EXCHANGE RATE DYNAMICS IN TANZANIA

EXCHANGE RATE DYNAMICS IN TANZANIA

By

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A Dissertation Submitted in Partial/Fulfillment of the Requirements for Award of the Degree of Master of Science in Accounting and Finance (MSc A&F) of Mzumbe University

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CERTIFICATION

We, the undersigned, certify that we have read and hereby recommend for acceptance by Mzumbe University, a dissertation entitled; **Exchange Rate Dynamics in Tanzania,** in Partial Fulfillment of the Requirements for the Award of the Degree of Master of Science in Accounting and Finance of Mzumbe University

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DECLARATION

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throw a large party instead. However, I thank everyone who contributed in one way or anothe`r to the success of this dissertation.

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DEDICATION

This work is dedicated to my beloved Mummy late Veronica Ngassala Msokwa, my lovely wife Evelyn Gordon my son Edson and my lovely sister Scholastica Sanga.

LIST OF ACRONYMS AND ABREVIATIONS

ADF	**-**	Augmented Dick Fuller
ARCH	-	Autoregressive Conditional Heteroscedasticity
BOT	**-**	Bank of Tanzania
BOP	-	Balance of Payment
EXP	-	Exports
GARCH	**-**	Generalized autoregressive conditional Heteroscedasticity
IMP	**-**	Imports
IF	-	Inflation
GDP	**-**	Growth Domestic Product
IMF	-	International Monetary Fund
LOP	**-**	Law of one Price
MOF	-	Ministry of Finance
NBS	-	National Bureau of Statistics of Tanzania
PPP	**-**	Purchasing Power Parity
ER	**-**	Exchange Rate
REER	**-**	Real Effective Exchange Rate
TZ	-	Tanzania
US	-	United States
VAR	-	Vector Autoregressive
VECM	-	Vector error correction Model

ABSTRACT

The dissertation examines the factors affecting Exchange rate dynamics in Tanzania. The study was conducted on some major factors affecting exchange rate dynamics in Tanzania, and their relative importance. Annual data were employed for the period 1990-2013 collected from National Bureau of Statistics, Bank of Tanzania and World data indicators. The variables for the study were Inflation, Imports and Exports, Foreign currency reserve, and Government Debt Service on Exchange rate. Time series multivariate regression model was used to analyse the results. Johansenn cointegration test revealed that long run relationship exists among the variables and VECM results revealed short-run and long-run causality exists among the variables. Tanzania currency has depreciated a great since the year 1990, as a result of which Tanzania exports become costly in the international market and lost the competitiveness and imports became cheap due to which the balance of trade got affected. The study revealed that Export is the main factor affecting exchange rate in Tanzania. The study further showed that the second important variable which brought more dynamics in exchange rate was foreign currency reserve, and then the third important variable which brought more dynamics in exchange rate was inflation rate, while order imports and debt service lay at the fourth and fifth positions. Central bank needs to insure that such factors are controlled and there should be strict control over the foreign exchange market and Banks. The dynamics of the exchange rates had an adverse effect on the economy. Based on the findings of the study it was recommended to harmonise fiscal policies with monetary policy first and then make effective link of both these policies with trade policy.

Keywords: Johansen test, Vector Error Correction Model, Depreciate, Appreciation, Inflation, Imports, Exports, Debt service and foreign currency reserve.

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CHAPTER ONE

STUDY BACKGROUND AND PROBLEM SETTING

1.0 Introduction

This research is about “The Facrors affecting Exchange rate Dynamics”.In this chapter, background of the problem, statement of the problem, objectives, scope, significance, rationale and /or justification of the study, scope of the study, and organisation of disssertation of the study are covered in detail.

1.1 Background of the study

Tanzania experienced long period of its national currency depreciating against the dollar. For this reason, it was important to study the factors affecting exchange rate dynamics in Tanzania. Exchange rate is a very important factor affecting economic health. It has a vital role in country’s level of trade which in turn is very critical in a free market economy. Consumers’ spending particularly in the agri-business sector is directly affected by money supply and vice versa. When a country’s currency appreciates (rises in value relative to other currencies), the country’s goods abroad become more expensive and foreign goods in that country become cheaper (holding domestic prices constant in the two countries). Conversely, when a country’s currency depreciates, its goods abroad become cheaper and foreign goods in that country become more expensive

This was the reason why exchange rate was the most monitored, analysed and politically manipulated measure of the economy. Like any other commodity, the value of the currency rises and falls depending on the forces of demand and supply. Consumer spending is directly affected by money supply and vice versa. Anything that increases the demand for domestic goods relative to foreign goods tends to appreciate the domestic currency because domestic goods will continue to sell well even when the value of the domestic currency is higher. Similarly, anything that

increases the demand for foreign goods relative to domestic goods tends to depreciate the domestic currency because domestic goods will continue to sell well only if the value of the domestic currency is lower.

There are certain variables that have an effect on the exchange rate such factors are inflation, export, growth, imports, national debt, exports and central bank reserve. Central Bank (BOT) needs to assure that such factors are controlled and it has a strict control over the foreign exchange market and Banks. Tanzania is a small economy involved in foreign trade. The currency of Tanzania is Shillings, which has depreciated a great since 1990, as a result of which Tanzania exports become expensive in the international market and lost the competitiveness and imports became cheap due to which the balance of trade got affected.

Twarowska and Kąkol (2014) .Conducted a study on the analysis of factors affecting fluctuations in the Exchange rate of polish zloty against euro. Results revealed that the financial account balance and inflation rate are the most important factors determining the level of exchange rate in polish. Second, financial account surplus contributes to appreciation of the country's currency; Third, interest rate was important factor determining the exchange rate level. The relative rise in interest rates contributes to appreciation of the Polish currency, because it encourages foreign investors to invest in Poland. The fourth important variable which brings more variation in the Polish exchange rate is the government deficit, while the economic growth and the current account are less significant

Galati and Ho (2003) showed that news play a role in fluctuation of exchange rate for Euro and dollar. The results of the study showed that good news bring appreciation while bad news depreciates currency. Sanchez-Fung (2003) also studied the same relationship and stated that exchange rate is more responsive in case of depreciation.

Parveen et al. (2012) studied on factors affecting exchange rate in Pakistan.The study revealed that inflation is the main factor affecting exchange rate in Pakistan.
The study further showed that the second important variable which brings more

variation in exchange rate is economic growth, while the order of exports and imports in variation lies at third and fourth positions.

Rutasitara (2004) investigated the influence of exchange rates on inflation in Tanzania. Model estimation lends support to the structural view of inflation and shows a high degree of persistence as the current rate reflects about 0.6 of its value four quarters back. The study contributes to the debate on the controversies about the relative role of exchange rates in discussion of Structural Adjustment Programmes (SAP) and stabilisation policies. Unfortunately, most key reforms occurred in the second half of 1990s, which are not captured by the study since the study period ends in 1995. It is also interesting to note that, almost all macro variables in the model, are stationary in levels.

Siregar and Pontines (2005) conducted a study on external debt and exchange rate overshooting in East Asian countries. Results found that the accumulation of external debts in these economies have indeed been partly responsible for the increasing incidence and severity of exchange rate overshooting of the local currency.

Henckel (2004).Investigated how government debt affects exchange rate behavior using a two-country general equilibrium and found that the exchange rate was directly related to the effective price of public debt

Patosa and Cruz (2013) Studied the factors affecting exchange rate movements in selected Asian countries (China, Philippine, Thailand and Malaysia).The Results revealed that not all variables included in the model contribute to the explanation of exchange rate movements. Industrial production is significant in all countries. Results for other three variables money supply, interest rate and inflation rate are somewhat mixed. China, Malaysia, Thailand and Singapore have only two significant variables each. For China and Malaysia, the significant variables are industrial production and inflation rate.

For Thailand industrial production and interest rate are significant and for Singapore money supply and industrial production. For the Philippines, three variables have significant contribution to the exchange rate movements, and these are money supply, interest rate and industrial production and also they found that the country imports and exports are also affected by the changes of exchange rate. An appreciation of home country currency will lead the price of export products to be more expensive, and import products to be cheaper. Likewise, a depreciation of home currency will lead the price of import products to be more expensive and export products to be cheaper.

Asari et al. (2011) studied on interest rate and inflation towards exchange rate volatility in Malasyia.The results show that the inflation rate impacts the interest rate as indicated by Granger-cause. Subsequently, the interest rate influences the exchange rate as shown by the Granger cause test. Taking into account a long term relationship, interest rate moves positively while inflation rate goes negatively towards exchange rate volatility in Malaysia. The implication of this study is that increasing the interest rate can be efficient in restraining exchange rate volatility

Zada (2010) .Studied the factors affecting exchange rate of Pakistan for the period 1979 to 2008. The study used multiple regression model in which exchange rate was taken as dependent variable while Inflation, interest rate, Foreign exchange reserves, trade balance, money supply and Gross Domestic Product were the independent variables. The study showed that Inflation, interest rate and foreign exchange reserves strongly influence the exchange rate and remained significant at 1% level while other variables GDP, Money supply and trade deficit remained insignificant.

Asari et al.(2011).Studied on approach in explaining the relationship between interest rate and inflation towards exchange rate volatility in Malaysia. The results show that the inflation rate impacts the interest rate as indicated by Granger-cause. Subsequently, the interest rate influences the exchange rate as shown by the Granger-cause test.

Taking into account a long term relationship, interest rate moves positively while inflation rate goes negatively towards exchange rate volatility in Malaysia. The implication of this study is that increasing the interest rate can be efficient in restraining exchange rate volatility.

Devereux and Lane (2001) underline the need to extend the list of variables important for understanding bilateral exchange rate volatility beyond those suggested by optimal currency area theory. Their study showed that for developing countries, in particular, volatility in their bilateral exchange rates was strongly and negatively affected by the stock of external debt.

Bernhardsen and Røisland (2002) studied on "Factors that influence the krone exchange rate" In the long term, the krone exchange rate is found to be dependent on the oil price and the price differential between Norway and other countries. In the short term, the krone exchange rate is also influenced by international financial turbulence and by the interest rate differential against other countries. International financial turbulence has had a particular effect on the krone exchange rate since January 1997, when there was a sharp increase in the daily volatility of the krone exchange rate. In this period, effects stemming from international foreign exchange markets appear to have had at least as great an impact as the oil price on monthly movements in the krone exchange rate.

Khan Rajer.(2014).Studied the factors affecting exchange rate in Pakistan. The results revealed that inflation is the main factor affecting exchange rate in Pakistan. Then further showed. That the second important variable which brings more variation in exchange rate was economic growth, while order of export and import in variation lies at third and fourth positions in respect of Terms of Trade and Productivity growth.

In the first half of 2012/13, the Interbank Foreign Exchange Market (IFEM) stabilised following implementation of tight monetary policy and regulatory measures pursued by the Bank towards the end of 2011. As a result, the Shilling remained relatively stable, fluctuating within a range of TZS 1,574.03 and TZS 1,586.18 against the US dollar, compared to TZS 1,553.72 and TZS 1,688.23 per USD recorded in the corresponding period in 2011/12.During the period under review, the Bank continued to participate in the IFEM for liquidity management purposes by selling USD 346.5 million, out of USD 626.7 million transacted in the market. The exchange rate was expected to remain market determined and the Bank continue to participate in the foreign exchange market for liquidity management purposes and to smooth out short-term fluctuations in the exchange rate, while maintaining an adequate level of international reserves. The exchange rate was expected to remain stable in the remaining period of 2012/13, supported by the monetary policy stance and regulatory measures (Central bank Monetary Policy 2013)

Although there had been tight monetary policy taken by Central bank in the year 2012/2013, exchange rate in Tanzania shillings was still fluctuating against dollar. That is why exchange rate dynamics is the hot topic in our country. (Although there have been numerous studies, focusing on Factors affecting Exchange rate in different Countries (Edmira Cakrani (Albania), Ntui Proti (Tanzania) Rutasira,Dan Rodric (U.SA), Tommaso Griffoli et al. (Switzerland), Wang (China) and Khan Rajer.(Pakistan)) but no such studies had been done in Tanzania. Also, we had limited studies that focused on Factors affecting Exchange rate Dynamics in Tanzania, likewise there were no Economic Fundamental variables which were affecting every country; they differ depending on economic situation of a particular country and monetary policy still had played important role.

This study attempted to assess the factors affecting exchange rate dynamics in Tanzania and it has already provided the evidences on what factors affects exchange rate dynamics and therefore we have understood those factors affecting the Exchange

rate dynamics in Tanzania, we would be helpful for Government and policymakers to take appropriate actions to control them.

The Government of Tanzania had made some efforts have helped in stabilising the exchange rate in from 1990 to 2013 but still fluctuations were there and in the recent years the exchange rate has become very unstable. The volatility of the exchange rates can have an adverse effect on the economy. To understand the exchange rate behaviour the variable affecting the exchange rate dynamics needed to be studied. Little is known about Factors affecting exchange rate in Tanzania dynamics in Tanzania bearing in mind that exchange rate has great impact economic growth of a country

1.2 Statement of the problem

The exchange rate issues still hot even in developed countries no even Economics Profession who can foolproof establishing currency properly valued that is why we decided to investigate the factors affecting exchange rate in Tanzania. Which are the factors that affect exchange rate dynamics in a developing country like Tanzania? Factors affecting exchange rate dynamics can be economic, political, and psychological and also in short-run or long-run. Behaviour of exchange rate may be more appropriately studied through macro variables and/ or micro variables.

A number of international studies have been done in this regard. The study by Uddin et al.(2013) on factors affecting the Fluctuation in Exchange Rate of the Bangladesh shows that exchange rate is strongly associated with ratio stock of nominal money of respective currencies. Increase in the relative debt is another important source affecting nominal exchange rate. Borrowing of the government from domestic and foreign sources has been one of the major causes of depreciation in the Bangladesh Taka against US Dollar..

Khan Raja.(2014).Analysed the factors affecting exchange rate variability in Pakistan. Conducting an analysis of the factors affecting the exchange rate variability in Pakistan he said that the inflation in Pakistan is the factor that affects the exchange

rate variability the most in the recent years. As inflation increases the money supply increases and local currency depreciates due to which the exchange rate changes and variability increases. Oil prices have been found as the second most influential factor that affects the exchange rate variability in Pakistan Government intervention is among one of those factor that can have an effect on the exchange rate variability.

Bernhardsen and Røisland.(2002) .Studied on factors that influence the krone exchange rate. In the long term, the krone exchange rate was found to be dependent on the oil price and the price differential between Norway and other countries. In the short term, the krone exchange rate was also influenced by international financial turbulence and by the interest rate differential against other countries. International financial turbulence has had a particular effect on the krone exchange rate since January 1997, when there was a sharp increase in the daily volatility of the krone exchange rate. In this period, effects stemming from international foreign exchange markets appear to have had at least as great an impact as the oil price on monthly movements in the krone exchange rate.

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Siregar and Pontines (2005).Studied on External debt and exchange rate's overshooting in East Asian countries." Results showed that the accumulation of external debts in these economies have indeed been partly responsible for the increasing incidence and severity of exchange rate overshooting of the local currency. Empirical studies in Tanzania did not yield the same results despite the numerous studies on exchange rate such as Rutasitara (2004) who investigated the influence of

exchange rates on inflation in Tanzania. Model estimation lends support to the structural view of inflation and shows a high degree of persistence as the current rate reflects about 0.6 of its value four quarters back. It was interesting to note that just about all macro variables in the model, are stationary in levels. Also, Proti Ntui. (2013) carried out a study on Exchange rate Fluctuations shock-in Tanzania, an empirical analysis. The empirical results of the study suggest that variables such as national debt, political tension and economic growth affect exchange rate movement in Tanzania.

Moreover, no such studies have been done in Tanzania where factors affecting exchange rate dynamics in Tanzania are not well known. But this study did considering those variables and data ranging from 1990-2013. The dependent variable was Exchange Rate and Independent variables were inflation, interest rate, Government Debt, Economic Growth ,Government Expenditure, Trade Barriers (Tariffs),Imports, Exports and Central Bank Reserves (Foreign currency reserve).Thus, it suffices to conclude here that no study exists on the Factors affecting exchange rate dynamics in Tanzania. This is the gap the present study sought to bridge. The study posed the question: what are the factors affecting of exchange rate Dynamics in Tanzania?

1.3 Rationale of the study

Exchange rate is a key element that needs to be addressed specially in Tanzania where Tanzanian shillings is consistently losing its value and it was very necessary to look into those factors that are affecting the exchange rate in Tanzania. In the current economic condition it is very important to analyze these factors and see which of these needs to be taken care of to control the exchange rate. This research can contribute in the policy making and implementation of the policies like monetary, fiscal and trade policy.

The results can provide guidelines for the authorities to look at those factors that are causing this dynamics in exchange rate and it can contribute in the body of knowledge. Also, it has its importance in the context of Tanzania as in this recent time where exchange rate dynamics is very high the need to study the main factors causing this dynamics was very crucial. The interest of this study was to investigate which factors really affect the exchange rate Dynamics in Tanzania. Understanding of the mechanism behind the exchange rate dynamics has always been of great interest for economists/Government around the world.

1.3 Significance of the study

The study contribute to the body of knowledge by filling in the gap in knowledge particularly in recent Tanzania situation as recommendations will be helpful for the investors, foreign multination company, Foreign exchange currency market players, Government, companies from all sectors, exporters and importers. Thus, study can contribute to the economy and policy making as it identifies the relations and their significance between macroeconomic variables and exchange rate dynamics. Movements in today's exchange rate are affecting tomorrow's exchange rate level and, thus, the Central Bank's loss function. As is the case with price level stabilisation, the forward looking public understands that deviations from target would be countered by future policy movements. Consequently, this reduces the discretionary stabilisation bias. The impact of exchange rate to the macroeconomic variables was an essential factor that policymakers should consider, aside from determining factors affecting exchange rate Dynamics between countries. Moreover, this study would help them in deciding what issues and policies are to be prioritized, especially in formulating the monetary as well as the fiscal policy.

1.4 Research objectives

1.5.1 General Objective

The main objective was to determine the factors affecting Exchange rate dynamics in Tanzania.

1.5.2 Specific Objective

Dynamics of economic relationship between exchange rate and other economic variables.

1.6 Research question

Fluctuations in the value of currencies of different economies have increased after the collapse of Breton Woods System. Fluctuations and variability in exchange rate affect the growth and trade exchange rates. Exchange rate has a vital role in country's level of trade which in turn was very critical in a free market economy play a central role in international trade because they allow us to compare the prices of goods and services produced in different countries.

The unification of the foreign exchange market followed the introduction of foreign exchange bureaus in 1992 and the liberalization in 1993. Then inter- bank foreign exchange market (IFEM), which was introduced in June 1994 so as to assist in stabilizing our currency.Although the Government made efforts in stabilizing the dynamic of exchange rate, since 1990 to 2013 but fluctuations were still there and in the recently years the exchange rate has become very dynamic.

Therefore the study aimed at finding answer to question" How is the economic relationship between exchange rate and other economic variables?

1.7 Justification of the study

Each country has a currency in which the prices of goods and services are quoted. The Tanzanian shillings in Tanzania, dollar in the USA, the euro in France, the pound sterling in the UK, the yen in Japan, and the kroner in Denmark and hundreds in a line. Exchange rates play a central role in international trade because they allow us to compare the prices of goods and services produced in different countries. In daily newspapers you can see relative prices of national currency per foreign unit. Weekly or monthly magazines and journals show growth trends over specific period. As long as exchange rates are part of our everyday business or main factor that effect the way how our business goes, it is worth to analyse how currency rates change and what are the factors affecting exchange rate dynamics in Tanzania.

Exchange rate is an important economic variable, where exchange rate behaviour affects the economy in microeconomic terms defining the allocation of resources between the tradable sector and the non-tradable sector.

Exchange rate affects economy also in macroeconomic terms, through its impact on key economic variables, such as economic growth, employment and inflation. But Exchange rate itself is affected by economic variables. Exchange rate has significant impact on the economy of a country. The Exchange rate is considered as a key indicator of a country's competitiveness, it even is considered as the most reliable indicator of competitiveness in the Tanzania. Depreciation of the exchange rate is interpreted as a decline in price competitiveness, while an appreciation Exchange rate leads to faster economic growth Tanzania as a big country and it would be very important for Tanzanian economy to attract foreign investments.

Khan et al. (2012) argue that the importance of exchange rate can never be underestimated as exchange rate has its effect on the economy. Investors need to clearly identify the exchange rate movements before investing in stocks. So, the study of those factors that directly affect the exchange rate variability is also of great importance. Policies should be made that reduce the exchange rate variability.

Ickes (2014) argues that the exchange rate measures the cost of foreign goods relative to domestic goods. It gives a measure of competitiveness, and it is a useful variable for explaining trade behavior and national income.

Exchange rate is a key element that needs to be addressed specially in Tanzania where Tanzanian Shillings was consistently losing its value and it was very necessary to look into those factors that are affecting the exchange rate in Tanzania. In the current economic condition it was very important to analyse these factors and see which of these needs to be taken care f to control the exchange rate. This research would contribute in the policy making and implementation of the policies like monetary, fiscal and trade policy. The results would provide a guideline for the authorities to look at those factors that affect Exchange rate dynamics and look necessary precaution measure and it was importance in the perspective of Tanzania as in this recent time where exchange rate volatility is very high, compared to previous years.

The studies on exchange rates and possible variations of currency rates attracted great interest in 70s; and so far until now this topic one of the leading ones in economic field. That is why it was worth indeed to study the factors affecting exchange rate dynamics in Tanzania

1.8 Limitations and delimitations of the study

The study was limited by lack of availability of data in Tanzania especially from 1980-1989, because the researcher was intended to include the data for thirty four years. Due to lack of data the study included the data for period 1990-2013 with yearly data for twenty four years only. But this is not a problem which could limit the reliability of the study because the research which uses times series analysis needs the data which could cover at least twenty years. Therefore, this research included twenty four years which was sufficient to provide data for the study.

1.9 Scope of the study

The research conducted in Dar-es salaam, Tanzania because the city was where we found all the organisations where we intended to collect the data for the research study. The organisations included the ministry of finance, the national bureau of statistics and Bank of Tanzania.The research investigated factors affecting exchange rate dynamics in Tanzania.

1.10 Organisation of the dissertation

This research Dissertation is organised in six chapters. Chapter one covers the overview of the study, which includes an introduction and background to the study, the statement of the problem, the research objectives, the research questions, the significance of the study and scope othe the study, The second chapter presents a review of the existing literatures on factors affecting Exchange rate Dynamic in Tanzania .The third chapter presents the research Methodology highlighting the location and characteristics of the study, selection of the study area, source and types of data, design of the research, instruments and data collection tool.

The fourth chapter present research Findings and Presentation of the study.The fifth chapter presents the Discussion of the Findings, and lastly, chapter six presents the Summary of the study,Conclusions,and Policy implications. After chapter six the dissertation presents References, Appendices,and Time Frame

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents definition of main concepts, theoretical framework and empirical studies on factors affecting exchange rate dynamics in Tanzania. It is divided in subsections as presented hereunder:

2.1 Theoretical part

The topic of currency exchange rates and factors those drive exchange rates change has been reviewed by many scholars in the last decades and still remains to be one of the hot topics in international economic studies. In the works about exchange rates, the analyses were theoretically proven and found empirical evidence as well. Most of the scholars came to similar conclusion, even though they focused not on the same factors

Definitions

Definitions: Exchange Rate- Exchange Rate is the price of a foreign currency in terms of the home currency

2.2 Exchange rate policy

The unification of the foreign exchange market followed the introduction of foreign exchange bureaus in 1992, which was allowed to transact in foreign exchange at freely determined exchange rates for current account transactions, and the liberalisation in 1993 of nearly all remaining foreign exchange transactions for current account purposes. Although the parallel foreign exchange market is still in existence, its premium is small reflecting mainly the operation of residual capital controls, the financing of illegal activities, and tax evasion.

The virtual disappearance of parallel exchange rate premium also reflects the extent to which the adoption of the crawling peg at the start of 1986 has realigned the real exchange rate to its long-run path. Currently, the exchange rate is determined freely at the inter- bank foreign exchange market (IFEM), which was introduced in June 1994 to replace weekly foreign exchange auctions that were started in July 1993 shortly before the foreign exchange market was unified.

As the rate of domestic inflation declines and becomes consistent with inflation in Tanzania's major trading partners, the real value of exchange rate is expected to become more stable. As at the end of 1998, the real exchange rate was slightly overvalued. In general the liberalisation of exchange rate has boosted exports and foreign exchange inflows, making it possible for the country to accumulate foreign exchange reserves equivalent to its four-month' worth of imports. Exchange rate developments in 1999/2000 was that, the weighted average exchange rate of shilling was TZS 710.2 US$ compared to TZS 684.9 per US$ recorded in 1998/1999, registering a nominal depreciation of 16.3 percent. The pace of depreciation was high during the first quarter of the year when the shilling depreciated persistently from TZS 721.7 per US$ in June 1999 to TZS 797.2 per US$ in September 1999 and had stabilised at about TZS 800.o per US$ since then. The depreciation in the exchange rate of the shilling in the first quarter was a reflection of shortfall in the supply of foreign exchange following a sharp decline in exports in 1999. It could also have represented a correction, following four years of appreciation in the real effective exchange rate of the shilling.

2.3 Theories

The two theories consider international trade as a factor influencing exchange rate; these are Purchasing power parity and Balance of payment theory. The fact is there are many theories of exchange rate determination but no theory provides a complete explanation of past exchange rate behaviour, even forecast the future with any degree

of accuracy. However, a consensus of theoreticians and empirical researchers may be summarised in four fairly well accepted propositions.

2.3.1 Propositions

Proposition 1.Foreign exchange is a financial asset that behaves very much like other financial assets, such as stocks and bonds. Its price is determined in the context of risk, returns, and most of all, expectations.

Proposition 2.Movement in exchange rate between two currencies is fundamentally a monetary phenomenon.It is determined by the basic factors underlying the demands for and supplies of each national money.

Proposition 3.Real- factors such as economic growth and monetary aberrations do exert strong influence on a currency's value.

2.3.2 Balance of Payment (Bop)

Just as the basic determinants behind the supply of and demand for products (e.g. coffee) are critical in fully understanding the behavior of their coffee prices, so it is important to understand the factors behind the supply of and demand for foreign exchange to determine the price of a foreign currency. Assuming trading linkage between two countries TZ and USA, the factors determining the demand for TShillings are also the factors determining the supply of US$, and the factors determining the supply of TShillings also determine the demand for US$. Therefore, the balance of payments is a systematic array of all the factors that determine the foreign exchange rate.

Balance of Payment Implications

Terms of Trade; Ratio comparing export prices to import prices.If the price of a country's exports rises by a greater rate than that of its imports, its terms of trade have favourably improved.

Increasing terms of trade shows greater demand for the countries exports, this in turn, results in rising revenues from exports, which provides increased demand for the country's currency.

Current-Account Deficits;The current account is the balance of trade between a country and its trading partners, reflecting all payments between countries for goods, services, interest and dividends. A deficit in the current account shows the country is spending more on foreign trade than it is earning, and that it is borrowing capital from foreign sources to make up the deficit. In other words, the country requires more foreign currency than it receives through sales of exports, and it supplies more of its own currency than foreigners demand for its products.

Public Debt; Nations with large public deficits and debts are less attractive to foreign investors. The reason a large debt encourages inflation, and if inflation is high, the debt will be serviced and ultimately paid off with cheaper real dollars in the future. In the worst case scenario, a government may print money to pay part of a large debt, but increasing the money supply inevitably causes inflation. Moreover, if a government is not able to service its deficit through domestic means, then it must increase the supply of securities for sale to foreigners, thereby lowering their prices. Finally, a large debt may prove worrisome to foreigners if they believe the country risks defaulting on its obligations. Foreigners will be less willing to own securities denominated in that currency if the risk of default is great.

For this reason, the country's debt rating (as determined by Moody's or Standard & Poor's, for example) is a crucial determinant of its exchange rate. This is the most basic theory of exchange rate determination, and one which accords with common sense and with the theory of international trade is that: The equilibrium exchange rate is the one that equates exports and imports between two countries

2.3.3 The Purchasing Power Parity (PPP)

The Theory is based on 'the law of one price' The theory says: The exchange rate must be set at a level that equates aggregate prices between two countries, so the exchange rate is the ratio of the home and foreign countries' price levels, which are weighted-average prices of all goods and services in the economy.

$$S_t = \frac{L_t}{L_t^*} \quad \text{.....(1)}$$

L_t = home country
L_t^* = foreign country

Measuring Price Levels: Because the price levels themselves are not measured, the present rate relative to the past rate equals the ratio of inflation rates in the two countries

Inflation differentials between countries will also be eliminated in terms of their effect on the prices of the goods because the PPP will adjust to equal the ratio of their price levels equals the ratio of inflation rates in the two countries. More specifically, as stated in Lumby and Jones (1999), "the currency of the country with the higher rate of inflation will depreciate against the other country's currency by approximately the inflation deferential.

Theory of exchange rate determination purchasing power parity is based on the assumption that all goods are tradeable. Hence, it assumes that real exchange rates are constant. It is not a bad assumption for the long run, but it may be problematic for the short run.

If each country produced one and the same good, and if transport costs and national prejudices did not exist, then arbitrage would clearly bring about the law of one price. Of course countries produce many goods, and not all are tradeable. It is nonetheless worthwhile to see its implications.

A simple example of this theory was provided by the Big Mac index. The Big Mac is essentially the same good in every country. Hence, we can compare the dollar price of Big Mac's across countries. Where the currency appears over-valued we should expect the exchange rate to appreciate, and vice versa. This does surprisingly well though it was not perfect. Notice that even with the Big Mac, however, price differences persist. Not even all the Big Mac costs are really tradable. The PPP conclusion that exchange rates are determined solely by changes in relative price levels rests on the assumption that all goods are identical in both countries and that transportation costs and trade barriers are very low. When this assumption is true, the law of one price states that the relative prices of all these goods (that is, the relative price level between the two countries) will determine the exchange rate

2.4 Empirical part

Kisaka and Mwasaru (2012) investigated the variations in exchange rate have its implications on the whole economy including the financial intermediaries, individual investors and corporate investors. They found that exchange rate variability affects the profits of companies. The companies that are heavily dependent on imports will suffer from the business and conversion losses because high imports will depreciate the local currency as imports and exchange rate are significantly related and imports is one of the main factors that affects the exchange rate variability

Mukhtar and Malik (2010) argued that the exports are the main source of increasing the foreign exchange reserves in developing economies and with high exports the exchange rate can be brought down.

Policies must be made to control the volatility in exchange rate so that exports continue to increase and exchange rate is kept under control or desirable level

Akinbobola (2012) , in their study, argued that the empirical results confirms that in the long run, money supply and exchange rate have significant inverse effects on inflationary pressure, while real output growth and foreign price changes have direct

effects on inflationary pressure. The possible justification for the inverse effect of money supply on price level is that inflation may not be due to aggregate demand pressure but rather due to hiccups in the supply chain of goods both from the domestic and foreign supply outlets. Empirical deductions also signify the presence of significant feedback from the long run to short run disequilibrium. However, there exists a causal linkage between inflation, money supply and exchange rate in Nigeria.

Uddin et al. (2013) also contended that empirical results from their study show that exchange rate is strongly associated with ratio stock of nominal money of respective currencies. Increase in the relative debt is another important source affecting nominal exchange rate. Borrowing of the government from domestic and foreign sources has been one of the major causes of depreciation in the Bangladesh Taka against US Dollar.

Hopper (1997) in his article suggests that economic models and indeed fundamental economic quantities are not very useful in explaining the history of the exchange rate or in forecasting its value over the next year or so. This fact has important implications for market participants. It is all too common to encounter private-sector foreign exchange economists who tell very cogent stories designed to buttress their short-term forecasts for the values of currencies

Previous studies showed that volatile exchange rates depress or adversely affect international trade due to uncertainty and the associated risks of fall in the value of the currency by Sauer.(2001).Janine et al. (1997) observed that central bank reserves indicate the capacity of the bank to defend the currency. As such, an increase in reserves has the effect of appreciating the real exchange rate, while a decrease in reserves depreciates the real exchange rate.

In their study of the determinants of the real exchange rate for South Africa by janine et al. (1997) found results consistent with theory; an increase in reserves appreciated the real exchange rate.

Kriljenko and Habermeier (2004) argued that the determinants of exchange rate volatility are of interest because of the exchange rates' potential linkages to other economic variables. In some developing countries there is no consensus in the literature on the factors affecting exchange rates and their volatility. This absence of agreement reflects basic difficulties in modeling and predicting exchange rates. Much of the existing work focuses on the levels of exchange rates (in statistical terms, the mean or first moment), but also has implications for exchange rate volatility.

Twarowska and Kąkol (2014) .Analysed factors affecting fluctuations in the Exchange rate of polish zloty against euro. Results revealed that the financial account balance and inflation rate are the most important factors determining the level of exchange rate in polish. Second, financial account surplus contributes to appreciation of the country's currency; Third, interest rate was important factor determining the exchange rate level. The relative rise in interest rates contributes to appreciation of the Polish currency, because it encourages foreign investors to invest in Poland. The fourth important variable which brings more variation in the Polish exchange rate is the government deficit, while the economic growth and the current account are less significant.

Asari et al. (2011) studied on "the Approach in Explaining the Relationship between Interest, Rate and Inflation towards Exchange Rate Volatility in Malaysia". The results show that the inflation rate impacts the interest rate as indicated by Granger-cause. Subsequently, the interest rate influences the exchange rate as shown by the Granger cause test. Taking into account a long term relationship, interest rate moves positively while inflation rate goes negatively towards exchange rate volatility in Malaysia. The implication of this study is that increasing the interest rate can be efficient in restraining exchange rate volatility

Levy-Yeyati and Sturzenegger(2007).Argued that empirical studies present evidence suggesting that foreign exchange rate intervention has typically been aimed at limiting appreciations rather than depreciations (what they call "fear of appreciation").

After establishing whether such interventions were actually successful in maintaining an undervalued real exchange rate, they examined the effects of “fear of appreciation” on growth in developing countries. They found that fear of appreciation indeed leads to higher long-term growth rates. However, in contrast to the view that points to the relative size and growth of the tradable sector as the relevant channel, they found that higher growth comes from increased domestic savings and investment.

Patosa and Cruz (2013) studied on Factors affecting exchange rate movement in selected Asian Countries. The results revealed that not all variables included in the model contribute to the explanation of exchange rate movements. Industrial production is significant in all countries. Results for other three variables, money supply, interest rate and inflation rate are somewhat mixed. China, Malaysia, Thailand and Singapore have only two significant variables each. For China and Malaysia, the significant variables are industrial production and inflation rate.

In case of Thailand industrial production on and interest rate are significant and for Singapore money supply and industrial production. For the Philippines, three variables have significant contribution to the exchange rate movements, and these are money supply, interest rate and industrial production and also they found that the country import and export exchange rate.

Kisaka and Mwasaru (2012) studied the causal relationship between exchange rate and stock price in Kenya. The results revealed that the variations in exchange rate have its implications on the whole economy including the financial intermediaries, individual investors and corporate investors. Exchange rate variability affects the profits of companies. The companies that are heavily dependent on imports suffer from the business and conversion loses because high imports depreciate the local currency as imports and exchange rate are significantly related and imports is one of the main factors that affects the exchange rate variability.

Dani Rodric.(2008).Provides empirical evidence which shows that undervaluation of the currency stimulates economic growth. This is true particularly for developing countries. This finding is robust to use in different measures of the real exchange rate and different estimation techniques. It also provides some evidence that the operative channel is the size of the tradable sector (especially industry).These results suggest that tradable goods suffer disproportionately from the government or market failures that keep poor countries from converging towards higher income

Aguirre and Calderón (2005) show that both large real exchange rate overvaluation and large real exchange rate devaluations hamper economic growth although large devaluation and overvaluation of real exchange rate hamper economic growth but causes currency crisis as supported by Mail.(2013) ,the persistently over-valuated real exchange rate is an early indicator of potential currency crisis,)

Hoda.(2012).Provided empirical results which suggested that long-run real exchange rate in Albania is affected by the relative productivity and terms of trade, excluding interest rate differentials and net foreign assets.

Empirical findings by other researchers have also concurred that a chronic misalignment in the real exchange rate is a major factor responsible for the poor economic performance of most developing countries. For example, Ghura and Grennes (1993) used a panel of Sub-Saharan countries to investigate the impact of real exchange rate misalignment on economic performance. They too found that real exchange rate misalignment negatively affected income growth, exports and imports, and investment and savings. The finding is that terms of trade, government consumption, and investment share all influence the real exchange rate for imports while terms of trade central bank reserves and trade taxes influence the real exchange rate for exports in the long run. The internal real exchange rate is influenced by terms of trade, investment share, and the rate of growth of real GDP in the long-run.

Ibrahimu and Raimundo (2005) argued that it is pertinent to note that for the advanced industrial countries, though productivity and the capital account restrictions are by far the most important fundamentals affecting the long-run behavior of the RER, other fundamentals are important as well. These include fiscal policy and policy-oriented openness

Mussa (1986) contends that appears to be a wide consensus in the literature that the long-run equilibrium RER in developing countries is subject to the influence of a relatively wide range of time-varying exogenous and policy fundamentals. This view is corroborated by the failure of the PPP-based approach to explain persistent deviations of the real exchange rate from the PPP benchmark in both developed and developing countries alike.

Driskill et al. (2000) provided the empirical results which show that an overlapping-generations model in which the short run response of the real exchange rate to a change in national saving depends on a country's level of net foreign indebtedness. In particular, the short-run and long-run response will be in the same direction if a country is a sufficiently large net debtor.

Berthou (2008) provided the results which confirm that an appreciation of the real exchange rate reduces the value of bilateral exports; our elasticity however is smaller as compared to the previous literature: a real appreciation of the domestic currency by 10% decreases exports by 6.8% on average. Importantly, this effect differs according to the nature of the destination: the elasticity is indeed larger when the importer is an OECD country, and reduced when the importer is a developing country. In our quantification exercise, we show that the geographical composition of exports, associated with differences in trade costs, can contribute to large differences in the effect of real exchange rate movements on bilateral exports across exporting countries. Finally, we find weak evidence that Labour Market Regulations contribute to reduce the elasticity on the real exchange rate.

Mkenda. (2001). Determinants of the real exchange rate the finding is that terms of trade, government consumption, and investment share all influence the real exchange rate for imports, while terms of trade, central bank reserves and trade taxes influence the real exchange rate for exports in the long-run. The internal real exchange rate is influenced by terms of trade, investment share, and the rate of growth of real GDP in the long-run. Error-correction models are then estimated

Magud and Sosa.(2010) .Conducted a survey which shows that on the one hand, DD does exist as the real exchange rate appreciates, there is factor reallocation, and production switches away from manufacturing. On the other hand, exchange rate volatility hampers economic growth. Misalignment of the real exchange rate from its fundamental value also lowers growth. Overvaluations (however defined) are always negative for economic growth, while the evidence on undervaluation is inconclusive.

Gylfason and Zoega.(1997) studied the effects of DD on the volatility of the real exchange rate, which further lowers productivity and investment in the tradable goods sector this, amplifies the standard DD effects. They show that abundance of a natural resource tend to inhibit economic growth by reducing investment in human capital, Montiel and Servén (2008), focusing on the claim that an undervalued real exchange rate fosters growth through an increase in domestic savings rate, they find no evidence of a positive relationship between a depreciated currency and higher saving rates

Ongeri Hezekiah Otuori (2013) came up with results which showed that interest rate and external debt had positive and significant effects on performance while inflation rate and external debt had negative and significant effects on performance. The study concluded that higher levels of interest rate lead to higher profitability in commercial banks in Kenya. The study further concluded that higher levels of inflation rate result in lower bank profitability in Kenya. The study also concluded that higher levels of external debt result in lower bank profitability in Kenya. Lastly, the study concluded that higher levels of exports and imports lead to higher profitability in commercial banks.

2.5 Conceptual framework and research model

2.5.1 Factors that affect Exchange Rates in the Short run

1. Inflation; the inflation is one of the factors that affect the exchange rate in short run for example. If the rate of inflation in the Tanzania is relatively lower than elsewhere, then Tanzania exports will become more competitive and there would be an increase in demand for Tanzania shillings to buy Tanzanian goods. Also, foreign goods would be less competitive and so Tanzania citizens will buy less import. Therefore countries with lower inflation rates tend to see an appreciation in the currency value of any country.

2. Interest Rates; Interest rates affect the exchange rate in short run, for example Tanzania interest rates rise relative to elsewhere, and it would become more attractive to deposit money in the Tanzania. You would get a better rate of return from saving in Tanzania banks; therefore demand for Tanzanian shillings would rise. This is known as "hot money flows" and was an important short run factor in determining the value of a currency. Higher interest rates cause an appreciation.

3. Debt service (Debt), defined as the ratio of debt payments (principal and interest) to export revenues. If the ratio of debt service increases, it means that a large part of the foreign currencies need to serve the debt. In this way, the domestic currency weakens, which leads to an undervaluation of the exchange rate**.**

4. Economic growth; A recession may cause depreciation in the exchange rate because during a recession interest rates usually fall. Recession is the factor that affect exchange rate in short run due to the fall in interest rates but in economy growth is factor that affects the exchange rates due increase of interest rates.

5. Government Consumption (Spending/Expenditure); an increase in government a purchased raise output and private consumption, deteriorate the trade balance, and depreciate the exchange rate

2.5.2 Factors that affect Exchange Rates in the Long run

1. Trade Barriers (Tariffs).The Trade barriers was the factor that affect exchange rates in long run .For instance Barriers to free trade such as tariffs (taxes on imported goods) and quotas (restrictions on the quantity of foreign goods that can be imported) could affect the exchange rate. Increasing trade barriers caused a country currency to appreciate in the long run.

2. Preferences for Domestic versus Foreign Goods (Imports). The Preference for Domestic versus Foreign Goods are the factors that affect the exchange rates in long run. Increased demand for a country's exports causes its currency to appreciate in the long run; conversely, increased demand for imports causes the domestic currency to depreciate.

3. Productivity .The productivity is the factors that affect exchange rates in long run. For instance, if one country becomes more productive than other countries, businesses in that country can lower the prices of domestic goods relative to foreign goods and still earn a profit. As a result, the demand for domestic goods rises, and the domestic currency tends to appreciate. If, however, its productivity lags behind that of other countries, its goods become relatively more expensive, and the currency tends to depreciate. In the long run, as a country becomes more productive relative to other countries, its currency appreciates.

4. Change in Competitiveness (Export). The change in competitiveness is the factors affect exchange rates in long run. For instance if Tanzanian goods become more attractive and competitive this would also cause the value of the Exchange Rate to rise. This is important for determining the long run value of the Shillings. This was similar factor to low inflation.

5. Central Bank Reserves. Means the capacity of the bank to defend the currency, as such, an increase in reserves has the effect of appreciating the exchange rate, while a decrease in reserves depreciates the exchange rate.

2.5.3 Research model

Times Series Basic Model

$$Y_t = X_t\beta + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 2)$$

Y_t = Dependent Variable

X_t = Independent Variable

ε_t = Error/White – noise

Autoregressive Models

Models in which the Regressors are past values of the dependent variables they are regression models that relate a time series variable to its past value.i.e regression of a series into its own lag.

Lagged values of the dependent variable as Regressors

Economists regularly use time-series variables such as interest rates, inflation measures, aggregate investment, and aggregate consumption for various analysis and modeling projects. We specify time series observations using the subscript t to denote time instead of the i used to denote cross-section data.

Thus, a multiple regression model would be as follows

$$Y_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \ldots + \beta_t X_{kt} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

In many time-series applications the dependent variable in time period *t* is also often related to the value taken by this variable in the previous time period that is, to y_{t-1} .The value of the dependent variable in an earlier time period is called **a lagged dependent variable.**

Consider the following regression model linking a dependent variable, Y, K independent variables and a lagged dependent variable

$$Y_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \ldots + \beta_t X_{kt} + \gamma y_{t-1} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(4)$$

We implicitly assume that the set of independent variables $X_1 X_2 \ldots X_{kt}$ contains all quantities that significantly affect the behaviour of the dependent variable, Y_t .Realistically there are likely to be additional variables that in any real applied problem also affect the dependent variable. The joint influence of these factors is absorbed within the error term, $\pounds_t$ however; a serious problem can occur if an important variable is omitted from the list of independent variable

In order to analyse the factors affecting the exchange rate, a linear regression model has been used. The following was the main linear regression model which was used for analysis.

$$\text{Exchange Rate}(Y_t) = \beta_0 + \beta_1 \text{inf} + \beta_2 \text{int} + \beta_3 \text{debt} + \beta_4 \text{exp} + \beta_5 \text{tariff} + \beta_6 \text{impo} + \beta_7 \text{exp} + \beta_8 \text{prod} + \beta_9 \text{reserve} + \beta_{10} \text{growth} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.(5)$$

Dependent Variable

Y_t = Exchange Rate

Independent Variables

X_I=Inflation Rate	**X_2**=Interest Rate
X_3= Debt sercice	**X_4**=Economic Growth
X_5=Government Consumption (Expenditure)	**X_6**=Trade Barries (Tarrifs)
X_7=Imports	**X_{18}**= Export
X_9=Productivity	**X_{10}**=Foreign currency Reserve

2.6 Hypotheses

The specific hypotheses was tested below in null form

There is no significant Dynamics economic relationship between exchange rates and other economic variables

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter gives an overview of the research methodology for the proposed study. The chapter describes indetails the study area and research design adopted. It then gives a detailed description of the sample and the sampling procedure, unit of analysis which was used in this study and closes with the techniques were used in data collection and the methods of data analysis

3.1 Description of the Study Area

The study was conducted in Tanzania.The study involved Financial Instutions (Bank of Tanzania),Public Organisation (Ministry of Finance and National Bureau of Statistics). This allowed the accesibility of relevant data for the research study purpose

3.2 Research Design

The purpose of this study was to investigate briefly on factors affecting exchange rate dynamics in Tanzania, this study used quantitave techniques in data collection. It applied a case study design so as to gether in-depth information regarding the factors that were affecting the exchange rate in Tanzania from 1990 to 2013.

3.3 Study Population

The population for this study was Tanzania but involved Financial Instutions (Bank of Tanzania),Public Organisation (Ministry of Finance and National Bureau of Statistics) in Tanzania.The selected population was considered due to the fact that they couldclearly provide relevant data

3.4 Sample Size and Sampling Techniques

The study used annual secondary data time series covering the period between 1990-2013.This period was chosen due to the fact that data used in this study was likely available The number observations for single variable was 24 years,the total sample was 240 observations.

3.5 Variables and their Measurements

3.5.1 Variables

In this study we developed two types of variables; that was the independent and dependent.We measured ten independent variables inflation, interest rate, Government Debt, Economic Growth, Government Expenditure, Trade Barriers (Tariffs), Imports, Exports and Central Bank Reserves. The dependent variable was exchange rate.The mentioned independent and dependent variables had a casual effect relationship in this study

3.6 Units of Analysis

A unit was the major entity that was being analysed in the study; it was what being studied. Therefore, the units of analysis in this study was Tanzania.

3.7 Data Collection

To achieve reliable information all secondary data was drawn from the International Financial Statistics Year Book, the Central Bank of Tanzania (BOT), world development indicators (WDI), National bureau of statistics (BNS), publications and websites.

3.7.1 Sources of Secondary Data

Usually published data are available in: (1) various publications of the central, state are local governments; (2) various publications of foreign governments or of international bodies and their subsidiary organisations; (3) technical and trade journals; (4) books, magazines and newspapers; (5) reports and publications of various associations connected with business and industry, banks, stock exchanges(6) reports prepared by research scholars, universities, economists in different fields; and (7) public records and statistics, historical documents, and other sources of published information and unpublished data are many they may be found in diaries, letters, unpublished biographies and autobiographies and also may be available with scholars and research workers, trade associations, labour bureaus and other public/ private individuals and organizations

3.8 Data analysis methods

Data were analysed by using practical analysis of financial data (STATA) as the research tool for data collected. The study used time series data to analyse, interpret and drawing conclusion. Regression diagnosis with STATA was appropriate for enhance of reliability of the data. Data sample ranged from 1990 -2013 annual data.conduct.

This study used secondary data where by annual data for the period 1990-2013 were used. Different sources for the data were drawn from International Financial Statistics Year Book, the Central Bank of Tanzania (BOT), world development indicators (WDI), National bureau of statistics (BNS), publications and websites.

Shapiro test was used to test for normality and the results revealed that the data were normal or residual were normally distributed. The stationarity of data is determined, by using Augmented Dickey-Fuller (ADF) test and Philip Perron. To select the optimum ADF lag, two lags used was selected; lag selection criteria was used to determine how many lags should be included in the model. Stationarity of the variables indicated that all the variables were nonstationary at level but became stationary at first difference. Johansen cointegration test was used to determine the

cointegration in the multivariate time series used for analysis and cointegration existing in the model. There are long run relationships among the variables.

In order to analyse the factors affecting the exchange rate dynamics multivariate regression model was used.

Multivariate regression model which was used for analysis was as follows:

$$ER = 388.6927 - 11.0889IF + 5.12e - 09DS + 25.35858EP - 3.63243IMP + 1.73e - 07$$
$$+ \text{«} ....(6)$$

Where ER- Exchange rate, IF-inflation, DS –Debt service, XP - Exports, IMP-Imports, RE-Reserve and μ is the residual term.

Standard Deviation			**t-statistic**
Inflation	=	3.376403	-3.27
Import	=	3.646062	-1.00
Debt Service	=	4.04e-07	-0.01
Export	=	5.392742	4.70
Reserve	=	2.62e-08	6.62
R-Sq = 97.93%		**R-Sq (Adj) = 97.35%**	**constant=388.6927**

Given above are the results of the regression of Exchange Rate on Inflation, Expenditure, Debt Service, Export and Reserve. It was clear from the p-values and t-statistic that there are three variables including constant term in the model are significant. As far as the overall fit of the model is concerned the coefficient of Determination(R-Sq) and the adjusted coefficient of determination(R-Sq (Adj) show that the model was a very good fit.

3.9 Econometric estimation

We used regression diagnostic with STATA, to test the variables with,

Normality-Normal data or the residuals are normally distributed

Homogeneity of variance (Homoscedasticity)-The error variance was constant

3.9.1 Multicollinearity

Linear relationship between independent variables, as the degree of multicollinearity increases, the regression model estimates of the coefficient become unstable and standard errors for the coefficient can get wildly inflated, wider significance, high variation in parameter estimates when variables are added /deleted, suspiciously high or low estimates of parameter and parameters estimates have wrong sign. We deal with multicollinearity by dropping irrelevant variables for the model. We reduced the level of multicollinearity because we can't eliminate multicollinearity rather we reduce it to the level which was acceptable 4.8 which was less than 5.

3.9.2 Independence

The errors associated with one observation are not correlated with the errors of any other observation. There was no autocorrelation.

3.9.3 Model specification

The model for this study was well specified because the value hat was statistically significant since it was predicted value and the value of hat square was not significant because the model was well specified the squared predictions do not have much explanatory power. The model was properly specified because the data are normally distributed or the residual was normally distributed, kernel density, probability normal and Shapiro-Wilk indicates that the distribution was normal. Using breusch-pagan test testing Ho: Variance of the residual was homogeneous. The result showed constant variance in the model, we do not reject null hypothesis because p-value was great than 5% lather we accept it indicating no Heteroscedasticity in the model. The model had minimum multicollinearity the VIF was 4.80 which was less than VIF 5 set as a benchmark. No autocorrelation within the model because the p-values was great than 5% for all the variables, even Lagrange multiplier indicates no autocorrelation

existence in lag order. No unit root within the model all the variables are non-stationary at levels but they became stationary at first difference.

The lag two has been chosen because the lag selection has advised us to choose lag two, considering the equation with many criteria should be granted or awarded. We constructed the model with five variables namely inflation, expenditure, debt service, exports and imports

The model specification

$$ER = 388.6927 - 11.0889\ IF + 5.12\ e-09\ DS + 25.35858\ EP - 3.632437\ IMP + 1.73\ e-07\ RE + \mu \ldots\ldots\ldots .(7)$$

3.10 Tests for the time series

3.10.1 Autocorrelation test

The data should be free from autocorrelation means should not suffer from autocorrelation the Table 4.8 shows that the all p-values are great than 5% which describes that the Ho: There is no autocorrelation in the residual, ALT: There is serial autocorrelation in the residual. We use tests Breusch Godfrey and autocorrelation and partial autocorrelation for checking serial correction in the residual. Because p-value 64.19% is great than 5%, we do not reject the Null hypothesis and we accept the (Ho) that there no autocorrelation in the residual, which is a good model or the model is desirable in our study.

3.10.2. Heteroscedasticity tests

The Breusch-Pagan Test. Testing, Ho: Hypothesis that the variance of the residual was homogeneous. Null hypotheses not rejected meaning that the data does not suffer from heteroscedasticity in the model as the p-value 12.31% great than 5% critical value.

3.10.3 Stationarity test

Stationarity of the series was an important phenomenon because it could influence its behaviour. If X and Y series are nonstationary random processes, then modeling the X and Y relationship as the simple OLS as in equation generate a spurious regression

$$Y = \sim + \quad X_t + £_t \text{ ....(8)}$$

Time series stationary was the statistical characteristic of the series such as its mean and variance over time. If both are constant overtime then the series was said to be a stationary processes (i.e. was a random walk/has no unit root), otherwise the series was described as being a non-stationary process i.e. a random walk /has unit root).Differencing a series using differencing operations produces other sets of observation such as the first difference value the second and so on

$$X \qquad \text{Level} \qquad X_t \text{ .....(9)}$$

$$X1^{st} \qquad \text{differenced} \quad \text{value} \quad X_t - X_{t-1} \text{ .....(10)}$$

If a series was stationary without any difference at designated as I (0) or integrated of order (0), the series that has first differences was designated I (1) or integrated of order (1).Therefore, in this study the results revealed that all the variables have first differences and were designated 1(1).Thus, the problem of nonstationarity was overcome by converting the variables in their first differences. All the variables were non stationary at levels but they become stationary after being converted into their first difference by using augmented dick fuller (ADF) and Philip Perron (PP).Null hypothesis Ho: There is a unit root. ALT: We do not reject null hypothesis at levels because p-values were great than 5% rather we do not that reject null hypothesis there is a unit root, so the variables are non-stationary. But after being converted into first difference all the variables became stationary p-values less than 5%.We reject the null hypothesis and we do not reject the alternative hypothesis that there no unit root

into the variables. Generally, all the variables became stationary after being converted in the first difference and did not contain unit root, the model is desirable or a good model.

Testing for Cointegration multivariate time series, cointegrated existing means these variables tend to move together through time. The test procedures was done by regressing variables using least square and test the residuals for nonstationarity using augmented dickey fuller and philip perron test. Significant exists among them then multivariate time series are cointegrated.

3.10.4 VEC and VAR Models

The vector autoregressive (VAR) model is a general framework used to describe the dynamic interrelationship among stationary variables. So, the first step in time-series analysis should be to determine whether the levels of the data are stationary. If not, take the first differences of the series and try again. Usually, if the levels of your time series are not stationary, the first differences would be. Since the time series are stationary then the VAR framework no needs to be modified to allow consistent estimation of the relationships among the series. The vector error correction (VEC) model was just a special case of the VAR for variables that are stationary in their differences I (1). The VEC can also take into account any cointegrating relationships among the variables. Consider two time-series variables, Y_t and X_t Generalising the discussion about dynamic relationships between these two interrelated variables yields a system of equations as follows:

$$\Delta Y = {}_3\Delta Y_{t-1} + {}_4X_{t-1} + V_t^{\Delta y} \quad \text{.....(11)}$$

$$\Delta X = {}_7\Delta Y_{t-1} + {}_8X_{t-1} + V_t^{\Delta X} \quad \text{.....(12)}$$

Using least squares

If y and x are I (1) and cointegrated, then the system of equations can be modified to allow for the cointegrating relationship between them I (1) variables. Introducing the

cointegrating relationship leads to a model known as the vector error correction (VEC) model.

Therefore, in our case the model is suitable for the study simply because all the variables they became stationary after their being converted into first differences. The vector error correction (VEC) model is just a special case of the VAR for variables that are stationary in their differences I (1). The VEC could also take into account any cointegrating relationships among the variables. The diagnostic tests carried out to see the reliability of VECM results showed that the Lagrange-multiplier test for autocorrelation at lag order was not able to reject the null hypothesis that no autocorrelation at lag order because the P-value is greater than .05 and the Jargue-Bera test for residual normality had failed to rejected the null hypothesis that the residual are normally distributed because the P-value again was greater than .05.

3.10.5 The Granger-Causality discussion of the results

Granger-Causality: A general specification of the Granger-causality test in a bivariate (X, Y) context can be expressed as:

$$Y_t = \sim 0 + \sim 1 Y_{t-i} + \sim 1 Y_{t-i} + \ 1 Y_{t-1} + \ i X_{t-1} + \text{«} \quad \text{.....(13)}$$

$$X_T = \sim 0 + \sim 1 X_{t-i} + \sim i X_{t-i} + \ 1 X_{t-1} + \ i Y_{t-i} + \text{«} \quad \text{.....(14)}$$

In the model, the subscripts denote time periods and μ is a white noise error. The constant parameter 0 represents the constant growth rate of Y in the equation 14 and X in the equation 15 and thus the trend in these variables can be interpreted as general movements of cointegration between X and Y that follows the unit root process. We can obtain two tests from this analysis: the first examines the null hypothesis that the X does not Granger-cause Y and the second test examines the null hypothesis that the Y does not Granger-cause X. If we fail to reject the former null hypothesis and reject the latter, then we conclude that X changes are Granger-caused by a change in Y. Unidirectional causality will occur between two variables if either null hypothesis of

equation (14) or (15) is rejected. Bidirectional causality exists if both null hypotheses are rejected and no causality exists if neither null hypothesis of equation (14) nor (15) is rejected.

Researcher had to verify the Granger Causality between Exchange rate,Inflation,Debt service,Export,Import and Reserve.Estimation results for Granger causality between the variables are presented in table 4.17.1.The test was for testing granger causality for six variables.

Cointegration Method

The cointegration method was used to explain the possibility of long-term relationship between economic variables. Time series data was tested to see if they are covariance stationary (i.e. no trend) or are stationary trend. When two or more time-series are nonstationary, it is important to test whether there is a linear combination of them that is stationary. This phenomenon was referred to as test for cointegration. The existence of cointegration implies that there was a long-run relationship among the variables. Hence, the short-run dynamics can be represented by an error correction mechanism (Engle and Granger 1987). We applied both the Engle-Granger Two-Step procedure and the Johansenn Maximum Likelihood Methodology for the cointegration test The Johansen Maximum Likelihood was applied in order to get the determinants of the long run exchange rate

Augmented Dickey-Fuller test (ADF).If the exchange rate was nonstationary, any stationary variable cannot be a determining variable because variables determining the exchange rate in the long run should have the same order of cointegration, as the exchange rate. Cointegration test was done by using Johansen methodology

Vector Error Correction Model (VECM) -The short run dynamics can be represented by an error correction mechanism (Engle and Granger 1987).If all the variables were cointegrated, and then we performed the VECM, that shows if there was causality from economic variables to exchange rate. VECM allows also allow making distinctions between variables that had affect exchange rate in the long-run

relationship and short-run relationship , VECM enables also the identification of variables that could affect the exchange rate in short run Statistical significance of each of them was verified through Wald test .Therefore, Error Correction Models avoid the spurious regression relationships.

3.10.6 Generalised Autoregressive Conditional Heteroscedasticity Model

The GARCH model, developed by economist Tim Bollerslev, who built on work by economist Robert Engle, uses the volatility-clustering phenomenon to predict future volatility. In essence, a GARCH model measures the strength of the relationship between recent volatility and current volatility. Once this strength is known, it could be used to forecast volatility. GARCH models have good empirical support for exchange rates and are being used in practical applications in the foreign exchange market. ARCH (autoregressive conditional Heteroscedasticity) models will recognise the presence of successive periods of relative volatility and stability. The error variance, conditional on past information, evolves over time as a function of past errors. The model was introduced by Engle [1982]. Bollerslev [1986] proposed the GARCH (generalised ARCH) conditional variance specification that allows for a parsimonious parameterization of the lag structure. Considerable interest has been in applications of ARCH/GARCH models to high frequency financial time series. Generalized autoregressive conditional Heteroscedasticity (GARCH) A generalised autoregressive conditional Heteroscedasticity (GARCH) (Bollerslev, 1986) model generalises the ARCH model. Today's conditional variance is a function of past squared

ARCH and GARCH were not suitable in this study simply because no ARCH effect in Autoregressive conditional Heteroscedasticity test and clustering volatility. We do not reject the null that no ARCH effect and no clustering volatility in the model. Therefore, in order to run ARCH and GARCH there should be ARCH effect and clustering volatility. Theories suggested that in order to use ARCH and GARCH model you should use daily data.

CHAPTER FOUR

ANALYSIS AND PRESENTATION OF FINDINGS

4.0 Introduction

This chapter presents the findings of the study. The chapter is made of description of basic statistics of the data, inflation rates, imports, exports, debt service, and foreign reserve with dependent variable exchange rate. Normality of the data, Multicolliarity Stationarity status of data, Autocorrelation, Outliers, Lag selection criterion and Johansen test for cointegration, Heteroscedasticity, Vector Error Correction Model, Garch model and diagnostic tests. Check model specification, relationship and causality in both long run and short run

4.1 Descriptive Statistics

We conducted a preliminary analysis of my data using relevant descriptive statistics techniques. Ten variables, twenty four observations pasted into STATA data editor and reveal the results in summary from Table 4.1 below.

Table 4.1 Descriptive statistics results

Variable	Obs	Mean	Std.	Dev.	Min
Year	24	2001.5	7.071068	1990	2013
exchange	24	911.7334	436.6632	195.0559	1600.444
inflation	24	14.24329	9.850152	4.735801	35.82677
interest	19	8.069703	4.722176	3.047895	24.625
gdpgrowth	24	5.315533	2.221301	.5843222	7.828299
Exp	24	15.57321	3.231479	8.284477	19.63795
debt service	24	1.24e+08	6.02e+07	3.39e+07	2.39e+08
export	24	19.75766	5.785989	10.26206	31.05742
Import	24	34.01823	9.295804	19.84033	50.21501
pcgrowth	24	2.336322	2.274935	-2.728204	4.966249
Tariff	14	10.915	4.010139	6.61	18.31
Reserve	24	1.74e+09	1.45e+09	1.93e+08	4.67e+09

There are ten variable in the summary descriptive statistics table showing the Number of Observation, Mean of each variable, Standard deviation of each variable, Minimum and Maximum of each variable.

The number of observation was 24.There was no missing observation for Exchange rate, inflation, Gdp growth, Expenditure, Debt service, Export, Import, Gdp per capital Growth, and Reserve, 5 missing observation Interest rate and 10 missing variables for Tariff.

The mean for the each variables 911.7334 for Exchange rate,14.24329 for inflation,8.069703 for interest rate deposit,5.315533 for Gdp growth,15.57321 for Expenditure, 1.24e+08 for Debt service,19.7575766 for Export,34.01823 for Import,2.336322 for Gdp per capital,10.915 for Tariffs and 1.74e+09 for Reserve.

The Standard Deviation for the each variables 436.6632 for Exchange rate,9.850152 for inflation,4.722176 for interest,2.221301 for Gdp growth,3.231479 for Expenditure, 6.02e+07for Debt Service,5.785989 for Export,9.295804 for Import,2.274935 for Gdp per capital,4.010139 for Tariffs and Reserve 1.45e+09.

The Minimum and Maximum for the each variables,195.0359-1600.444 for Exchange rate, 4.735801-35.82677 for inflation,3.04789-24.625 for interest,0.5843222-7.828299 for Gdp growth,8.284477-19.63795 for Expenditure, 3.39e+07 for Debt Service,10.26206-31.05742 for Export,19.84033-50.21501 for Import,-2.728204-4.966249 for Gdp per capital,6.61-18.31 for Tariffs and Reserve 1.93e+08-4.67e+09.

4.2 The normality test

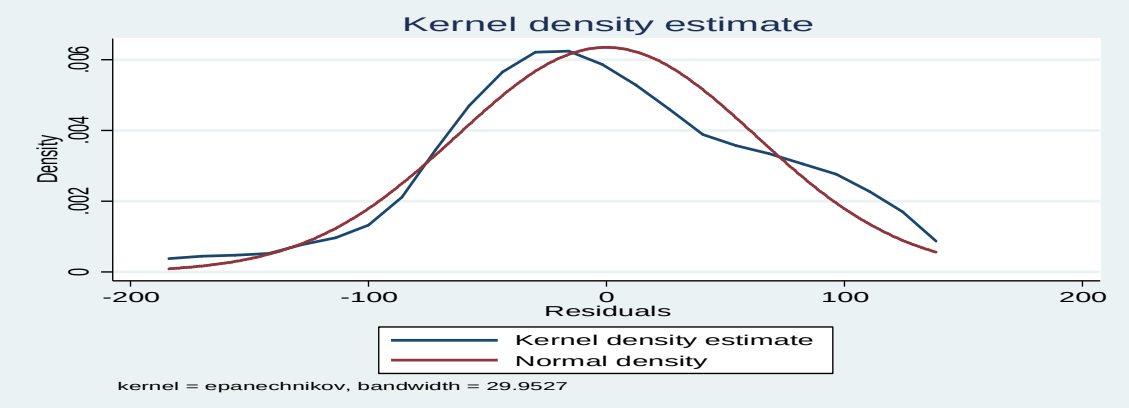
The Data should be normal because the errors was normally distributed technically normality was necessary only or Hypothesis test to be valid, after predicting the residual.

Both tests showed that the residuals was normally meaning that the model was desirable or good model

4.2.1 Graph (Kernel Density R, Normal)

The kernel density were used to test if the residuals are normal distributed, there were two graphs one kdensity residual without normal and another kdensity residual with normal estimation as shown in Figure 4.1

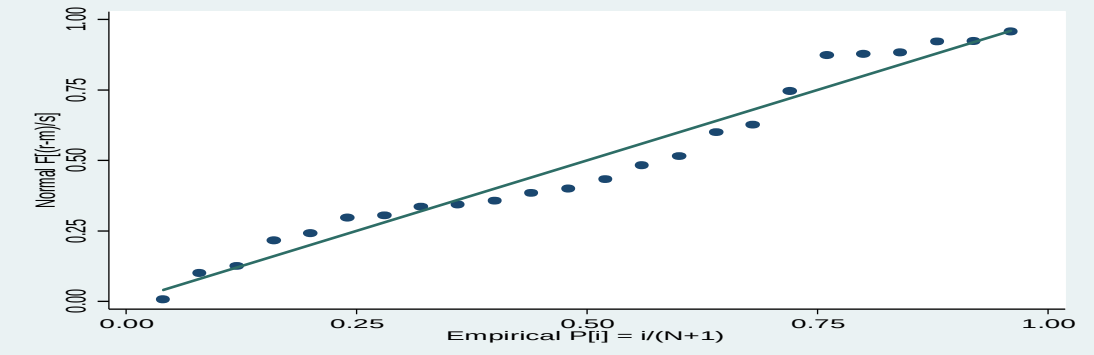
Figure 4.1: Kernel Density estimate



4.2.2 The graph of standardised normal probability plot

To plot the residual versus fitted values

Figure 4.2: Graph of standardised normal probability plot



Source: Researcher's drawing using STATA

4.2.3 Shapiro Wilk Test for normality. (Normal data)

It tests Ho: Normal data, given that the prob>0.69723 great than 5% meaning that we do not reject the null hypothesis. Normal data exists as shown below in Table 4.2

Table 4.2 Shapiro Wilk results

Shapiro-Wilk W test for normal data					
Variables	Obs	W	V	Z	Prob>Z
r	24	0.95504	1.213	0.393	0.34708

Source: Researcher's set using STATA

4.2.4 Jarque Bera Tests for normality

The results revealed that the residuals are normally distributed for all the variables since all the values of p-value are great than 5%.Meaning that the Null hypothesis was not rejected, Then Ho: not rejected as all probability was great than 5% critical value. Means the residuals are normally distributed. The results are illustrated in Table 4.3 below.

Table 4.3: Jarque Bera Tests results

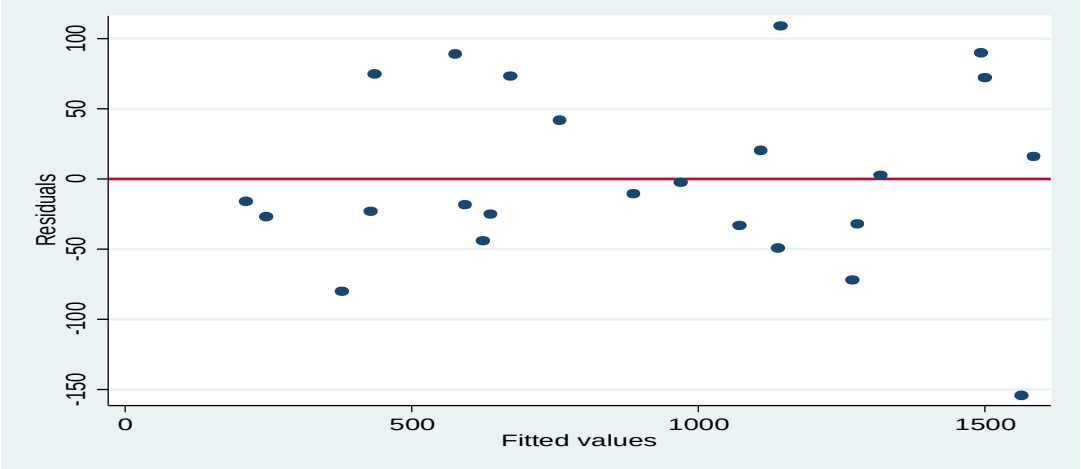
Jarque –Bera test			
Equation	chi2	df	Prob > chi2
D_exchange	0.452	2	0.79776
D_inflation	0.551	2	0.75903
D_debt service	1.198	2	0.54927
D_export	1.024	2	0.59918
D_import	0.775	2	0.67889
D_reserve	0.650	2	0.72262
ALL	4.650	12	0.96865

Source: Researcher's set using STATA

4.3 Homogeneity of variance

Plotted residual versus fitted values, if the patterns of the data points are getting narrower towards the right end, which was an indication of Heteroscedasticity, but the data are not getting narrower towards the right, meaning that there was no existence of heteroscedasticity in the data as shown in Figure 4.3 below. The model was desirable or good model.

Figure 4.3: Plotted residual versus fitted values



Source: Researcher's set using STATA.

4.3.1 The alternative test for homogeneity of variance

The white's test for Ho: Homoscedasticity also tests for skewness and kurtosis White test. The results revealed, Homoscedasticity does exist in the model as Ho: not rejected by p-value 32.14% which was great than 5%.

Table 4.4: Alternative test for homogeneity of variance results

White's test for Ho:homoskedasticity			
Against Ha:unrestricted heteroskedasticity			
Chi2(20) = 22.36			
Prob > chi2 = 0.3214			
Cameron & Trivedi's decomposition of IM- test			
source	**chi2**	**df**	**p**
Heteroskedasticity	22.36	20	0.3214
Skewness	5.23	5	0.3883
Kurtosis	0.02	1	0.9015
Total	27.60	26	0.3782

Source: Researcher's set using STATA.

4.4 Model specification

The model was properly specified, **hat(Y)** was significant since it was the predicted value and **hat squa**re (Y^2) was not significant. The model was properly specified, the squared prediction don't have explanatory power.

In this case the model was correctly specified the variables exchange rate as dependent variable, inflation, expenditure, export, debt service and reserve suits the model as shown in Table 4.5

Table 4.5: Model specification results

Dependent Variable	**Exchange rate**			
Model	**Ordinary Least Squares (OLS)**			
Variables	**Coefficient**	**Std. Err**	**t**	**Prob>|t|**
_hat	1.112413	.1587733	7.01	0.000
_hatsq	-.0000614	.000085	-0.72	0.478
_cons	-40.47963	64.29707	-0.63	0.536
R-squared	0.9798			
Adjusted R-squared	0.9779			
Prob > F (Model)	0.0000			

Source: Researcher's set using STATA.

4.5 Omitted variables test

Tests if the model has omitted variables, Null hypothesis: The model has no omitted variables, because p-value 18.25% is not statistically significant we do not reject the Null hypothesis and we accept the null hypothesis, that there are no omitted variables in the model. The model was desirable or good model as shown in Table 4.6 below

Table 4.6: Omitted variables test

Ramsey RESET test using powers of the fitted values of exchange	
Ho: model has no omitted variable	
F(3,15)	1.84
Prob > F	0.1825

Source: Researcher's set using STATA.

4.6 Heteroscedasticity test

The Breusch-Pagan Test. Testing, Ho: Hypothesis that the variance of the residual was homogeneous. Null hypotheses not rejected meaning that the data does not suffer from heteroscedasticity in the model as the p-value 12.31% great than 5% critical value as shown in Table 4.7 below

Table 4.7: Heteroscedasticity test

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	
Ho:Constant variance	
Variables	fitted values of exchange
chi2(1)	2.38
Prob>chi2	0.1231

Source: Researcher's set using STATA.

4.7 Checking for multicollinearity

Increases in multicollinearity causes the regression model estimates of the coefficient become unstable and standard errors of coefficients could get wildly inflated we had reduced the VIF to 4.8 which was less than 5, which was recommended.

Multivariate Regression analysis with all the variables results output.

Tables 4.8: (a) Multivariate Regression results

Dependent Variable	**Exchange rate**			
Model	**Ordinary Least Squares (OLS)**			
Variables	**Coefficient**	**Std. Err**	**t**	**Prob>|t|**
iflation	42.45892	9.247542	4.59	0.044
interest	38.73578	17.69314	2.19	0.160
gdpgrowth	238.5639	470.5525	0.51	0.663
exp	29.38364	21.32061	1.38	0.302
debt service	3.74e-06	8.53e-07	4.38	0.048
export	43.50531	27.6444	1.57	0.256
import	-27.36249	11.93664	-2.29	0.149
pcgrowth	-193.5942	453.6302	-0.43	0.711
tarriff	-63.62511	13.21029	-4.82	0.041
reserve	3.98e-08	4.40e-08	0.91	0.461
_cons	-603.9288	905.8418	-0.67	0.574
R-squared	0.9983			
Adjusted R-squared	0.9901			
Prob > F (Model)	0.0083			

Variance Inflated Factors

We opt to drop Gdp Growth due to its high VIF 4309.17, high Standard deviation 470.5525 and statistically not significant P> [t] 0.663.As shown in Table 4.9

Tables 4.9: (a) Variance Inflated Factors results

Variable	VIF	1/VIF
gdpgrowth	4309.17	0.000232
pcgrowth	2977.94	0.000336
export	282.16	0.003544
import	135.91	0.007358
exp	49.88	0.020047
reserve	37.90	0.026388
tarriff	29.37	0.034049
debtservice	14.89	0.067170
iflation	14.71	0.067975
interest	11.61	0.086162
Mean VIF	**786.35**	

Multivariate Regression analysis without the variable Gdp Growth results output as shown in Table 4.10

Tables 4.10: (b) Multivariate Regression results

Dependent Variable	**Exchange rate**			
Model	**Ordinary Least Squares (OLS)**			
Variables	**Coefficient**	**Std. Err**	**t**	**Prob>|t|**
iflation	40.91165	7.57172	5.40	0.012
interest	42.67294	13.78939	3.09	0.054
exp	36.64683	13.69602	2.68	0.075
debt service	3.57e-06	6.81e-07	5.24	0.014
export	53.03201	17.58699	3.02	0.057
import	-29.53542	9.663146	-3.06	0.055
pcgrowth	35.87257	26.38887	1.36	0.267
tarriff	-60.60413	10.22645	-5.93	0.010
reserve	5.07e-08	3.32e-08	1.53	0.224
_cons	-179.0429	298.2107	-0.60	0.591
R-squared	0.9981			
Adjusted R-squared	0.9925			
Prob > F (Model)	0.0006			

Variance Inflated Factors

The VIF dropped from 786.35 to 44.25 after dropped Gdp Growth, but still the model suffer from multicollinearity, we opt to drop expenditure because it make much sense to drop expenditure instead of export, import and reserve, in determining Exchange rate.

Tables 4.11: (b) Variance Inflated Factors results

Variable	VIF	1/VIF
Export	151.79	0.006588
Import	118.39	0.008447
Reserve	22.53	0.044394
Exp	28.80	0.034722
Tarriff	27.36	0.036549
pcgrowth	13.39	0.074656
Inflation	13.39	0.076283
Debt service	12.63	0.079200
Interest	9.37	0.106721
Mean VIF	**44.25**	

Multivariate Regression analysis without the variables Gdp Growth and Expenditure results output as shown in Table 4.12.

Tables 4.12 (c) Multivariate Regression results

Dependent Variable	Exchange rate			
Model	Ordinary Least Squares (OLS)			
Variables	Coefficient	Std. Err	t	Prob>|t|
inflation	34.20763	11.38726	3.00	0.040
interest	22.89999	18.55405	1.23	0.285
debt service	2.26e-06	7.56e-07	2.99	0.040
export	12.32022	14.05706	0.88	0.430
import	-8.239238	8.73347	-0.94	0.399
pcgrowth	77.27781	34.06628	2.27	0.086
tarriff	-55.33247	15.99259	-3.46	0.026
reserve	1.21e-07	3.26e-08	3.71	0.021
_cons	514.015	235.523	2.18	0.094
R-squared	0.9937			
Adjusted R-squared	0.9810			
Prob > F (Model)	0.0004			

Variance Inflated Factors

The VIF dropped from 44.25 to 17.87 after we opt drop expenditure, but still the model suffer from multicollinearity, we opt to drop tariff because it makes much sense to drop tariff instead of export and import in determining Exchange rate.

Tables 4.13 :(c) Variance Inflated Factors results

Variable	VIF	1/VIF
export	38.18	0.026191
import	38.07	0.026264
tarriff	22.53	0.044394
inflation	11.67	0.085663
reserve	10.91	0.091695
pcgrowth	8.79	0.113781
interest	6.68	0.149719
debt service	6.13	0.163265
Mean VIF	**17.87**	

Multivariate Regression analysis without the variables Gdp growth, expenditure and tariffs results output. Results are shown in Table 4.14

Tables 4.14: (d) Multivariate Regression results

Dependent Variable	**Exchange rate**			
Model	**Ordinary Least Squares (OLS)**			
Variables	**Coefficient**	**Std. Err**	**t**	**Prob>|t|**
inflation	-5.9317774	7.736369	-0.77	0.459
interest	-10.43338	7.802684	-1.34	0.208
debt service	7.62e-08	5.18e-07	0.15	0.886
export	2.8811515	11.63269	0.25	0.809
import	9.8227	6.221904	1.58	0.143
pcgrowth	15.80576	31068376	0.50	0.628
reserve	1.67e-07	2.98e-08	5.61	0.000
_cons	417.5927	145.9708	2.86	0.015
R-squared	0.9776			
Adjusted R-squared	0.9634			
Prob > F (Model)	0.00000			

Variance Inflated Factors

The VIF dropped from 17.87 to 9.13 after we opt drop tariff but still the model suffer from multicollinearity, we opt to drop Gdp per capital because it make much sense to drop Gdp per instead of export, import and inflation in determining Exchange rate

Tables 4.15 :(d) Variance Inflated Factors results

Variable	VIF	1/VIF
export	16.73	0.059788
import	14.33	0.069763
inflation	9.49	0.105360
Pcgrowth	7.08	0.141223
reserve	6.98	0.143282
Interest	5.60	0.178430
Debt service	3.7.	0.2701506
Mean VIF	**9.13**	

We run Multivariate Regression analysis without excluded variables Gdp growth, import, tariff and Gdp per capital results output as shown in Table 4.17

Table 4.16: (e) Multivariate Regression results

Dependent Variable	**Exchange rate**			
Model	**Ordinary Least Squares (OLS)**			
Variables	**Coefficient**	**Std. Err**	**t**	**Prob>|t|**
inflation	-8.39776	5.768265	-1.46	0.171
interest	-9.991644	7.505728	-1.33	0.208
debt service	3.05e-08	4.9e-07	0.06	0.952
export	6.37481	8.993487	0.71	0.492
import	8.642055	5.571204	1.55	0.147
reserve	1.67e-07	2.89e-08	5.79	0.000
_cons	459.2104	115.9722	3.96	0.002
R-squared	0.9771			
Adjusted R-squared	0.9657			
Prob > F (Model)	0.0000			

Variance inflated factors

The VIF dropped from 9.13 to 7.44 after dropped Gdp per capital but still the model suffer from multicollinearity, we dropped deposit interest rate because it make much sense to drop deposit interest rate instead of import, export, reserve and inflation in determining Exchange rate as shown 4.17

Tables 4.17 :(e) Variance Inflated Factors results

Variable	VIF	1/VIF
export	13.83	0.072281
tarriff	12.10	0.082643
reserve	8.05	0.124159
iflation	5.85	0.170889
debtservice	2.71	0.369500
dinterest	2.12	0.471131
Mean VIF	**7.44**	

Multivariate Regression analysis without the variables Gdp growth, tariff, deposit interest rate, Gdp per capital and expenditure results output as shown in Table 4.18

Table 4.18: (f) Multivariate Regression results

Dependent Variable	Exchange rate			
Model	**Ordinary Least Squares (OLS)**			
Variables	**Coefficient**	**Std. Err**	**t**	**Prob>|t|**
inflation	-11.04889	3.376403	-3.27	0.004
debt service	5.12e-09	4.04e-07	0.01	0.990
export	25.35858	5.392742	4.70	0.000
import	-3.632437	3.646062	-1.00	0.332
reserve	1.73e-07	2.62e-08	6.62	0.000
_cons	388.6927	90.49395	4.30	0.000
R-squared	0.9793			
Adjusted R-squared	0.9735			
Prob > F (Model)	0.0000			

Variance inflated factors

The VIF dropped from 7.44 to 4.80 after we opt to drop deposit interest rate. The model had a recommended VIF 4.80 as required by benchmark, which was less than 5 as shown in Table 4.19.

Tables 4.19: (f) Variance Inflated Factors results

Variable	VIF	1/VIF
Reserve	6.57	0.152274
import	5.24	0.190975
iflation	5.04	0.198337
export	4.44	0.225333
debtservice	2.70	0.370455
Mean VIF	**4.80**	

Multicollinearity model fitting summary

From economic theory, we were required to select the variables which could determine the exchange rate dynamics at the same time does not suffer from multicollinearity and we were required to decide which the variables should be dropped. First we opt to drop the Gdp growth due to its high VIF 4309.17, VIF dropped to 44.25.But still multicollinearity does exists we continued with further diagnosis in reducing the multicollinearity in the model

The second we opt to drop expenditure, instead of export, import and reserve which both having high VIF than expenditure simply because it make sense to drop the Government expenditure in determining the exchange rate. Then after we dropped expenditure the value of mean VIF dropped from 44.25 to 17.87.

The third we opt to drop tariff instead of export and import which both have a higher VIF than tariff simply because it makes much sense to drop the tariff in determining the exchange rate, value of mean VIF dropped from 17.87 to 9.13.

The fourth we opt to drop Gdp per capital growth, instead of export, import and inflation which both having high VIF than Gdp per capital growth simply because it make much sense to drop Gdp per capital growth in determining the exchange rate,the value of mean VIF dropped from 9.13 to 7.44,

The fifth we opt to drop deposit interest rate, instead of export, import, reserve and inflation which both having high VIF than deposit interest rate simply because it make much sense to drop deposit interest rate the in determining the exchange rate

value of mean VIF dropped from 7.44 to 4.80 which were the recommended VIF below 5.

Five variables was dropped due high multicollinearity like Gdp growth but other four we were dropped them due to preferences of the variables in predicting the dependent variable exchange rate, the remaining variables in the model they has much power or influences in explaining the dependent variable in the model. The good model was properly specified having no existence of multicollinearity.

4.8 Autocorrelation test

Test for autocorrelation, it tests for autocorrelation in residuals, since p-values 64.14% was great than 5% we do not reject the null hypotheses meaning that no existence of serial correlation in the model. The data do not suffer from autocorrelation thus the good model is as shown in Table 4.20 below.

Table 4.20: Autocorrelation test

Breusch-Godfrey LM test for autocorretion			
Lags(p)	**Chi2**	**df**	**Prob>chi2**
1	0.216	1	0.6419
Ho:no serial correlation			

Source: Researcher's set using STATA

We tested for autocorrelation up to two lag but results showed that no existence of correlation in the data as shown in Table 4.21 below

Table 4.21: Autocorrelation up to two lag results

Breusch-Godfrey LM test for autocorretion			
Lags(p)	**Chi2**	**df**	**Prob>chi2**
1	0.216	1	0.6419
2	2.541	2	0.2807
Ho:no serial correlation			

4.9 This was an alternative test for autocorrelation.

Null hypothesis was not rejected because probability value 69.42% great than 5% critical value thus Null hypothesis was accepted and results shows no existence autocorrelation in the model as shown in Table 4.22 below

Table 4.22: Alternative test for autocorrelation results

Durbin's alternative test for autocorretion			
Lags(p)	**Chi2**	**df**	**Prob>chi2**
1	0.155	1	0.6942
Ho:no serial correlation			

Source: Researcher's set using STATA.

4.10 Residuals correlation

Test for autocorrelation the results showed all probability values were great than 5% critical value that the residual don't suffer from autocorrelation. No autocorrelation in the residuals up to ten lag the because all probability value was great than 5% critical value as shown in table 4.23 below

Table 4.23: Residuals correlation results

LAG	AC	PAC	Q	Prob>Q
1	0.0896	0.0900	.21796	0.6406
2	-0.2747	-0.3107	2.3587	0.3075
3	-0.1620	-0.1710	3.138	0.3708
4	-0.2083	-0.4210	4.4917	0.3435
5	0.0313	0.0228	4.5238	0.4767
6	0.1894	0.0362	5.7672	0.4498
7	0.0823	0.0518	6.0159	0.5379
8	-0.0681	-0.0353	6.1969	0.6252
9	-0.1868	-0.6974	7.6492	0.5699
10	-0.2381	-1.1672	10.175	0.4253

Source: Researcher's set using STATA.

4.11 Lagrange multiplier test VECM reliability

Lagrange multiplier test, used to check if exists autocorrelation at lag order the Null hypothesis was not rejected because p-value is 17.991% great than 5% critical value Null hypothesis was not rejected which indicates that no autocorrelation at lag order. This means that no autocorrelation the in model, good model as shown inTable 4.24

Table 4.24: Autocorrelation at lag order results

Lagranger-multiplier test

Lag	Chi2	df	Prob>chi2
1	26.2936	36	0.88221
2	28.3185	36	0.81566
Ho	No autocorrelation at lag order		

Source: Researcher's set using STATA.

4.12 Dwatson test

The dwatson test it test for first order autocorrelation the results indicates that the value of Durbin Watson DW (1.815159) is significant to indicate that the sign of the absence of serial correlation as shown in Table 4.25 below.

Table 4.25: First order autocorrelation results

Durbin-Watson d-statistics	(6,24)	1.815159

Source: Researcher's set using STATA.

4.13 Heteroscedasticity tests

Heteroscedasticity Tests, it tests autoregressive conditional heteroscedasticity. Probability value 49.83% was great than 5% critical value. We do not reject the null hypothesis, meaning no existence of Heteroscedasticity in the model. This is illustrated in Table 4.26.

Table 4.26: Autoregressive Conditional Heteroscedasticity results

LM test for autoregressive conditional heteroskedasticity (ARCH)			
lags(p)	chi2	df	Prob>chi2
1	0.459	1	0.4983
H0:no ARCH effects vs. H1:ARCH (p) disturbance			

Source: Researcher's set using STATA.

4.14 Testing for stationarity

4.15 Exchange

Exchange rate nonstationary at level but becomes stationary after first difference. This is illustrated in Table 4.27.

Table 4.27: Results for ADF at level and at First Difference for exchange rate

dfuller exchange				
Dickey-fuller test for unit root			Number of obs	23
	Test statistic	1% critical value	5%Critical value	10% Critial value
Z(t)	-0.476	-3.750	-3.000	-2.630
MacKinnon approximate p-value for Z(t) =0.8966				
dfuller D.exchange				
Dickey-fuller test for unit root			Number of obs	23
	Test statistic	1% critical value	5%Critical value	10% Critial value
Z(t)	-4.349	-3.750	-3.000	-2.630
MacKinnon approximate p-value for Z(t) = 0.0004				

Source: Researcher's set using STATA.

4.16 Inflation

Inflation nonstationary at level but becomes stationary after first difference as illustrated in Table 4.28.

Table 4.28: Results for ADF at level and at First Difference for inflation

dfuller inflation				
Dickey-fuller test for unit root			Number of obs	23
	Test statistic	1% critical value	5%Critical value	10% Critial value
Z(t)	-2.312	-3.750	-3.000	-2.630
MacKinnon approximate p-value for Z(t) =0.1680				
dfuller D.inflation				
Dickey-fuller test for unit root			Number of obs	23
	Test statistic	1% critical value	5%Critical value	10% Critial value
Z(t)	-3.949	-3.750	-3.000	-2.63
MacKinnon approximate p-value for Z(t) = 0.0017				

Source: Researcher's set using STATA.

4.17 Exports

Exports nonstationary at level but becomes stationary after first difference as illustrated in Table 4.29.

Table 4.29: Results for ADF at level and at First Difference for exports

dfuller export				
Dickey-fuller test for unit root			Number of obs	23
	Test statistic	1% critical value	5%Critical value	10% Critial value
Z(t)	-1.363	-3.750	-3.000	-2.630
MacKinnon approximate p-value for Z(t) =0.5999				
dfuller D.export				
Dickey-fuller test for unit root			Number of obs	23
	Test statistic	1% critical value	5%Critical value	10% Critial value
Z(t)	-2.881	-3.750	-3.000	-2.630
MacKinnon approximate p-value for Z(t) = 0.0476				

Source: Researcher's set using STATA.

4.18 Foreign reserve

Foreign reserve nonstationary at level but becomes stationary after first difference as shown in Table 4.30.

Table 4.30: Results for ADF at level and at First Difference for reserve

dfuller reserve				
Dickey-fuller test for unit root			Number of obs	23
	Test statistic	1% critical value	5%Critical value	10% Critial value
Z(t)	1.668	-3.750	-3.000	-2.630
MacKinnon approximate p-value for Z(t) =0.9980				
dfuller D.reserve				
Dickey-fuller test for unit root			Number of obs	23
	Test statistic	1% critical value	5%Critical value	10% Critial value
Z(t)	-4.321	-3.750	-3.000	-2.630
MacKinnon approximate p-value for Z(t) = 0.0004				

Source: Researcher's set using STATA.

4.19 Debt service

Debt service nonstationary at level but becomes stationary after first difference. The results are indicated in Table 4.31.

Table 4.31: Results for ADF at level and at First Difference for debt service

dfuller debt service				
Dickey-fuller test for unit root			Number of obs	23
	Test statistic	1% critical value	5%Critical value	10% Critial value
Z(t)	-1.536	-3.750	-3.000	-2.630
MacKinnon approximate p-value for Z(t) =0.5156				
dfuller D.debt service				
Dickey-fuller test for unit root			Number of obs	23
	Test statistic	1% critical value	5%Critical value	10% Critial value
Z(t)	-5.749	-3.750	-3.000	-2.630
MacKinnon approximate p-value for Z(t) = 0.0000				

Source: Researcher's set using STATA

4.20 Imports

Imports nonstationary at level but becomes stationary after first difference as indicated in Table 4.32.

Table 4.32: Results for ADF at level and at First Difference for imports

dfuller import				
Dickey-fuller test for unit root			Number of obs	23
	Test statistic	1% critical value	5%Critical value	10% Critial value
Z(t)	-1.148	-3.750	-3.000	-2.630
MacKinnon approximate p-value for Z(t) =0.6954				
dfuller D.import				
Dickey-fuller test for unit root			Number of obs	23
	Test statistic	1% critical value	5%Critical value	10% Critial value
Z(t)	-3.518	-3.750	-3.000	-2.630
MacKinnon approximate p-value for Z(t) = 0.0075				

Source: Researcher's set using STATA.

4.21 Dickey Fuller and Philip Perron Test

Both tests revealed that no unit root in the residual,likewise meaning that cointegration exists into the times series and long run relationship exits.Cointegration exits meaning that there are granger causality between them either one or two way or in both directions. The results are as follows:

Table 4.33: Dickey Fuller results.

dfuller r				
Dickey-fuller test for unit root			**Number of obs**	**23**
	Test statistic	1% critical value	5%Critical value	10% Critial value
Z(t)	-4.187	-3.750	-3.000	-2.630
MacKinnon approximate p-value for Z(t) = 0.0007				

Source: Researcher's set using STATA.

Table 4.34: Philip Perron results.

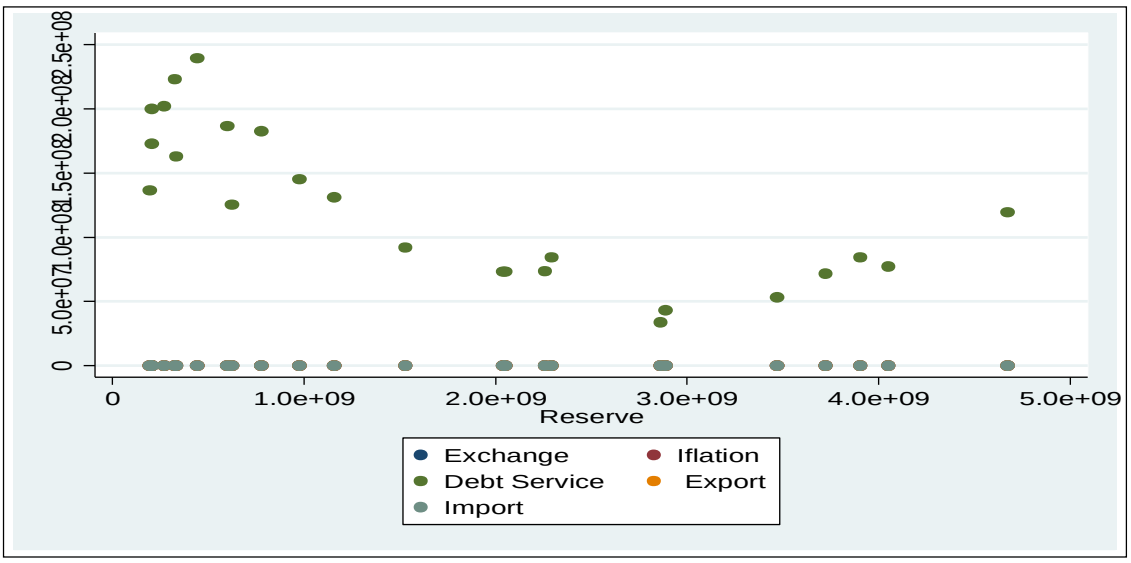
pperron r				
Philips-Perron test for unit root			**Number of obs**	**23**
			Newey-West lags	2
	Test statistic	1% critical value	5%Critical value	10% Critial value
Z(rho)	-19.068	-17.200	-12.500	-10.200
Z(t)	-4.151	-3.750	-3.000	-2.630
MacKinnon approximate p-value for Z(t) = 0.0008				

Source: Researcher's set using STATA.

4.22 Outliers

Outliers does not exist because no all observation within the data range as indicated in Figure 4.4

Figure 4.4: Outliers results



Source: Researcher's drawing using STATA.

4.23 Vector error correction model

Vector error correction model was suitable for identifications of short run and long run causality among the variables and we apply VECM after confirmed that cointegration exists among the variables meaning that long run relationship exists among the variables. The VCEM results showed that long run and short run causality among the variables exists, as shown in Table 4.35 below.

Table 4.35: Vector error correction model

	Coef.	**Std.rr**	**z**	**p>[z]**
D-exchange -ce1 L1.	-.697825	.1618724	-4.30	0.0000
-ce2 L1.	-16.50536	4.029368	-4.10	0.0000
-ce3 L1.	-2.03e-07	2.45e-07	-0.83	0.407
exchange LD.	.7688943	.2318986	3.32	0.001
Inflation LD.	4.144923	3.00957	1.38	0.168
Debt service LD.	2.10e-07	2.29e-07	0.91	0.361
export LD.	3.849846	4.512417	0.85	0.394
import LD.	14.79023	3.245184	-4.56	0.000

reserve LD.	-1.40e-07	3.99e-08	-3.50	0.000
-Cons	40.4826	149.3523	4.96	0.000

$$ER = 740.4826 + 4.144923Ifl - 2.10e-07Debt + 3.849846EP - 14.79023IMP - 1.40e-07Reserve \quad \ldots\ldots(16)$$

Given that error correction term coefficient was negative-0.6957825 and statistically significant p-value 0.000 meaning long run causality exists in VECM model. The overall decision of the model, there is short run as well as long run causality running from inflation, debt service, exports, imports and reserve to exchange rate.

The coefficient of variable inflation is positive; consistent with the economic theory.1% increase in inflation was accompanied by depreciation of exchange rate by 4.144923.The coefficient of debt service was positive, 1% increase in debt service was accompanied by depreciation of local currency by 2.10e-07.The exports coefficient was positive,1% increase in exports accompanied with the appreciation of exchange rate by 3.849846.The imports coefficient was negative, consistent with the theory.1% increase in imports accompanied by depreciation of exchange rate by -14.79023 and vice versa true. The coefficient of reserve was negative, not consistence with the economic theory.1 % increase in reserve accompanied by depreciate exchange rate by -1.4e-07.

4.24 Lag Selection

The choice of Lags lengths were used while running VECM and VAR processes was decided by using multivariate model. Lags was chosen among the majority criteria granted for LR FPE AIC HQIC SBIC.The value with the lower LR FPE AIC HQIC SBIC the better the model ,we chose lag two because four criteria are suggesting to choose lag two that is means that the always majority must be granted. In this study the lag two was chosen because lag selection method has advised to choose lag two, as shown in Table 4.36.

Table 4.36: Lag-order selection criterion

Selection-order criteria								
Sample: 1992 - 2013						Number of obs = 22		
lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-1217.63				8.2e+40	111.239	111.309	111.537
1	-1100.75	233.77	36	0.000	6.1e+37	103.886	104.377	105.969
2	-1021.94	157.62*	36	0.000	3.1e+36*	99.9944*	100.906*	103.863*

Endogenous: exchange iflation debt service export import reserve

Exogenous: _cons

4.25 Johansen test for cointegration

The Johansen test of cointegration tests the null hypothesis that there is no vector of cointegration versus the alternative hypothesis that there are vectors of cointegration. However, the correct application of this test requires the determination of time series lags of the variables in order to avoid autocorrelation.

With annually data it would be more appropriate to use two times lags. After proofs, the Johansen test was performed with two time lags. Johansen test for cointegration found that cointegration exists,meaning that time series have long run relationship and tend to move together. The results are illustrated in Table 4.37

Table 4.37: Results of Johansen Cointegration Tests

Johansen tests for cointegration							
Rank	Eigen value	Trace statistic	5% value Critical	Rank	Eigen value	Maximum statistic	5% value Critical
0	.	169.4328	94.15	0	.	60.6854	39.37
1	0.93661	108.7474	68.52	1	0.93661	46.5191	33.46
2	0.87931	62.2283	47.21	2	0.87931	32.7194	27.07
3	0.77401	29.5089*	29.68	3	0.77401	19.2445	20.97
4	0.58303	10.2645	15.41	4	0.58303	10.2100	14.07
5	0.37129	0.0545	3.76	5	.37129	0.0545	3.76
6	0.00247			6	0.00247		

Table 4.37 showed the results of Johansen cointegration test in trace test and maximum Eigen value test. Trace test results show that null hypothesis of no

cointegration was rejected, because the test value 169.4328 is bigger than the critical value 94.15 at 5% probability. Also, null hypotheses that there at most one vector of cointegration and at most two vectors of cointegration are both rejected. Trace test results show that null hypotheses that there are at most three vectors of cointegration was not rejected, because the trace test 29.5089 is smaller than the critical value 29.68, meaning that there are 3 vectors of cointegration between exchange rate and other variables included in the model. Maximum eigenvalue test does not reject the null hypotheses that there are at most 3 vectors of cointegration between variables, because test result 19.2445 is smaller than critical value 20.97.

Since both trace test and maximum eigenvalue test confirm the existence of at least three vector of cointegration, it was concluded that there was a long run relationship exists between the exchange rate and economic variables included in the model, namely inflation, expenditure, debt service, exports, imports and reserve the variables move together in long run.

4.26 Multivariate time series regression analysis

Table 4.38: Multivariate time series regression results

Dependent Variable	**Exchange rate**			
Model	**Ordinary Least Squares (OLS)**			
Variables	**Coefficient**	**Std. Err**	**t**	**Prob>|t|**
inflation	-11.04889	3.376403	-3.27	0.004
debt service	5.12e-09	4.04e-07	0.01	0.990
export	25.35858	5.392742	4.70	0.000
import	-3.632437	3.646062	-1.00	0.332
reserve	1.73e-07	2.62e-08	6.62	0.000
_cons	388.6927	90.49395	4.30	0.000
R-squared	0.9793			
Adjusted R-squared	0.9735			
Prob > F (Model)	0.0000			

The level of significance were used in this model was 0.05. The F Value was 170.23 and the p value was 0.000< 0.05. So the distribution was F(5 ,18), and the probability of observing a higher value or equal to 0.000 was lesser than 0.05.The value of F, P and coefficient of determination show that the model was fit and good one. The

coefficient of determination R^2 was 0.9793 which shows that 97.93 % exchange rate was explained by inflation, debt service, imports, exports and reserve. Adjusted R^2 was 0.9735 which shows that 97.35% exchange rate was explained by the independent variables that are by inflation, debt service, imports, exports and reserved .The degree of freedom was 5 and residual was 18.The number of observation was 24.Therefore, factors affecting exchange rate dynamics in Tanzania are inflation, debt service, export, import and reserve.

It was definitely understandable from the above results that regression fit the model R-square was 97.93% meaning that variations in exchange rates were explained by this model. The main factors determined here are inflation, imports, debt service, exports and foreign reserve or we can say on the basis of the model that 97. 93 variations in exchange rate include five variables in the model whereas only 2.07% of the variations in exchange rate was caused by other variables not included in the model.

Taking consideration of Exchange rate as dependent variable with the predictor variables inflation, debt service, export, import and reserve, the last figure (cons) represents constant or intercept

Inflation rate –The coefficient was -11.04489.Meaning that for every unit (1) increase in inflation there are -11.044489 units of exchange rate depreciates, holding other variables constant. Probability value for inflation is statistically significant (p> [t] 0.004), therefore inflation rate affects negatively exchange rate and statistically significant. This means that as inflation increases the exchange rate depreciates exchange rate and as inflation decrease the exchange rate appreciates vice versa true.

Debt service –The coefficient was 5.12e-09.Meaning that for every unit (1%) increase in debt service there are 5.12e-09 units appreciation of exchange rate holding other variables constant. Not consistent with the theory that debt service depreciates exchange rate. Probability value for debt service was statistically insignificant (p> [t] 0.990), therefore debt service does not affect exchange rate and statistically

insignificant. When the debt service increases the value of Tanzania shillings tend to appreciates relative to dollar. This result was surprising and not consistent with the theory.

Exports –The coefficient was 25.35858.Meaning that for every unit (1%) increase in export there are 25.35858units appreciates of exchange rate, holding other variables constant. Probability value for exports was statistically significant (p> [t] 0.000), therefore export affects Exchange rate and statistically significant. When a country increase exports meaning that increases the foreign currency reserve and when a country export decreases the foreign currency reserve exchange rate depreciates. Therefore, exports appreciates or depreciates shillings depends on the situation existing

Import –The coefficient was -3.632437. Meaning that for every unit (1%) increase in import there are-3.632437 units of exchange rate depreciates, holding other variables constant. Probability value for import not statistically significant (p> [t] 0.332), therefore imports does not affects exchange rate and statistically not significant. When imports increase the value of exchange rate depreciates and when imports decreases exchange rate appreciates and vice versa was true.

Reserve –The coefficient was 1.73e-07.Meaning that for every unit (1%) increase in reserve there are 1.73e-07units of exchange rate appreciates, holding other variables constant. Probability value for reserve is statistically significant (p> [t] 0.000), therefore reserve affects exchange rate and statistically significant. When foreign reserve increases the exchange rate appreciates and when foreign reserve decreases the exchange rate depreciates. There are 95% confidence intervals for the coefficients.

4.27 Granger causality test

The granger causality shows there are causal relationship among the variables in the model starting with dependent variable Exchange rate are affected by four independents variables which are inflation, expenditure, debt service and reserve

statistically significant and not affected by one independent variable which was a debt service statistically not significant. Inflation was affected by all five independents variables exchange rate, export, reserve, inflation, expenditure and debt service, and statistically significant. Imports are not affected by all independents variables exchange rate, export, inflation, debt service and reserve statistically not significant. Exports are affected by all independents variables which are exchange rate, inflation, imports, reserve and debt service statistically significant. Debt service was affected by three independents variables which are exchange rate, inflation, and exports statistically significant and not affected by two independents variables reserve and imports statistically not significant. Reserve is not affected by all independents variables exchange rate, inflation, expenditure, debt service, export and reserve statistically not significant. There was one bidirectional which was inflation rate.

The granger causality measures all variables if exists causal relationship among the variables. It shows how one variable are being affected by the changes of other variables in the model as shown in table 4.39 below

Table 4.39: Granger causality results

Granger causality Wald tests				
Equation	**Excluded**	**chi2**	**df**	**Prob>chi2**
exchange	inflation	16.211	2	0.000
exchange	reserve	69.029	2	0.000
exchange	debt service	1.9319	2	0.381
exchange	export	16.161	2	0.000
exchange	import	42.594	2	0.000
exchange	**ALL**	**103.01**	**10**	**0.000**
inflation	exchange	132.63	2	0.000
inflation	reserve	65.652	2	0.000
inflation	debt service	19.717	2	0.000
inflation	export	61.947	2	0.000
inflation	import	81.445	2	0.000
inflation	**ALL**	**670.44**	**9**	**0.000**
debt service	exchange	10.138	2	0.006
debt service	inflation	35.261	2	0.000
debt service	reserve	4.4358	2	0.109
debt service	export	11.821	2	0.003
debt service	import	5.8828	2	0.053
debt service	**ALL**	**88.007**	**10**	**0.000**
export	exchange	16.684	2	0.000
export	inflation	9.1265	2	0.010
export	reserve	8.7531	2	0.013

export	debt service	9.4472	2	0.009
export	import	6.8937	2	0.032
export	**ALL**	**42.607**	**9**	**0.000**
import	exchange	3.3327	2	0.189
import	inflation	1.5714	2	0.456
import	reserve	5.826	2	0.054
import	debt service	2.1492	2	0.34
import	export	.68007	2	0.712
import	**ALL**	**32.968**	**10**	**0.000**
reserve	exchange	4.435	2	0.109
reserve	iflation	.77702	2	0.678
reserve	debtservice	3.3151	2	0.191
reserve	export	1.9018	2	0.386
reserve	import	4.1259	2	0.127
reserve	**ALL**	**17.542**	**10**	**0.063**

Granger Casuality Results Analysis

EXCHANGE RATE; The first variable was exchange rate set as dependent variable to check how independent variables granger cause exchange rate.This was about cause relationship among the the variables.

The Null Hypothesis (Ho) = Lagged inflation, export,import and reserve does not cause exchange rate. Alternative Hypothesis (Ha) = Lagged inflation,export,import and reserve does cause exhange rate.

Since the probability for variables namely inflation,export,import,and reserve was highly significant(p>[t]0.000),we rejected the null hypothesis. Meaning that the inflation,export,import and reserve,Granger cause exchange rate.One variables was not statistically significant namely statistically debt service.

The Null Hypothesis (Ho)= Lagged debt service does not cause exchange rate. Alternative Hypothesis (Ha)= Lagged debt service does cause exhange rate.

Debt service its probalility was not significant, we do not rejected the null hypothesis (p>[t]0.381),meaning that the lagged debt service does not cause exchange rate.The overall results found that probability is highly significant (p>[t]0.000) for ALL the variables namely inflation,export,import, reserve and debt service,Granger cause exchange rate. Therefore all variables Granger cause exchange rate statistically significant.

IFLATION;The second variable was iflation set as dependent variable to check how independent variables granger cause inflation.This was about cause relationship among the the variables.

The Null Hypothesis (Ho)= Lagged inflation,debt service,export,import and reserve does not cause exchange rate. Alternative Hypothesis (Ha)= Lagged inflation, debt service ,export,import and reserve does cause exhange rate.Since theprobabilities for ALL variables namely inflation,export,debts service,import,and reserve was highly significant (p>[t] 0.000),we rejected the null hypothesis,meaning that the inflation,debt service,export,import and reserve,Granger cause inflation rate.

The overall results found that probability for ALL variables was highly significant (p>[t]0.000) for all the variables namely inflation,export,import, reserve and debt service,granger cause inflation. Therefore overall all variables granger cause inflation rate statistically significant

DEBT SERVICE;The third variable was debt service set as dependent variable to check how independent variables granger cause debt service.This is cause relationship among the the variables.Three variables were statistically significant namely,exchange,inflation and export and two variables not statistically significant namely import and reserve.

The Null Hypothesis (Ho)= Lagged inflation,export,and exchange rate does not cause debt service. Alternative Hypothesis (Ha)= Lagged inflation,export, and exchange rate does cause debt service.Since the probability for variables namely inflation, export and exchange rate was statistically significant(p>[t]0.006,0.000,0.003),we rejected the null hypothesis. Meaning that three variables inflation,export and exchange rate,Granger cause debt service.

Two variables were not statistically significant namely statistically import and reserve.The Null Hypothesis (Ho)= Lagged import and reserve does not cause exchange rate. Alternative Hypothesis (Ha)= Lagged inflation import and reserve

does cause exhange rate.Import and reserve its probalility is not statistically significant, we do not rejected the null hypothesis (p>[t]0.109,0.53),meaning that the lagged import and reserve does not cause debt service.The overall results found that probability was highly significant (p>[t]0.000) for ALL the variables namely inflation,export,import, reserve and debt service,granger cause exchange rate. Therefore all variables Granger cause exchange rate statistically significant

EXPORT;The fourth variable was exports set as dependent variable to check how independent variables granger cause exports.This is about cause relationship among the the variables.Five variables were statistically significant namely exchange, inflation, debt service,import and reserve.

The Null Hypothesis (Ho) = Lagged inflation,debt service,exchange rate,import and reserve does not cause export. Alternative Hypothesis (Ha) = Lagged inflation, debt service ,exchange rate,import and reserve does cause export.

Since the probabilities for variables namely inflation,debts service,import,and reserve was statistically significant (p>[t] 0.010,0.009,0.000,0.032,0.013),we rejected the null hypothesis,meaning that the variables namely inflation,debt service,exchange rate,import and reserve,Granger cause export.The overall results found that probability was highly significant (p>[t]0.000) for ALL the variables namely inflation,export,import, reserve and debt service, granger cause export.Therefore overall all variables Granger cause export rate statistically significant

IMPORTS;The fifth variable was imports set as dependent variable to check how independent variables granger cause imports.The cause relationship among the the variables.Five variables were not statistically significant namely exchange, inflation, debt service,export and reserve.

The Null Hypothesis (Ho) = Lagged inflation,debt service,exchange rate,export and reserve does not cause import. Alternative Hypothesis (Ha) = Lagged inflation, debt service ,exchange rate,export and reserve does cause import.

Since the probabilities for variables namely inflation,debts service,import,and reserve were not statistically significant (p>[t] 0.456,0.341,0.189,0.712,0.054),we do not rejected the null hypothesis,meaning that the variables namely inflation,debt service,exchange rate,export and reserve,does not cause import.The overall results found that probability was highly significant (p>[t]0.000) for ALL the variables namely inflation,export,exchange rate, reserve and debt service, Granger cause import.Therefore overall all variables Granger cause import rate statistically significant

RESERVE;The sixth variable was reserve set as dependent variable to check how independent variables Granger cause reserve.The cause relationship among the the variables.Five variables were not statistically significant namely exchange, inflation, debt service,export and import.

The Null Hypothesis (Ho) = Lagged inflation,debt service,exchange rate,export and import does not cause reserve. Alternative Hypothesis (Ha) = Lagged inflation, debt service ,exchange rate,export and import does cause reserve.

Since the probabilities for variables namely inflation,debts service,exports,exchange rate and import were not statistically significant (p>[t]0.678,0.191,0.109,0.386,0.127) we do not rejected the null hypothesis,meaning that the variables namely inflation,debt service,exchange rate,export and reserve,granger does not cause reserve.The results of probability as ALL the variables found that probability was not significant (p>[t]0.063) we do not reject the null hypothesis for all the variables namely inflation,export,exchange rate,debt service and import does not cause reserve.Therefore, overall all variables Granger does not cause reserve statistically not significant.

CHAPTER FIVE

DISCUSSIONS OF THE FINDINGS

5.0 Introduction

In this section the factors affecting exchange rate dynamics was identified and discussed. There are five variables which affecting exchange rate dynamics in Tanzania. These variables are inflation, exports, imports, debt service and foreign reserve currency.

5.1 Discussions

The residuals were normally distributed, meaning that they were normal data. The residual was tested by using the Shapiro-Wilk and Jarque-Bera test, revealed that normality exists in vector error correction model and no autocorrelation vector error correction model. There was no serial correlation in the model and all the variables were nonstationary at level but all the variables become stationary after being converted into first difference. There were no outliers in the model all the observations were within the data range and there was no existence heteroscedasticity in the model. Multicollinearity was within acceptable level VIF less than 5.The error variance was constant in the model. R-squared was 97.93% the predictors variables

namely inflation, imports, exports, debt service and reserve explained about 97.93% of exchange rate. No omitted variables in the model and the model were properly specified, because -hat was significant and should have much explanatory power. Likewise, –hat square was not significant and should not have much explanatory power. The overall results showed that the model for this study was good mode or desirable.

Inflation affects exchange rate inversely due to its negative coefficient which was -11.04889 this meant that as inflation increases the values of Tanzania shillings tend to depreciate relative to dollar As observed by Twarowska and Kąkol, (2014).
Increase in the inflation in Poland causes depreciation of the zloty, as the more expensive products at the domestic market encourage consumers to import products from abroad, and thus the supply of currency increases and Fadhili Asari et al. (2012). Empirical results showed that inflation rate goes negatively towards exchange rate volatility in Malaysia and Raja Sher Ali Khan, (2014).Inflation was the main factor that affects the most the exchange rate variability in the recent years in Pakistan. As inflation increases the money supply increases and local currency depreciates due to which the exchange rate changes and variability increases. Theories support the results that increase in inflation depreciate exchange rate and decrease in inflation appreciates the exchange rate. Thus, inflation affects exchange rate inversely and statistically was significant, as the p-value was 0.004.Tanzania inflation policy was appropriate settled with the goal of low and stable inflation simply because as inflation increases the exchange rate depreciates and vice versa is true

The debt service affected the exchange rate but statistically not significant as a result of positive coefficient which was 5.12e-09. Thus, meant that as the debt service increases the value of Tanzania shilling appreciates and when we decrease the debt service the currency depreciates. The debt service not consistent with the theory, which says that, the debt service depreciates the exchange rate and Standard organisations like Standard and Poor's, Moody's give debt rating of the country, and it is a very important determinant of its exchange rate.The positive correlation that

does exist between exchange rate and debt service implies that any increase in debt service is associated with exchange rate depreciation, (Mail, 2013).Empirical evidence showed that Proti's (2013) empirical results showed that the national debt affects the exchange rate movement in Tanzania. The results showed that increasing loans or borrowing appreciates the currency simply because we don't export more in order to get enough foreign currency reserve. We had to get loans or borrow in order to defend our currency in case of shortage of foreign reserves in short run. Due to low exports and high imports BOT gets shortage of supply of foreign reserve currency; therefore, BOT has to obtain loans or borrow so that it can bolster its foreign reserve hence Tanzanian Shillings appreciates but this works in short run. Tanzania agreed $800 million of loans from Rand Merchant Bank and China Development Bank Corp. to bolster its foreign-exchange reserves, as the country shows up a weakening currency, and plugs the budget deficit. Merchant Bank had to raise as much as $600 million and $200 million from China Development (Bloomberg Business, 2015).In long run high Government debt depreciates the local currency simply because more foreign currency are used to service the debt as proved by empirical studies By Henkel (2004); Siegar and Pontiners (2005); Devereux and Lane (2001) and Uddin et al, (2013).Lastly debt service is directly proportional with the National debt or external debt, that why this study found that debt service appreciates the exchange rate although statistically insignificant. Due to low exports we have to borrow in order to get increase foreign currency reserves currency

Export was the main factor which affects exchange rate dynamics in Tanzania. Exports affects exchange rate and statistically significant as the results of positive Coefficient 25.35858 this means that increase in exports appreciate local currency and decrease in exports depreciates local currency. This result was consistence with the theory that exports increase foreign currency reserves hence appreciate exchange rate and vice versa true. The study results were evidenced by empirical studies by (Khan, 2014, Parveen et al., 2012 and Malik, 2010) all the studies showed that exports appreciates exchange rate. The exports increasing the foreign exchange reserves in

developing economies like Tanzania and with high exports the exchange rate can be brought down. Theory suggested that when exports increase foreign currency reserve increases as well but decrease in exports foreign leads to decrease in currency reserve.

Imports affects exchange rate and statistically not significant, as the results of negative coefficient -3.632437, this means that increase in imports depreciates the exchange rate and decrease in imports appreciates exchange rate. Therefore, imports affect exchange rate inversely but statistically not significant. Tanzanian shilling hit a new all-time low at 1,823 against the dollar on October 2014 dragged by increased dollar demand from importers.

There are high demand and no export earnings to support the shilling Bloomberg Business UK, October (2014).The imports results are consistent with the theory that high imports depreciates local currency and low imports appreciates local currency.

The empirical evidence by other researches, (Khan, 2014; Parveen et al, 2012; Mukhtar and Malik, 2010 and Kisaka and Mwasaru, (2012), showed that increase in imports depreciates exchange rate and vice versa is true. The results revealed that foreign Reserves affects exchange rate and are statistically significant, as a result of positive coefficient 1.7e-07, this means that increase in foreign reserves appreciates exchange rate and decrease in foreign currency reserve depreciates exchange rate. Tanzania's central bank sold $339 million to lenders from January to April, 2015 to support the shilling according Bloomberg Business UK, (2015).Empirical findings by other researchers (Janine et al, 1997; Zada.(2010) and Mkenda. (2001) have revealed the same results. The depreciation of local currency this year was caused by Shipments of gold, a key source of foreign exchange dropped 13 percent to $1.4 billion in the year through March (2015) according to the regulator. Other factors that caused severe shortages of foreign currency reserve especially in fourth quarter were non exportation of agricultural products at that time and absence of tourist arrivals that season.

Therefore, factors affecting exchange rate dynamics in Tanzania are inflation, foreign currency reserve and exports and statistically significant and empirical evidence exits.

Imports and debt service does not affect exchange rate but imports contribute negatively to exchange rate depreciation and Government debt contributes positively to appreciation of exchange rate in Tanzania.

CHAPTER SIX

SUMMARY, CONCLUSIONS, AND POLICY IMPLICATIONS

6.0 Introduction

This chapter presents the summary of the study, conclusions and policy implications which are based on the purpose and objectives of the study. The details of the chapter are as follows:

6.1 Summary of the results

This study determined the factors affecting exchange rate dynamics in Tanzania. It also presented results and investigated the determinants of exchange rate dynamics in Tanzania with the United States as the base country. Data were gathered from the World Bank Indictors, National Bureau of Statistics and Bank of Tanzania. The adjusted R^2 97.35% (p-value F-statistic = 0.000479) suggests that the economic variables together explain about 97.35% of the movements in exchange rate and only 2.65% of these movements can be explained by other factors not included in the model

The results output revealed that variables affecting exchange rate dynamics were inflation, export and reserve. Inflation affects negatively exchange rate, meaning that as inflation increases the exchange rate depreciate and vice versa true. Exports and reserves affects positively exchange rate, when both increases the exchange rate

appreciates. Likewise if exports and reserves decrease the exchange rate to depreciates as well.

The debt service and imports does not affect exchange rate dynamics in Tanzania. But the contributes exchange rates changes ,imports contributes negatively to exchange rate changes ,as imports increases exchange rate depreciates and when debt service increases the exchange rate appreciates as well.

The analysis shows that the residuals are normally distributed in the model, VEC model was tested by using Jarque-Bera depicts normality, and Breusch-Godfrey Lagrange Multiplier test for autocorrelation for the model shows no evidence of the presence of serial correlation.

The Durbin-Watson statistic for the model shows that there is no evidence of the presence of autocorrelation, Test for vector error correction reliability Lagrange Multiplier test not autocorrelation at lag order and test for Heteroscedasticity autoregressive Heteroscedasticity (ARCH) was used and indicates no existence of Heteroscedasticity. The model was no Multicollinearity (VIF, 4.80).The variables were non stationary at level but after first difference they became stationary by using Dickey-Fuller and Philip Perron. Cointegration test used Dickey-Fuller residual and Philip Perron to test for cointegration since the values of probability were statistically significant, which means multivariate time series are cointegrated; they tend to move together in long run. Johansen tests for cointegration, cointegration at equation three or there are 3 vectors of cointegration meaning that the variables have long run relationship, they tend to move together in long run. Vector error correction model (VECM) revealed that there is short run as well as long run causality exists among the variables. Lag selection criteria used final prediction error (FPE), Akaike's information criterion (AIC), Schwarz's Bayesian information criterion (SC), and the Hannan and Quinn information criterion (HQIC) lag-order selection statistics for a series of vector autoregression. To identify the lag lengths for VAR or VEC models of unknown order.

The lower the values of, FPE, AIC, SBIC and HQIC, the better the model. But we chose the equation two with many criteria, meaning that the majority must be granted. So, maximum lag was selected based on many criteria, and hence lag two was chosen Therefore, the model was properly specified, simply because the hat-was statistically significant meaning that it had more explanatory power and the hat square was statistically insignificant meaning that it did not have much explanatory power. When hat is significant it means that it had included relevant variables in the model and when hat square is statistically insignificant it means no irrelevant variables were included in the model. Tests for omitted variables using OVTEST revealed that there were no omitted variables in the model.

Granger causality revealed that the dependent Exchange rates are affected by all variables due to its probability was significant. Dependent inflation had bidirectional causality it affected by all the variables and its highly significant. Dependent exports as they are all affected by all variables due to the fact that the probability for all was significant. Dependent imports were all affected by all variables due to the fact that probability for all was significant. Dependent debt service was affected by all variables due to the fact that its probability for overall was significant. Dependent variable reserve was not affected by all variables due to the fact that its probability for overall was insignificant.

Therefore, these are the main factors affecting exchange rate dynamics in Tanzania that is first export, second foreign currency reserve, third inflation rate, fourth imports and fifth debt service.

6.2 Conclusions

The factors affecting exchange rate dynamics in Tanzania are export, reserve, inflation, imports and debt service. The export was the first variable affecting exchange rate; as exports increase the exchange rate appreciates and when export decreases the exchange rate depreciates. The second, variable was foreign currency

reserve, when foreign currency reserve increases /decreases the exchange rate tend to appreciates or depreciates; even empirical results by Janine et al.(1997) in their study determinants of real exchange rate in South Africa revealed that increase in central bank reserve appreciates the exchange rate.. The third variable was inflation. It tends to affect exchange rate negatively as it has negative coefficient; when the inflation decreases the exchange rate tends to appreciates and when inflation tend to increases the exchange rate tend to depreciates and vice versa likewise Twarowska and Kąkol (2014) in their study on factors affecting fluctuations of exchange rate of polish zloty against euro they found that inflation has negative coefficient. The fourth variable was import which has a negative coefficient; when the imports increase, the exchange rate depreciates and when an import decreases, the exchange rate appreciates. The fifth variable was debt service; when the debt service increases it tends to appreciate the exchange rate and when the debt service decreases it tends to depreciate the exchange rate. But this result not consistent with the theory, that a country with higher public debt is not attractive to foreign investors because the higher debt of the country leads to higher inflation ultimately increases debt to control inflation and depreciates exchange rate. Standard organisations like Standard & Poor's, Moody's gives debt rating of the country, and it is very important determinant of its exchange rate.

The Johansen test revealed cointegration of three vectors or at equation three, it showed that the long run relationship exists. The VCEM revealed that short run and long run causality exists in the model. Stationarity test by using Dickey–Fuller and Philip Perron the results revealed that all the variables were nonstationary at level but they became stationary when converted into first differences. Shapiro Wilk test shows that the data /residual was normal distributed. Lag selection criteria was employed and lag two was selected due many criteria was suggesting to choose lag two. The model doesn't suffer from autocorrelation and Heteroscedasticity. The multicollinearity was minimum 4.80 as required benchmark below 5, recommended one. The model was properly specified and has no omitted variables.

6.3 Policy implications

Fiscal policy and monetary policy should be made with the consideration for their effects on the exchange rate dynamics. The government should intervene to make exchange rate stable whenever there are high dynamics in the exchange rate. Policy makers must take into consideration the exchange rate dynamics before making policies that affects the exchange rate. The gap between policy formation and its implementation both in fiscal and in monetary policy is supposed to be reduced. Based on these evidences it is clear that in Tanzania fiscal and monetary policies plays an important role in exchange rate dynamics. It is recommended to harmonise fiscal policies with monetary policy first and then make efficient relationship of both these policies with trade policy. It is therefore recommended that policy makers should not only rely on targeting inflation as a measure of stabilising the exchange rate, but should adopt complementary macroeconomic policies such as increasing domestic production of exports and previously imported inputs used in the production process. Therefore, stable and competitive exchange rate and sound macroeconomic fundamentals are required in order to improve international competitiveness and greater penetration of Tanzania exports to international markets.

6.4 Recommendations

The government should ban all the colleges, primary schools and secondary schools from charging fees by using foreign currency dollar, they have to use local currency in order to make our Tanzania shillings stable relative to dollar. Then the government should take strong measures against black market; there should be no black market because nowadays dollar is being sold randomly in the country and the Government knows that but no action has been taken so far. Good examples are drawn from Kariakoo Dar es Salaam, Tunduma border and Namanga border. Again there are many Bureau de changes concentrated in big cities especially Dar es salaam.

I recommend that there should be strong regulations regarding the bureau de change opening. The government should ban citizens from opening the foreign currency account in banks. The bank of Tanzania should monopolise the foreign currency

exchange all over the country. The government must stop printing excessive money for its needs as it leads to increased supply of money causing inflation in the economy. The discoveries of natural resources like minerals and natural gas (Mtwara) are also important as they can have an impact on the quantity to be supplied which can boost the level of export, for example the very recent massive discoveries of the natural gas in Tanzania could have the great positive impact in the near future on the exchange rate and the economy as a whole as it will attract more investments both domestic and foreign ones. This will increase the capacity to export hence realisation of the positive trends on the exchange rate.

Although the oil prices were not included in this study, they have great impact on exchange rate dynamics. Oil prices have been an essential factor that affects the exchange rate dynamics the most; so, being an oil importing country Tanzania must reduce its dependence on the oil as energy resources to reduce the dynamics in exchange rate. Furthermore, new energy resources like coal, bio gas and Mtwara gas should be used to reduce dependence on oil so that the effect of oil prices on exchange rate can be reduced.

In Europe many countries have alternative of oil as energy resources they are using natural gas as oil substitute in cars, industries and homes energy resources especially in winter season. The Government should use Mtwara gas as a means of energy substitute in country and reduce oil importing dependence so that we may stabilise oil prices at the same time reduce inflation and exchange rate as well. The government should not continue to borrow as the borrowing depreciates our currency because we use a lot foreign currency to service the debts.

6.5 Limitations of the study

The study was limited due to lack of availability of data in Tanzania especially from 1980-1989, because the researcher intended to include the data for thirty four years. Due to lack of data the study included the data for period 1990-2013 with yearly data

for twenty four years only. But this is not a problem which could limit the reliability of the study because the research which used time series data needed the data which could cover at least twenty years. Therefore, this research included twenty four years which was sufficient for providing the required data for the study

6.6 Further research/studies

The scope of this study covered about 24 years as sample period of study for Tanzania and used a time series technique as an estimation method. In order to ensure wider investigation and stronger results further studies should focus on the factors affecting real exchange rate dynamics in Tanzania using a monthly data time series. Because real exchange rate is considered as a key indicator of a country's competitiveness, it even is considered as the most reliable indicator of competitiveness in the country. So, future researchers should consider factors affecting real exchange rate dynamics in Tanzania, because it is broader than exchange rate dynamics.

REFERENCES

Aguirre, A. and Calderon. (2005) "*Real exchange rate misalignments and Economic performance*," Central Bank of Chile, Working Paper No. 315.

Asari, F.F.S.H., Baharuddin, N.S., Nurmadihah Jusoh, N., Mohamad, Z., Shamsudin, N. and Jusoff, K. (2011) Approach in Explaining the Relationship between Interest Rate and Inflation towards Exchange Rate Volatility in Malaysia

Akinbobola T, (2012).*The dynamics of money supply, exchange rate and inflation in Nigeria*

Berthou, A. (2008). "*An Investigation on the effect of Real Exchange Rate Movements on OECD Bilateral Exports Working Paper Series* No 920 / July 2008

Bloomberg Business United Kingdom, 2014/2015

Bernhardsen, T. and Roseland, Q. (2000). *Factors that influence the krone exchange rate.* Economics Department, Norges Bank

Cavallo, A., Neiman, B. and Rigobon, R. (2013). "*Currency Unions, Product Introductions, and the Real Exchange Rate*": MIT University of Chicago and NBER MIT and NBER October 2013.

Cakrani,E.,Resulaj,P.R.P. and Luciana Koprenka(2013). *Government Spending and Real Exchange Rate Case of Albania)* European Journal of Sustainable Development (2013), 2, 4, 303-310 ISSN: 2239-5938

Dani, R. (2008). "*The Real Exchange Rate and Economic Growth"*, John F. Kennedy School of Government, Harvard University Cambridge, MA 02138, Revised, October 2008.

Driskill, R. and Cantor, R. (2000). "Effects on the real exchange rate of demographic and fiscal-policy induced changes in national saving is the conventional academic wisdom always right?

Ellis, L. (2001) *Measuring the Real Exchange Rate*: Pitfalls and Practicalities Research Discussion Paper 2001-04, August 2001 Economic Research Department Reserve Bank of Australia.

Fung ,S. (2003) .*Nonlinear modeling of daily exchange rate returns volatility and News in Small Developing Economy*. Applies Economics letters, 10(4), 247-250

Galati, G. and Ho, C. (2003). *Macroeconomics News and the Euro/Dollar Exchange Rate Economic Notes*, 32(3), 371-398.

Gylfason, H. and Zoega. (1997), *"A mixed blessing: natural resources and economic growth,*" macroeconomic dynamics, Vol. 3, 204–25

Ghura, D and Grennes, T.J (1993). *The real exchange rate and macroeconomic performance in sub-Saharan Africa*. Journal of Development Economics 43.1:155-174.

Griffoli, T.M., Meyer, C., Natal, J.M.and Zanetti. (2014). "*Determinants of the Swiss Franc Real Exchange Rate"* SNB Working Papers 8/2014

Galstyan, V.and Lane, P. (2008). *"The composition of government depending and the real exchange rate"* IIIS, Trinity College Dublin and CEPR December.

Hopper,G.P.(1997). *What Determines the Exchange Rate*: Economic Factors or Market Sentiment? Business Review.

Henckel, (2004) .Investigated how government debt affects exchange rate behavior using a two-country general equilibrium

http://www.ats.ucla.edu/stat/webbooks/reg

http://www.bot.go.tz

http://www.nbs.go.tz

http://www.tic.co.tz

Haddad, M.and Pancaro, C. (2010)." Can Real Exchange Rate Undervaluation boost exports and growth in developing countries? Yes, but not for Long" poverty reduction and economic management (PREM), economic premise, World Bank.

Hoda. (2012). *Equilibrium Exchange Rate in an economy in transition*. Bank of Albania Working Paper 04(54)

Ickes, B.W.F. (2004). *Lecture Note on the Real Exchange Rate*

Ibrahim, A. E, and Raimundo, S. (2005). "*Theory and Empirics of Real Exchange Rate in Sub-Saharan Africa and Other Developing Countries*" World Bank, Washington DC Email: ielbadawi@worldbank.org Instituto de Economía, Universidad Católica de Chile, Santiago, Chile, Email: rsoto@faceapuc.cl

Janine, A., Ibrahim, E.and Brian, K. (1997). "*Determinants of the Real Exchange Rate in South Africa"*, Centre for the Study of African Economies, WPS/97-16, CSAE Publishing, and Oxford

Jean-Louis., C.Tidiane, K. and Patrick, P. (2008). "*Capital Flows, Exchange Rate Flexibility, and the Real Exchange Rate* "Authorized for distribution by Mauro Mecagni January 2011© 2011 International Monetary Fund WP/11/9 African Department

Jerson, B. P. and Agustina, T. C. (2013).”*Factors affecting Exchange rate movements in selected Asian countries”*

Kim, B.Y. and Korhonen, L.(2002). *“Bank of Finland, Institute for Economies in transition”,* discussion papers equilibrium exchange rates in transition countries: Evidence from dynamic heterogeneous panel models

Kriljenko, J.C. and Habermeier. (2004). *“Structural Factors Affecting Exchange Rate Volatility”:* A Cross-Section Study IMF Working Paper Monetary and Financial Systems Department

Khattak, N., Tariq, M. and khan, J. (2012).*Factors Affecting the Nominal Exchange Rate of Pakistan:* An Econometric Investigation (1982-2008), Asian economic and financial review Vol. 2, No. 2, pp. 421-428.

Kisaka, S. and Mwasaru, A. (2012).*The causal relationship between exchange rate and stock prices in Kenya,* research journal of finance and accounting, Vol.3, No.7, 2012, pp. 121-130.

Khan, A.R.S. (2014*). “Analysis if the factors affecting exchange rate variability in Pakistan”*

Lian, Y. And Rowe, F. (2007) *“Aid inflows and the real effective exchange rate in Tanzania”*. The World Bank, poverty reduction and economic management network, economic policy and debt department. December 2007 WPS4456

Mail, E.C. (2013). *“Factors that Affect Real Exchange Rate in the Long Run and Short Run in Albania”* Universite I Vlores Ismail Qedmali Albania, edmira.cakrani @ gmail.com.E u r o E c o n o m i c an Issue 2(32)/2013 ISSN: 1582-8859.

Montiel, P.and Servén, L. (2008), *“Real exchange rates, saving and growth*: Is there a link? World Bank policy research working paper 4636.

Mussa, M. (1986).*Nominal exchange rate regimes and the behaviour of real exchange rates*: evidence and implications. University Of Chicago

MacDonald R. (1999). *Exchange Rate Behavior: Are Fundamentals Important? Economic Journal,* Vol. 109 (November)

McKenzie D, (1998). *"The Impact of Exchange Rate Volatility on Australian Trade Flows"* Journal of International Financial Markets, Institutions and Money 8 (1): 21–38.

Mkenda, B.K. (2001). *Long-run and Short-run Determinants of the Real Exchange Rate in Zambia.*

Mukhtar, T. and Malik, S. J. (2010). *Exchange Rate Volatility and Export Growth*: Evidence from Selected South Asian Countries, University of Piraeus, 60(3-4): 58-68.

Magud, N.and Sosa, S. (2010) *"When and Why Worry About Real Exchange Rate Appreciation?* The Missing Link between Dutch Disease and Growth"© 2010 International Monetary Fund WP/10/271 IMF Working Paper Western Hemisphere Department

Nord, R., Sobolev,Y.,Dunn,D,,Hardenberg,A.,Hobdari,N.,Maziad, S. and Roudet,S. (2009). Tanzania: the story of an African transition/AfricanDept, Washington, D.C International Monetary Fund, 2009.

Osang, A. and Slottje, D. (2000*). "Exchange-Rate Volatility and Foreign Trade:* Evidence from Thirteen LDCs." Journal of Business and Economic Statistics 18 (1): 10–17

Otuori, O.H. (2013).Influence of Exchange Rate Determinants on the Performance of Commercial Banks in Kenya.

Patosa, J.and Cruz, A. (2013*)" Factors affecting Exchange rate movements in selected Asian countries"*

Proti, N. (2013). *"Exchange rate fluctuations-shock in Tanzania,* An empirical analysis" St.Augustine University of Tanzania

Parveen, S.,A.Q. Abdul Q K. and Ismail, M. (2012) *"Analysis of the factors affecting exchange rate Variability in Pakistan"* ISSN-L: 2223-9553, ISSN: 2223-9944 Vol. 2, No.3, and Academic Research International.

Rutasitara (2004) *-investigates the influence of exchange rates on inflation in Tanzania.*

Rizov, C.M.M.M. and Willenbockel,D. (2010). "*Exchange Rate Volatility and Exports*: New Empirical Evidence from the Emerging East Asian Economies." The World Economy 33 (2): 239–63.

Ross S "Fundamental of Corporate finance" Eight Edition Massachusetts Institute of Technology, Randolph W.Westerfield University of Southern California and Bradford D Jordan University of Kentucky.

Reinhart, C.M.and Rogoff, K.S. (2002*)."The modern history of exchange rate arrangements":* A reinterpretation, national bureau of economic Research, 1050 Massachusetts Avenue, Cambridge, Ma 02138.

Samarasiri, P. (2010). *How do central banks manage exchange rates*? Assistant Governor, Central Bank of Sri Lanka, lecturer at the Institute of Bankers of Sri Lanka

Sauer C, and Bohara A, (2001*). "Exchange Rate Volatility and Exports*: Regional Differences between Developing and Industrialized Countries."Review of International Economics 9 (1): 133–52.

Siregar and Pontines (2005) *External debt and exchange rate overshooting in East Asian countries.*

Twarowska, K.and Kąkol. (2014). *"Analysis of factors affecting fluctuations in the Exchange rate of Polish Zloty against Euro"* Maria Curie Skłodowska University, Poland

Uddin, K.M.K., Quaosar, G.MA.A. and Nandi, D.C.(2013). *Factors affecting the Fluctuation in Exchange Rate of the Bangladesh:* a Cointegration Approach

Wang, T. (2004). China: Sources of Real Exchange Rate Fluctuations

Yeyati,E. and Sturzenegger. (2007).“*Fear of appreciation*,” World Bank policy research working paper 4387.

Zada. (2010) *“.Factors affecting exchange rate of Pakistan”*

APPENDICES

Appendix I: Research Time Frame

The study will be carried out within ten months starting from September 2014 to June 2015.

Table 1: Research schedule

Activities	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE
Concept Note										
Proposal writing										
Submission of proposal										
Data collection										
Data analysis										
Report writing and submission										

Source: Researcher 2014

Appendix II: TABLE NO. 2: BUDGET.

S/N	ITEMS	QUANTITY	AMOUNT (Tshs)
1	Ream paper	5	50,0000/=
2	Flash disk	1	30,000/=
3	Typing proposal	Lump sum	50,000/=
4	Typing research paper	Lump sum	100,000/=
5	Printing of proposal	Lump sum	120,000/=
6	Printing of research		200,000/=
7	Binding of proposal		50,000/=
8	Binding of research		100,000/=
9	Editing proposal		100,0000/=
10	Editing research paper		250,000/=
11	Transport expense		600,000/=
12	Upkeep costs in the field		2,350,000/=
13	Internet costs		300,000/=
14	Phone expenses		200,000/-
15	Contingencies		500,000/=
	GRAND TOTAL		**5,000,000/-**

Source: Researcher 2014