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Analysis of Macroeconomic Determinants of Economic Growth in Kenya

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Abstract:
Kenya vision 2030, seeks to achieve an economic growth rate of 10%per annum beginning the year 2012 henceforth. However, although economic growth rate has been on an upward trend since 2010, this target has not yet been achieved. The Kenyan government through various policies and initiatives has tried to target some of these factors to trigger growth. Despite these efforts, the economy continues to be marked by periods of stagnating and low economic growth as measured by annual Gross Domestic Product and policy makers are constantly revising their recommendations with a view to propel growth. The purpose of this study was to conduct an analysis into the macroeconomic determinants of Economic growth in Kenya. Specifically, the study sought to analyze the effects of external debts, interest rates, foreign direct investments and exchange rates on Economic Growth in Kenya the study used causal research design to establish the relationship between Economic growth and the four macroeconomic variables. The population for the study was all data on Foreign Direct investments, Exchange rates, External Debts and Lending Interest rates from 1963 up to the 2014/2015 fiscal year. Purposive sampling was adopted to select the sample size of macroeconomic data for 30 years from 1985 to 2015. The study used the error correction model to carry out the analysis. This approach was systematic and involved testing of stationarity of the data using Augmented Dickey Fuller, determination of Cointegration vector using the Engle-granger two-step approach and finally the error correction term. Time series data for the study period of 30 years was analyzed using PcGive Ox metrics and Eviews software. T-statistic and F-statistic were used to test the significance of the coefficients and overall model respectively. The study established that foreign direct investments, external debts, lending interest rates and exchange rate had statistically significant effects on economic growth in Kenya with a P value of 0.000 for all the variables. External debts and foreign direct investments were found to have a positive relationship with economic growth while lending interest rates and exchange rate had an inverse relationship with economic growth.98.85 % variations in economic growth were explained by variations in the independent variable and the overall model fitted the data well as indicated by the P value of the F- statistic 0.1338<0.05 at 5% level of significance. Recommendations were thus made that policy makers should come up with incentives that attract foreign direct inflows into the country and take measures to curb increases in lending interest rates and the exchange rate. The findings of this study would aid policy makers to identify and implement policies compatible with economic growth.

1. Introduction

1.1. Background to the Study

Macroeconomic variables are variables that signal the current trends in the economy. For policy makers to manage the economy, they must study and understand these variables. Macroeconomic variables and policies are the same in all economies but the difference occurs in how they are applied in different countries. The major macroeconomic variables in economics are consumer price index, Money supply, interest rates, balance of payments, trade balance, unemployment, exchange rate, foreign direct investment, foreign aid among others. Changes in any of these variables have widespread effects on the economy, thus getting them right is useful not only in formulating policies to manage the economy but also for growth purposes.

Economic growth is commonly measured as the annual rate of increase in a country's gross domestic product (GDP). Economic growth is what mainly determines the material well-being of people. GD Prefers to the total value of all final goods and services produced in a country over a period of time. It is an overall measure of a country's economic activities. Thus, every economy employs all measures to ensure that its GDP growth is on an upward trend all the time. High economic growth rate has desirable implications for example it implies higher living standards for the citizens of a country. Also, the level of growth of a country determines whether that country will be referred to as low, middle or a high-income country. Economic growth is determined by internal as well as external macro variables, (Aghion & Howitt, 2009).

Foreign direct investment can be defined as investment undertaken by a foreign national to produce goods and services that can either be sold in the local domestic markets or exported overseas (UNCTAD, 2005). World Bank (2013) defines foreign direct investment as a cross-border investment in which a resident in one economy (the direct investor) acquires a lasting interest in an enterprise in another economy (the direct investment enterprise). Since independence, Kenya has put in place various measures to boost FDI levels to spur economic growth by offering various investment incentives. The period 1970s to 1980s saw FDI inflows into the country hit 30.5 million US dollars and at this time GDP growth was also doing well at an average of 6.6%. However, FDI inflows not only fluctuated but generally started declining in the 1980s and 1990s when GDP growth also deteriorated (UNCTAD, 2005).

External debts refer to debt owed to external sources. Such sources could be multilateral such as debt from the World Bank, IMF, ADB and other international institutions or could be bilateral such as debt owed to other countries as well as commercial institutions (World Bank, 2013). Kenya's external debt grew in the 1970s and 1980s owing to the oil crisis by US$ 2909.28M from a value of US$ 477.53M to US$ 3386. 81M.It grew further in the 1990s when the country experienced drought which necessitated imports. It however declined between 1990s and 2000 partly due debt forgiveness that started in 1992 and a decline in bilateral and private debt (Onyango, 2014).

Interest rates can be defined as the price which equates the supply of credit or saving plus the net increase in the amount of money in a period, to the demand for credit or investment plus net hoarding in the period, (Keynes,1936). Interest rates refer to the cost of credit in a country. Credit is important in the process of growth for two main reasons: investors need it to finance their activities while individuals need credit to finance their consumption especially purchase of durable consumer goods. Hence high interest rates have the effect of lowering the aggregate level of investments and overall consumption (Ngetich&Wanjau, 2011). Kenya's interest rates were relatively stable before the 1990s but their volatility quickly set in after their liberalization in 1992, (IMF, 2012). There has been an inconsistence between the central bank's lending rate and the interests charged by commercial banks with the later oftenly higher than necessary and there is need to investigate how this affects economic growth.

The exchange rate refers to the price of a currency in relation to other currencies. It expresses the national currency's quotation in respect to foreign ones (Azid, Jamil&Kousar, 2005). The exchange of a country implicates on growth on a number of ways. A volatile exchange rate for one reduces investor's confidence and mostly leads to capital flight whereby investors purchase securities denominated in foreign currencies and make their investments abroad. Kenya's exchange volatility was more noticeable especially after the liberalization of the exchange rate in 1993(Kiptoo, 2007). Most of the studies that have been done in Kenya in relation to exchange rate mostly look at the fluctuations in exchange rate and the causes of such fluctuations without any attention given to what impact such fluctuations have on economic growth and this study seeks to address this gap.

Kenya's economic growth rate has been fluctuating since independence. The post-independence decade was characterized by rising GDP owing to the massive investments undertaken by the government. The first and second oil crisis, the fall of the East African Community and the drought experienced in the country lowered GDP in the 1990s that hit a negative figure in 1992. Economic growth since then was marked by periods of highs and lows. The main challenges that have been facing the economy are majorly political strife such as the ones witnessed during the 1992, 1997 and 2007 elections, drought and macroeconomic instability brought about by global crisis such as changes in the price of oil and fluctuations in the exchange rate (Republic of Kenya 2013, 2014&2015).

The Asian continent is of particular interest in studies relating to Economic growth especially in comparison with Kenya. This is because some Asian countries in particular Malaysia, South Korea and Taiwan have been at par with Kenya at one time in history in terms of GDP growth. Kenya and Malaysia gained their independence from Great Britain around the same time and took off at similar reins. In 1965, Kenya's GDP was equal to that of South Korea, (Bigsten& Collier, 1995). But several decades later, Kenya and other African countries are lagging far much behind in GDP growth as compared to these countries. The main factors attributed to this scenario are bad economic policies in Africa especially poor macro management and lack of political goodwill in Africa to support growth. For example, after independence both Kenya and Malaysia embarked on similar policies which sought to commercialize agriculture but while Malaysian policies were geared towards improving the conditions of the poor rural farmers, Kenyan policies focused on giving credit to the elite who had close personal ties with the politicians. This was caused by corruption, which led to allocation of resources to less productive activities, (Gupta, 2000).

Several studies have been conducted in Kenya to explore the main determinants of Economic growth. Most of these studies have not explored the role of macroeconomic stability in Growth. Macroeconomic instability has been the main cause of GDP fluctuation in Kenya. The economy has been marked by high rates of inflation, volatile exchange rates that hurt the trade balance and skyrocketing interest rates that adversely affect investor confidence. This may explain why GDP has been fluctuating despite various measures by the government to stabilize it.

The various policy documents that have been put across do not specify the ways to ensure macroeconomic stability. Some of the interventions adopted to propel economic growth may actually lead to macroeconomic instability if not properly managed. Economic theory suggests that there might be some contradiction between growth objectives and other variables. For example, measures to mitigate unemployment might end up accelerating the rate of inflation in the economy (Romer, 1996).

In the last decade, Kenya has been hit by increasing external debts that are needed to meet the increasing government expenditure, high interest rates, and depreciation in the Kenyan shilling against the US dollar and other major currencies as well as a decline in foreign direct investments as compared with its neighboring countries. This study therefore aims at exploring the effects of these factors in determining economic growth for the period 1985 to 2015 with an aim of informing policy so as to curb the fluctuations in economic growth that have been experienced in the economy and thus help towards achievement of Kenya vision 2030.

1.2. Statement of the Problem

Economic growth as measured by annual increases in GDP is the product of all economic activities of a country. The Kenyan Vision 2030 projects that the GDP growth rate should be 10% as at 2012. However today the GDP growth rate is only at 5.6% (Republic of Kenya, 2015). At independence, the size of Kenya's economy was at par with that of current economic giants of Asia such as South Korea, Hong Kong Taiwan and other newly industrializing countries. Specifically, in 1965, Kenya's GDP was equal to that of South Korea at 2859.4 US dollars (World Bank,2015). GDP per capita for the two countries started deviating in 1960s and diverged much widely in the 1990s when Kenya's economy was wrecked owing to macroeconomic instability. Decades later, the East Asian countries GDP per capita is thrice that of Kenya and Kenya's economy continues to be marked by widespread poverty, unemployment and inequalities. With a growing population that is likely to outstrip economic growth due to the pressure it exerts on the country's resources, Kenya needs to multiply its current real GDP growth rate if it's to be able to maintain high standards of living for all its population. The various government regimes have pursued measures and came up with several policy documents to stabilize the economy and propel it towards economic growth. Despite these efforts, real GDP growth in the country continues to be marked with cyclical fluctuations of highs and lows and this called for investigation to find out why these fluctuations continue to be witnessed. Several of the studies conducted in Kenya focusing on Economic growth have not exhaustively looked at the Long run role of macroeconomic stability in determining growth. Majority of the studies conducted on interest rates focus on the impact of lending interest rates on specific sectors of the economy with no effect on economic growth. Similarly, studies done in Kenya on the exchange rate focus on its effect on variables such as exports nd the balance of payment by using the Error Correction Model, this study therefore aimed at analyzing the short run as well as the long run effects of Lending interest rates, Exchange rates, external debts and foreign direct investments on Economic growth in Kenya.

1.3. Objectives of the Study

The general objective of the study was to analyse the macroeconomic determinants of Economic Growth in Kenya.

1.3.1. Specific Objectives

The study was guided by the following specific objectives:

i. To determine the effects of foreign direct investments on Economic growth in Kenya.
ii. To determine the effects of external debts on Economic growth in Kenya.
iii. To determine the effects of lending interest rates on Economic growth in Kenya.
iv. To determine the effects of exchange rates on Economic growth in Kenya.

1.4. Hypotheses

- $H0_1$: Foreign direct investments have no statistical significant effects on economic growth in Kenya.
- $H0_2$: External debts have no statistical significant effects economic growth in Kenya.
- $H0_3$: Interest rates have no statistical significant effects on economic growth in Kenya.
- $H0_4$**:** Exchange rate has no statistical significant effects on economic growth in Kenya.

1.5. Significance of the Study

The findings of this study would be useful to a wide range of users. First, the study would shed light into the macroeconomic factors that determine economic growth in Kenya enabling the government and policy makers to come up with policies that accelerate economic growth. Second, the study would aid investors to make sound investment decisions based on the various macroeconomic variables considered in this study. Third, the study would add onto the existing body of knowledge in the area of macroeconomic determinants of economic growth in Kenya and provide ground for further research. It would also help towards achievement of the vision 2030.

1.6. Scope of the Study

The focus of this study was to analyse the macroeconomic determinants of economic growth in Kenya. It covered the period between 1985 and 2015.This period marked the start of major stabilization policies pursued by the government to avert the decline in GDP growth rate witnessed in the 1980s.The stabilization policies were implemented in all sectors of the economy. This study therefore sought to determine whether these stabilization policies as well as other measures taken by the government to raise economic growth had been effective. In addition, the study period had witnessed massive dynamics in the macroeconomic variables considered in this study and therefore the study assessed whether these dynamics had or had not affected economic growth. The period covered by this study was long enough to make an economic analysis on macroeconomic factors affecting economic growth in Kenya. The study considered four macroeconomic variables namely exchange rates, interest rates, foreign direct investments and external debts. These variables were considered because they had been fluctuating recently and therefore the researcher needed to determine whether fluctuations in these variables had any effect on GDP growth.

1.7. Limitation of the Study

The researcher experienced the limitation of incomplete data on some variables from one single source. The limitation was overcome by acquiring the data for the missing period from the other sources of secondary data.

1.8. Assumptions of the Study

This study used secondary data for analysis and therefore it was conducted based on the assumption that the data sources were reliable enough for data to be procured from them. The study also assumed that the period covered was long enough to capture different phases of economic activities and therefore reliable inference would be made.

1.9. Definition of Terms

Macroeconomic Variables	: These are variables that signal the current trends in the economy as a whole.
Economic Growth	: Economic growth refers to the increase in per capitagross domestic product (GDP). It was measured by the percentage change in real gross domestic product (real GDP).
Foreign Direct Investment	: This refers to the total inflow of foreign assets into the economy. It was measured by the annual monetary value of all foreign inflows.
Interest Rates	: This refers to the commercial banks cost of lending. It was measured by the annual average interest rates.
Exchange Rates	: This refers to the price of the Kenyan currency in relation to the United States dollar. It was measured by the annual average exchange rate
External Debts	: This refers to the total debt owed to non-residents of a country including foreign organization and governments. It was measured by the annual monetary indebtedness in terms of GDP.

2. Literature Review

2.1. Introduction

This chapter provides an overview of the macroeconomic variables discussed in this study as well as review in details the various works done on gross domestic product and its determinants by various individual as well as groups of individuals. The chapter will look at both the theoretical as well as empirical literature review.

2.2. Overview of Macroeconomic Variables

This section discusses literature on the macroeconomic variables used in the study. They are; foreign direct investments, external debts, exchange rates and lending interest rates and their relationship to Economic growth.

2.2.1. Foreign Direct Investments

The need for foreign direct investment in an economy is perceived differently by different scholars. Sornarajah, (2004) contends that because less developed countries possess plenty of raw materials for industries abroad, foreign direct investments are inevitable. Asiedu (2007) as well as Eduardo (2008) postulate that most countries especially developing ones strive to attract foreign direct investments because it is important as a tool of economic growth and development.

Foreign direct investment is important in the economy as it accelerates growth of a country. There are many channels through which FDI can impact on growth; first it fills the gap between targeted or desired investment and locally mobilized savings. This is especially important in developing countries where the level of savings is too low to support any meaningful investments. Reduced savings are as a result of high consumption levels arising from the fact that developing countries are characterized by a high dependency ratio in the population.FDI also fills the gap between targeted foreign exchange earnings and those realized from exports through inflow of foreign capital. FDI also contribute to increase in government revenue through being taxed and participating in other financial activities of the host country.FDI also supplies technology and managerial expertise to the host country (Blomstrom,1986; Blomstrom & Persson, 1983; Gorg & Strobl, 2001; UNCTAD, 2005).

However, FDI also affects growth of a country adversely through, first reduction in both the government revenue and foreign exchange through such actions as importing intermediate goods, repatriation of profits to their country of origin, transfer pricing to avoid paying taxes excessive investment allowances and tariff protection by the host government. Other FDI also drive out local industries out of business to their advantage, (UNCTAD, 2005). There is also the tendency for over utilization of the available natural resources, as the companies strive to maximize profits in their venture (Colen, Maertens &Swinnen, 2009). The 'tragedy of the commons' whereby many organizations compete to utilize a shared resource leads to degradation of natural resources as well as environmental pollution, which have largely been associated with the issue of climate change (Sindre, 2011).

2.2.2. External Debts

Many less developing countries (LDCs), Kenya included are characterized by low capital formation due to the low levels of savings and investments (Adepoju, Salau&Obayelu, 2007). As a result, they result to external borrowing to supplement their savings (Safdari&Mehrizi, 2011). Soludo (2003) contends that countries borrow for two main reasons; to finance budget deficits and to boost economic growth. There are also other reasons why developing countries borrow such as, to deal with calamities such as wars and drought and to correct macroeconomic instabilities in their economies such as inflation and exchange rate volatility.

The effect of external debts on growth can be positive if the marginal benefit of the projects financed by the debt is higher than the marginal cost of the debt or negative if the reverse is true. Reinhart, Carmen, Vincent and Kenneth (2012) postulate that when external debts are used for growth related expenditures it accelerates economic growth by providing foreign capital for industrial development,

management know how technical expertise as well as access to foreign markets. The negative effects of external debts on economic growth are explained through the debt overhang hypothesis and the crowding out theory of debts.
The debt overhang hypothesis holds that when debts are higher than a country's ability to service them, domestic as well as foreign investments in the future will be discouraged because potential investors fear that any increase in output will be taxed to service the debt (Krugman, 1988). Serven (1997) also agrees that high debt stocks hamper economic growth by creating uncertainties among investors especially in low income countries with debt servicing difficulties. The crowding out theory holds that debt servicing will crowd out expenditures in other areas as infrastructural and human capital development leading to low growth rates (Clements, Bhattacharya& Nguyen, 2005, &Karagoi, 2002).

2.2.3. Interest Rates
Corb (2012) regards interest rates as an economic tool used by the Central Bank to control inflation and for economic development. Hartmann (2004) postulates that the ability of a banking sector to allocate credit efficiently through fair lending interest rates will have positive implications for economic growth. On the contrary, Adams (2004) contends that low interest rates lower economic growth by distorting saving decisions and the way lenders allocate credit. Mishkin (2010) argues that decreased interest rates attract capital inflows strengthening the domestic currency. Interest rates are an important variable in the economy as they determine the level of credit that the government, individuals as well as investors are willing to take to finance different economic activities. High interest rates lower demand for credit and vice versa (Keynes, 1936).
Interest rates include deposit rates, which are rates offered on deposits and lending rates, which are rates charged on credit. High deposit rates entice people to keep their savings with deposit taking institutions rather than investing them in other opportunities while higher lending rates discourage borrowing lowering investments and consumption. Deposits are the sources of funds for lending and therefore policy makers should come up with policies that favor high deposit rates to attract deposits and low lending rates to promote investments (Kinyua, 1997). This study will focus on lending rates only. Interest rates are measured monthly as well as annually. This study will use the annual average interest rates.

2.2.4. Exchange Rates
Changes in exchange rate will affect economic growth through the balance of payment of a country whereby imports will become expensive hurting growth especially for countries like Kenya that import capital equipment and manufactured goods that fetch high prices in the international market, (Slaughter,2001 &Miles, 2006).Dornbusch (2001) and Miles(2006) contend that there are two channels through which a stable exchange rate positively affect growth: first, it lowers risk and hence interest rates promoting investments and growth and secondly, it promotes growth by lowering the transaction costs associated with international trade. Exchange rates are measured at average on monthly, quarterly and annual basis.

2.3. The Concept of Economic Growth
Economic growth refers to the annual increase in GDP (World Bank, 2013). GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products (World Bank, 2013). Economic growth has been a major concern for all economists ranging from classical, Keynesian and modern economists. Smith (1776) and other classical economists looked at economic growth from the perspective of the wealth of a nation and this concept has evolved over the years. Kenya is currently a low-income country. According to the World Bank definition and statistics, a low-income country is one whose gross national income (GNI) per capita is equal to or less than $1,045. However, the Kenyan vision 2030 seeks to transform the country into a middle-income country by the year 2030.To achieve this, GDP is expected to grow at an annual rate of 10%. To achieve this target, the Kenyan government has put in measures and targeted specific sectors that will propel the economy towards sustained growth.

2.4. Empirical Literature on Macroeconomic Variables and GDP Growth
This section discusses works done by various scholars both in Kenya and abroad on macroeconomic determinants of GDP growth with a view of gaining insight into the subject matter.

2.4.1. Foreign Direct Investments and Economic Growth
Several studies have shown that FDI impacts positively on growth. Borensztein et al (1998) contends that FDI promotes growth through enabling the transfer of technology from the foreign firms to the host countries industries. Findlay (2001) also agrees with Borensztein that the technical progress that results from FDI is critical in promoting growth by having "contagious effects" on other sectors of the host country. Todaro and Smith (2003) noted that FDI will increase the revenue of the government through taxes, improve management because foreign firms usually train their employees overseas and also improve the labour skills of the host country. There are also studies that have found adverse as well as inconclusive effects of FDI on growth but this study expects a positive relationship between FDI and growth and seeks to critic these studies.
Studies conducted in Kenya also confirm the hypothesis that Foreign Direct Investments promote growth. Abala (2014) investigated the impact of foreign direct investment on economic growth in Kenya for the period 1970 to 2010. Using the Johansen Juselius Cointegration approach, the study found out that Kenya's FDI is market seeking and thus recommended measures that seek to enhance the market such as rise in GDP, political stability, good infrastructure and reduction in corruption. Having observed that FDI depend on the GDP of a country, this study aims at determining whether FDI on the other hand influences growth in GDP. Similarly, Arcade

(2009) who studied the relationship between foreign direct investments, exports and economic growth in 16 COMESA countries Kenya included for the period 1983 to 2007, found out that FDI inflow expands exports volume and accelerates economic growth. The study used Hurlin and Venet's tests for homogenous granger causality tests and Pesaran's test for heterogeneous granger causality test. Similar results were found by Mwangi (2014) while investigating the effect of FDI on economic growth in Kenya for the period 2004 and 2013 though the study used a different method of data analysis from the former. The three studies gave policy recommendations that seek to enhance the level of FDI in the country. Such policies include opening up the economy by engaging in bilateral and multilateral trade agreements, infrastructural development and fighting corruption to build on investors' confidence.

Among the major goals of the Kenyan Vision 2030 is to enhance the country's competitiveness in the global arena so as to attract Foreign Direct Investments. Several measures have been undertaken in this respect and this study seeks to fill the knowledge gap by establishing what effects such measures have had on economic growth.

2.4.2. External Debts and Economic Growth

Were (2001) investigated the impact of external debt on economic growth in Kenya. Using the vector error correction model and time series data for the period 1970 to 1995, the study looked at the structure of Kenya's external debts and its effect on growth. The findings were that there existed a debt overhang problem in Kenya whereby although debt stimulated investment, its servicing could lead to the crowding out of other investments. The study gave recommendations for proper macro management of the economy for good credit rating and encouraged policy makers to come up with ways whereby financing of economic activities is through export earnings. This study seeks to determine whether Kenya's debt has increased or decreased since the time of her study and whether its implications on growth have changed or remained the same.

Contrary to the study by Were, Utomi (2014) analyzed the impact of external debts on economic growth in Nigeria. Using the vector error correction model, the study found out that there exists an insignificant and bidirectional relationship between external debts and growth in Nigeria. This research project seeks to establish whether the same relationship exists between external debts and growth in Kenya.

The findings by Siti, Ahmad and Saini (2013)who investigated whether external debts contribute to Malaysia's economic growth, were different from those of both Were and Utomi in that their study found a long run and positive relationship between external debts and economic growth up to the threshold level above which debt adversely affects growth. The study tested time series data for the period 1991 to 2009 using Cointegration approach. Another study by Faraji and Makame (2013) investigating the impact of external debts on the economic growth of Tanzania for the period 1990 to 2011 found out that total external debt stock has a positive effect while debt service payment has a negative effect on growth. Cointegration tests further showed that there is no long run relationship between external debts and growth. Thus, the relationship between external debts and growth varies across economies from a positive, negative to insignificant or no relationship at all. This research thus seeks to determine the scenario for Kenya.

The reviewed studies provide conflicting relationship between external debts and economic growth. While Were contends that external debts stimulate investment, an observation is made that debt servicing may lower growth through the debt overhang hypothesis. The study in Nigeria found an insignificant relationship between external debts and growth while the relationship in Malaysia was positive. There is therefore need to ascertain the relationship between external debts and GDP growth in Kenya.

2.4.3. Interest Rates and Economic Growth

Mutindi (2014) looked at the effect of lending interest rates on economic growth in Kenya. Using regression analysis on time series data for the period 2003 to 2012, the study found out that there is a negative relationship between interest rates and economic growth and thus gave recommendations that the government should put up measures to check interest rates from going up. Similar results were found by Adede (2015) who investigated the relationship between lending interest rates and economic growth for the period 2000 to 2014 Using regression analysis. The period 2014/2015 witnessed sharp increases in interest rates and the researcher seeks to determine what happened to GDP growth.

Obamuyi (2009) investigated the relationship between interest rates and economic growth in Nigeria for the period 1970 to 2006 using Cointegration and error correction model. The study found out that real lending rates have significant effects on economic growth and thus governments should come up with interest rate policies that are investor friendly. This research project seeks to determine whether the same results are replicated in Kenya. Mudaki, Ojala, Mwangi, Obunde and Rombo (2014), conducted a similar study in Kenya for the period 1980 to 2010.Using the error correction model, the study found out that in order to control interest rates, attention must be given to expansionary monetary policies and budget deficits to check against rise in interest rates.

Given that budget deficits have been increasing lately this study therefore seeks to establish what effect this has on GDP growth. These studies are all consistent with economic theories contention that high lending interest rates have a negative impact on investments which adversely affect growth. Lending interest rates in Kenya have been on an upward trend and this study therefore seeks to determine whether this has had any impact on GDP growth.

2.4.4. Exchange Rates and Economic Growth

Asid, Mulok, Lily and Loganathan (2012) investigated the effect of exchange rates on economic growth in Malaysia. The study used time series data for the period between 1971 and 2009 and considered both real and nominal exchange rate to have the same effect on economic growth. The results using the error correction model indicated that exchange rate volatility causes economic instability with no precise results of exchange rate on GDP growth. However, in Bangladesh, the findings of Baziul, Sayema and Mohammad (2012)

while assessing the effect of exchange rate on economic growth, were contradictory to those of Asid et al. The study found out that depreciation in the exchange rate causes real output to increase and thus raises GDP. They used Cointegration approach.

Studies conducted in Kenya on Exchange rates and economic growth too give different results. Onyango (2014) looked at the impact of real exchange rate on Kenya's economic growth using the ECM and annual time series data for the period 1980 to 2012.The results indicated that exchange rate volatility impacts positively on economic growth and thus gave policy recommendations that policy makers should find a balance between depreciation and appreciation of the exchange rate to impact on growth. This is in contradiction to the findings by Asid et al that were that exchange rate volatility impacts negatively on economic growth.

Different results were found in Kenya by Malcolm and Rakovski(2000) who found out that there is no evidence of a strong relationship between changes in exchange rates and GDP growth in their study on the exchange rate and economic growth in Kenya. The study rather postulated that Kenya's GDP is affected by other factors such as monetary and fiscal policy, availability of foreign aid among others. The policy recommendation was thus that exchange rate should be managed alongside other economic variables to improve growth. The study used the error correction model and analyzed data for the period between 1970 and 1996.Oure (2013) analyzed the effect of exchange rate fluctuations on GDP in Kenya for the period 2008 to 2012 using regression analysis. The study findings were that exchange rate fluctuations have significant adverse effects on growth such as lowering real output growth and demand for investment and exports as well as raising inflation. These findings were similar to that of Asid et al though conducted in a different economic setting but different from the studies conducted in Kenya. The study informed policy that inflation should be controlled to achieve stability in the exchange rate.

As can be seen from the above review, different studies have found conflicting relationship between exchange rate and economic growth both domestically and abroad. The three studies conducted in Kenya particularly had different findings and this study therefore aims to establish whether exchange rate has a positive, negative or no significant effect on GDP growth in Kenya.

2.5. Theoretical Review

This section discusses the theories of growth namely the neoclassical model by Solow and Swan, the Harrod Domar model and the Endogenous growth model.

2.5.1. Neoclassical Model of Growth

The neoclassical model of growth was developed by Solow and Swan (1956). This model emphasizes on capital accumulation and its related decision of saving as important determinants of growth. The neoclassical production function considered two inputs, that is, labour and capital as determinants of output. It also considers exogenous technology. Growth of output in this model is achieved in the short run through higher rates of savings and capital formation. The neoclassical model postulates that in the long run growth in per capita GDP is driven by technological change. Without technological change, growth will be possible at first but this growth will soon be offset by diminishing marginal product of capital. Thus, according to the neoclassical theory, FDI accelerates economic growth by increasing per capita capital. It spurs long run growth through research and development and development of human capital.FDI have other benefits on the process of growth through technical transfers to affiliated business and also technology spillovers to other sectors of the economy (Ikiara, 2003).

2.5.2. Harrod Domar Model of Growth

Harrod and Domar (1948) in their model of growth emphasize the key role of investments in the process of growth. Investments according to this model, enhanced growth through two effects. First, through the demand effect, investment creates income which increases demand for goods and services; second through the supply effect, it augments the production capacity of the economy. Hence so long as investment is taking place, real income and output will continue to increase. This model by Harrod and Domar is based on the following assumptions: there is an initial full employment level of income, there's absence of government interference, the economy is closed with no foreign trade, there are no lags between investments and creation of productive capacity, there is no depreciation of capital goods which are assumed to possess infinite life, the general price level is constant and there's a fixed proportion of capital and labour in the productive process. The HarrodDomar model is a linear production function with output given by a capital stock times a constant A. in order for a country to realize growth new investments or addition to the capital stock are necessary. An assumption is hereby made that there is a direct relationship between capital stock size (K) and total GDP(Y).

2.5.3. Endogenous Growth Model

The endogenous growth theory developed by Arrow, Romer and Lucas emphasizes technical progress resulting from the rate of investment, the size of the capital stock and the stock of human capital. It is based on the following assumptions: there are many firms in the market, knowledge or technical advancement is non-rival, technological advance comes from things people do and that there are increasing returns to all factors taken together and constant returns to a single factor.

This theory takes technological change as being endogenous, that is, it is determined within the economy by factors such as funding of science, accumulation of human capital and other economic activities. To incorporate this aspect of endogenous technology, there is need to have a case where there are increasing and not constant returns to scale.

Arrow (1962) was the first economist to come up with a solution to this problem through his theory of learning by doing. Learning by doing forms the basis of the first model of endogenous growth theory also known as the AK model. He contemplated that at any moment of time new capital goods incorporate all the knowledge available then based on accumulated experience. But once they are built, any productive deficiencies in these capital goods cannot be changed by subsequent learning. This model postulates that when

people accumulate capital, learning by doing generates technological progress which increases the marginal product of capital thus overcoming the problem of diminishing marginal product of capital prevalent in the neoclassical model. This results in a production function of the form Y=AK. In which the marginal product of capital is equal to the constant K.

Levhari and Sheshinski extended Arrow's model of learning by doing by emphasizing that an increase in a firm's investment leads to parallel increase in the level of knowledge through spillover effects. The King-Robin model on the other hand emphasizes on learning by watching in its technical progress function. According to this model investment by a firm stem from the need to solve a problem it faces. If it's successful, other firms in the market will adopt this innovation to solve similar needs. Thus, externalities resulting from learning by watching are keys to economic growth. This model postulates that investment in one sector of the economy has the contagion and distribution effects on other sectors of the economy leading to overall economic growth. Romer (1986) in his model on endogenous growth emphasizes on learning by investment. He assumes creation of knowledge as a side product of investment and thus takes knowledge as an input in his production function.

Lucas (1988) endogenous growth model is based on investment in human capital, which is considered crucial in the growth process. Lucas distinguishes between the internal effects of human capital in which the individual worker undergoing training becomes more productive and the external effects which spillover and increases the productivity of capital and other workers in the economy. The endogenous growth theory's emphasis on endogenous growth factors implies that countries are able to achieve self-sustained growth leading to divergent economies.

This model emphasizes the importance of FDI in the process of growth. The endogenous growth model postulates that FDI will positively influence economic growth by promoting increasing returns to production through externalities such as technological spillovers and development of human capital.

2.6. Conceptual Framework

A conceptual framework is a diagrammatic representation showing the relationship between the independent variables and dependent variable. The conceptual framework for the study is shown in figure 1

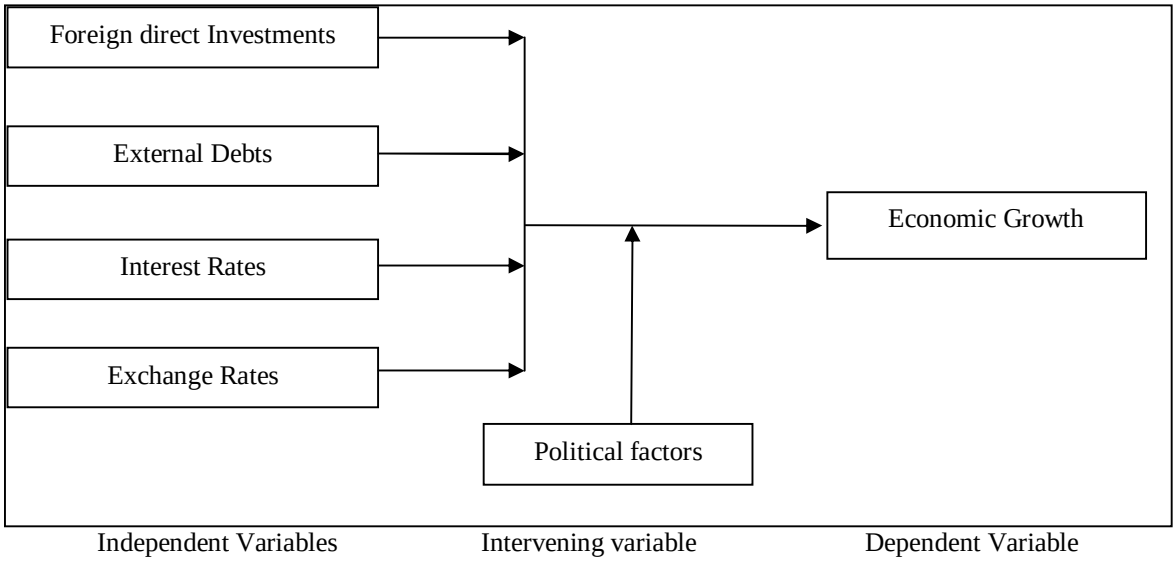

Figure 1: Relationship between Macroeconomic Determinants and Economic Growth

Figure 1 show the relationship between dependent variable Economic growth and independent variables: external debts, interest rates, foreign direct investments and exchange rates. Foreign Direct Investments impact on Economic growth positively by increasing employment opportunities, transfer of technical and managerial knowhow to the host country and through filling the savings, investments and foreign exchange gaps. External debts are negatively related to Economic growth if its repayment crowds out other expenditures or if a country's debts exceed its ability to repay them. However external debts up to the allowed threshold and if used to finance productive activities boost GDP growth.

High Lending interest rates affect Economic growth adversely through lowering the level of investments in a country. Exchange rate volatility affects Economic growth adversely through reducing investors' confidence and negative effects on the balance of payment.

The relationship between Economic growth and macroeconomic variables is affected by qualitative factors such as the political factors. Political stability will accelerate Economic growth by instilling confidence in investors while political instability hinders growth. The Economic growth of Kenya was adversely affected in the periods 1992, 1997 and 2007 when violence broke out of the political process. These factors are going to be included in the model by use of a dummy variable.

2.7. Operationalization of Variables

Variable	Measurement
Foreign Direct Investments	Total Annual Foreign Inflow in Kenya shillings
External Debts	Total External Debt Stock as a percentage of GDP
Lending Interest Rates	Annual Average Interest Rates
Exchange Rates	Annual Average Exchange Rates
Economic Growth	Annual percentage change in GDP growth

Table 1: Operationalization of Variables

3. Methodology

3.1. Introduction

This chapter presents the research design, location of the study, population, sampling procedure and sample size, research instruments, ethical considerations data collection and data analysis.

3.2. Research Design

The study used causal research design. This is because the study aimed at establishing whether there was a cause effect relationship between the dependent and the independent variables (Cooper& Schindler, 2011).

3.3. Location of the study

The study analysed the macroeconomic determinants of Economic growth in Kenya. The location was chosen because Kenya had experienced fluctuations in Economic growth among its neighbours despite it being considered as the regional economic hub (Dupas and Robinson, 2011). The researcher therefore sought to determine why these fluctuations in Growth as well as instabilities in macroeconomic factors continued to be experienced in Kenya.

3.4. Population of the Study

Kothari (2014) defines population as all items in any field of inquiry. The population of the study comprised all data on exchange rates, external debts, foreign direct investment and lending interest rates from independence (1963) to 2014/2015 fiscal year.

3.5. Sampling Procedures and Sample Size

The study adopted purposive sampling. Purposive sampling allows the researcher to deliberately choose the items that he or she feels are supreme for the study, (Kothari, 2004). The study used a sample size of macroeconomic data for 30 years from 1985 to 2015.This is the period during which stabilization policies begun to be implemented by the government to improve Economic growth. It also focused on four macroeconomic factors namely Exchange rate, External debt, foreign direct investments and lending interest rates and their impact on Economic growth. The exchange rate and lending interest rates had been unstable in the country and this prompted an inquiry into how such fluctuations had affected the growth of the country. With growing deficits and the need to finance them through external debts, it was necessary to consider whether debts accelerated or inhibited growth. Foreign direct investments are a major source of growth in many countries with a perfect example of the newly industrialized countries of Asia's rapid growth being attributed to investments by multinationals.

3.6. Research Instruments

A checklist was used to collect data on Economic growth rate and on independent variables which were foreign direct investments, external debts, interest rates and exchange rate. The data was obtained from the World Bank data bank, IMF statistics as well as the Kenya National bureau of Statistics. The content validity was sought from the supervisors and other experts in the field of economics.

3.7. Ethical Considerations

The researcher upheld the integrity of research by avoiding plagiarism. This was ensured by acknowledging all the works cited in the study that were not the researcher's as well as sources of data used in the analysis. The researcher also sought Consent from the Chuka University Ethics committee as well as from NACOSTI to collect data and conduct the research as well as any other consent that was needed to obtain data from any secondary source.

3.8. Data Collection

This study used annual time series data obtained from secondary sources. Time series data refers to data collected over a period of time and it is characterized by seasonality, trend, cyclical and random components, (Gujarati and Porter, 2010). The sources of data included statistics from the Kenya national bureau of statistics, statistical abstracts and economic surveys, World Bank's and IMF's world development indicators. The data was collected by filling the checklist for the period of 30 years from 1985 to 2015.This period is long enough for economic inferences to be made from its analysis. Data for each variable was considered from a single source for uniformity.

3.9. Data Analysis

The data analysis was conducted using Pc Give Ox metrics and Eviews softwares. These were the softwares used to analyze time series data. Ox metrics is a family of software packages for econometric and financial analysis of time series, forecasting, econometric model selection and for the statistical analysis of cross sectional and panel data developed by Jurgen and Hendry, (Renfro, 2004). Eviews is a statistical package for windows used mainly for time series econometric analysis. A multivariate regression model was used to analyse the cause effect relationship between the dependent variable and the independent variables.t-test and F-test were used to test the significance of the regression coefficients and the overall model respectively at 5% level of significance.

3.9.1. The Model

To analyse the determinants of economic growth, a multivariate regression model was used. The independent variables were foreign direct investments, external debts, lending interest rates and exchange rate while the dependent variable was economic growth. The variables were log linearized to take care of non-linearities in the relationship between economic growth and any of the independent variables as well as to test for stationarity. A dummy variable for political factors was also included in the model. The dummy variable took the values of 0 and 1; 0 indicating the absence of political factors and 1 indicating their presence. Since the value of the dummy was fixed OLS estimation was used to establish whether the dummy variable affected economic growth. The model is presented as follows:

$$\Delta \log Y_t = \beta_1 \Delta LogFDI_t + \beta_2 \Delta LogINT_t + \beta_3 \Delta LogEXCRATE_t + \beta_4 \Delta LogEXTDBT_t + D_{1t} + +\mu_t$$

Where;

- Y - GDP Growth
- FDI -Foreign direct investment
- EXCRATE -Exchange Rate
- EXTDBT -External Debt
- INT -Interest Rates
- D1 -dummy variable for political factors

3.9.2. Estimation Techniques

These were the techniques employed in analyzing the data as well as the tests carried out before the data was analyzed.

3.9.2.1. Error Correction Model

In order to test the long run relationship between Economic growth and the variables the error correction model was used. The ECM was suited for this study because it enabled the researcher to establish whether there was not only a short run but also a long run relationship between the dependent and independent variables. The error correction process was systematic and involved first ensuring that the data was stationary by carrying out unit root tests and then finding out the Cointegration vector before determining the error correction term.

3.9.2.2. Unit Root Test

It is imperative to ensure that economic data is stationary before embarking on any analysis to avoid spurious and misleading regression results, (Phillips, 1986). To test for stationarity of the data, this study used the Augmented Dickey Fuller unit root test as proposed by Dickey and Fuller in 1979 and refined by them in 1981. The ADF indicated whether the data was stationary. A null hypothesis of non-stationarity was tested against the alternative hypothesis of stationarity. The Neyman Pearson Framework was used for making decision on whether to reject or accept the null hypothesis. If the Mackinnon t statistic is less than the t critical, we reject the null hypothesis and accept the alternative one. Next, the study employed the Phillips Perron tests proposed by Phillips and Perron in 1988 to increase the validity and reliability of the unit root tests performed using ADF test.

3.9.2.3. Cointegration

The application of vector error correction model required pre-testing the variables to determine whether the variables were cointegrated or not and whether they were cointegrated of the same order. If the variables were to be cointegrated of different orders, then we would make them co integrated of the same order by differencing and then counting the Cointegration vectors. Cointegration tests were conducted using the Engle granger two step method. This method started by first checking for stationarity of the variables using the ADF statistic. After testing for stationarity, the researcher then ensured that the variables were integrated of the same order after which the model was then be estimated using ordinary least squares method. The next step involved testing for stationarity of the residues or the error term. If the error term was stationary, then there was proof of Cointegration.

3.9.2.4. Granger Causality Test

This was run to establish whether there was any relationship between the dependent variable and each of the independent variables and whether the relationship was unidirectional or bidirectional. It would be unidirectional if X caused Y but Y didn't cause X and bidirectional if Y caused X and X caused Y. If there was no relationship between the dependent variable and any independent variable, then there it would be irrelevant to include that variable in the regression. Granger causality was tested by comparing the P

value with the significance level. If the P value was greater than the significance value the null hypothesis of non-causality was rejected and the alternative hypothesis accepted.

3.9.3. Diagnostic Tests

The use of economic time series data necessitated the use of vector auto regression.VAR was used in time series data because it used lagged values of the dependent variable as the independent variable. The study applied normality, lag order selection and langrage multiplier diagnostic tests for Vector auto regression and carried out tests to detect econometric problems of multicollinearity, Heteroscedasticity and autocorrelation.

3.9.3.1. Multicollinearity

Multicollinearity occurs when the explanatory variables in a model are related. The classical linear regression analysis that the explanatory variables are independent of each other so that the relative effect of each one of them on the explained variable can be independently established. Multicollinearitywas detected using the coefficient of multiple determination R^2 and t ratios. HighR^2 ratio with few significant t ratios would indicate the presence of multicollinearity. Perfect collinearity between variables is the only one that presents serious analytical problems.

3.9.3.2. Lagrangian Multipliers Test for Residual Autocorrelation

LM tests were carried out to check whether autocorrelation existed in the residuals. Autocorrelation occurs when the variance of the error term in one-time period is serially correlated with the variance of the error term in another time period the null hypothesis of no autocorrelation was tested against the alternative hypothesis of autocorrelation and the decision rule was to accept the null hypothesis if the obtained critical value was more than 0.5. The Durbin Watson d statistic was also being used to test for autocorrelation. The d statistic ranges between 0 and 4 with a d statistic of 0 indicating evidence of perfect positive autocorrelation and that of 4 indicating perfect negative autocorrelation d statistics ranging between 2 and 2.5 indicate absence of autocorrelation.

3.9.3.3. Generalized Autoregressive Conditional Heteroscedasticity (GARCH)

Classical linear regression model assumes constant variance of the error term. Heteroscedasticity occurs when this assumption is violated. To test for Heteroscedasticity this study used white's heteroscedasticty test.

3.9.3.4. Test for Normally Distributed Disturbances

The classical linear regression model assumes that the error term is normally distributed. To test for normality, the null hypothesis that the error term is not normally distributed is tested against the alternative hypothesis of normally distributed disturbances using the skewness statistic. The data is normal if the skewness statistic lies between ± 3.

3.9.3.5. Lag Order Selection

VAR was used in time series data because it uses lagged values of the dependent variable as the independent variable. To determine how many lags to use, this study used the Akaike Information Criterion (AIC). The model with the least AIC value was chosen.

Hypothesis	Independent Variable	Dependent variables	Expected Coefficient sign	Test statistic
FDI does not have no statistical significance effects on economic growth in Kenya.	FDI	Economic growth	positive	t -test
External debts have no significant statistical effects on Economic growth in Kenya.	External Debts	Economic growth	Negative	t-test
Interest Rates have no significant statistical effects on Economic Growth inKenya.	Interest Rates	Economic growth	Negative	t-test
Exchange Rates have no significant statistical effect on Economic growth in Kenya.	Exchange Rates	Economic growth	Negative	t-test

Table 2: Data Analysis Matrix

4. Results and Discussions

4.1. Introduction

This chapter discusses the findings of the research with respect to the objectives of the study. Descriptive statistics from Stata were first discussed and thereafter econometric as well as diagnostic tests results from Eviews and Pc Give ox metrics softwares. The study also used vector auto regression therefore VAR diagnostic tests, that is, langrage multiplier and lag order specification tests were carried out.

4.2. Diagnostic Tests

Diagnostic tests were carried out to determine whether the data adhered to the assumptions of the classical linear regression model. In this respect, the data was tested for autocorrelation, heteroscedasticty, normality and multicollinearity. The presence of any of this problem will lead to inaccurate results and estimation.

4.2.1. Descriptive Statistics and Normality Test

The classical linear regression assumes normally distributed error term. The skewness statistic was used to test the normality of the data of each of the variables. For normal data, the skewness statistic should be within the range of ±3.The descriptive statistics results are presented in table 3

Statistic	LNGR	LNFDI	LNEXTDBT	LNIR	LNER
Mean	3.8855	1.26	54.5712	19.5068	58.6269
Std.Dev	2.3987	1.76	28.7076	6.7417	24.9667
Skewness	-0.2707	2.1385	-0.7554	1.0993	-0.6582
Kurtosis	2.1533	6.7806	2.9766	3.3302	1.9497
Observations	30	30	30	30	30

Table 3: Descriptive Statistics

From table3 the growth rate, foreign direct investments, external debts, interest rates and the exchange rate averaged 3.885.1.26, 54.57, 19.5068 and 58.62 respectively. The data on all variables is normal since the skewness statistic are within the acceptable range of ±3.The data is thus suited for further analysis.

4.2.2. Multicollinearity

Multicollinearity occurs when the explanatory variables in a model are related. Multicollinearity was tested using the R^2.A high R^2value with few significant t- ratios is an indicator of multicollinearity. From the model in table 9the R^2 is 0.9885 implying that 98.85% variations in the dependent variable can be explained by the changes in independent variables. All the t values were significant hence the absence of multicollinearity. The effect of each independent variable on the dependent variable could therefore be isolated with ease.

4.2.3. Heteroscedasticity Test

Heteroscedasticity occurs when the classical linear regression model assumption of equal variance of the error term is violated. The presence of heteroscedasticty in the data poses serious problems of wrong coefficients of the model and insignificant t ratios. To check for heteroscedasticty whites test was used and the results are as presented in table 4. The data is homoscedastic if the probability is greater than the p value at 0.05 significance level. The results of heteroscedasticty test are presented in table 4.

F statistic	0.2300	P-value	0.9808
Obs*R-squared	2.4175	P-value	0.9654

Table 4: Whites Heteroscedasticity Test

From table 4 the p value of the F statistic is 0.9808> 0.05hence we conclude that there is absence of heteroscedasticty therefore meaningful statistical inferences can be made from the data.

4.2.4. Langrage Multiplier Test

The LM test was used to check for autocorrelation. Auto correlation occurs when the error term in one-time period is serially correlated with the error term in another time period. The null hypothesis is that there is no autocorrelation at the selected lag order. The decision rule is to accept the null hypothesis if the computed probability is greater than 0.05.

Lag	Chi2	Df	Prob>chi2
1	0.7326	1	0.3920
2	0.0068	1	0.9344

Table 5: LM multiplier Test

From the table 5, the probability value of lag 1 which minimizes AIC is 0.39206>0.05 hence we accept the null hypothesis that there is no autocorrelation. The problem of autocorrelation does not therefore exist thus the statistical inferences derived from the data will be meaningful.

4.2.5. Lag Order Selection Criteria

Time series data in one period may be related with data in another time period hence the need to use lags to take care of this relationship. The lag order selection criteria will show the most appropriate lag to use for the data. An appropriate lag specification is one that minimizes the AIC value. The results from the model are presented in table 6.

Lag	AIC	SBIC
0	3.5846	3.8265
1	3.5000	3.7904
2	3.4554	3.7940
3	3.4408	3.8279
4	3.4069	3.8424

Table 6: Lag Specification Tests

From the table 6 the lag length that minimizes the AIC value is 4 so the model will use lag length 4.

4.3. Granger Causality Test

Granger causality seeks to establish the existence of a causal relationship between economic growth and the four determinants and the nature of such relationship. The relationship can be unidirectional, bidirectional or neutral.

The null hypothesis of non-causality between the variables is accepted if the probability value is greater than 0.05. The results of the test are shown in table 7.

Null hypothesis	Obs	F-statistic	Probability
LNGR does not Granger Cause DLNER	29	0.2341	0.6325
DLNER does not Granger Cause LNGR	29	0.6483	0.0428
LNGR does not Granger Cause DLNETRDBT	29	0.4578	0.5046
DLNETRDBT does not Granger Cause LNGR	29	0.0027	0.0161
LNGR does not Granger Cause DLNFDI	29	0.0022	0.9629
DLNFDI does not Granger Cause LNGR	29	1.3013	0.0264
LNGR does not Granger Cause DLNIR	29	0.1036	0.7501
DLNIR does not Granger Cause LNGR	29	0.0056	0.0405

Table 7: Granger Causality Tests

From table 7 the relationship between economic growth rate and each of the four independent variables is unidirectional, that is, each of the independent variables granger causes economic growth but economic growth does not granger cause any of the four variables. The model is thus suited for analysis because there exists a relationship between the dependent variable and all the independent variables.

4.4. Unit Root Tests

The use of time series data necessitates testing of stationarity to avoid spurious regression results because the estimates will lack constant mean and variance. This study therefore tested stationarity of data as well as what order they are integrated. Augmented Dickey Fuller was applied. Stationarity of data was first conducted at level form and the variables that were non-stationary at level form were differenced for further tests. The decision rule is to reject the null hypothesis of stationarity if the computed ADF statistic is less than the critical ADF. The results of the test are presented in table 8.

Variable	Estimation level	Test statistic	Critical value	status
LNGR	Level	-2.805	-1.95	stationary
LNFDI	Level	0.0975	-1.95	Non-stationary
D_LNFDI	1st difference	-8.714	-1.95	stationary
LNEXTDBT	Level	-1.307	-1.95	Non-stationary
D_LNEXTDBT	1st difference	-4.162	-1.95	stationary
LNIR	Level	-0.1771	-1.95	Non-stationary
D_LNIR	1st difference	-4.596	-1.95	stationary
LNER	Level	1.852	-1.95	Non-stationary
D_LNER	1st difference	-3.685	-1.95	stationary

Table 8: Unit Root Tests

From table 8 the data on all variables except the growth rate is non-stationary at level form since the computed ADF statistics are greater than the Mackinnon critical ADF. The first difference of the independent variables data was then tested for stationarity. At first difference, the data on all independent variables are stationary because the computed ADF statistic for all the four variables is less than the critical ADF.The data can thus be used to make meaningful statistical inferences.

4.5. Cointegration Tests

After testing for stationarity, the study proceeded to test for Cointegration using the Engle granger two step method. Testing for Cointegration is necessary because when variables are differenced to test for stationarity, long run properties are lost. Cointegration

means that there is a long run relationship between two or more variables. The Engle granger two step method checks for Cointegration by testing the stationarity of the residuals. The decision rule is to accept the null hypothesis of Cointegration if the computed ADF statistic for the residuals is less than the critical ADF. The computed ADF value was-4.441, which is less than the Mackinnon critical value of -1.95 at 5% level of significance hence there was Cointegration between the variables implying existence of a long run relationship between dependent and independent variables.

4.6. Error Correction Model

The Cointegration tests show that the variables linking economic growth to its determinants are cointegrated. The error correction model is thus suited to link the short run and long run relationship. The dependent variable for the model is economic growth. The independent variables are foreign direct investments, external debts, lending interest rates and exchange rate. The null hypothesis is that each of the independent variables is not statistically significant in determining economic growth. The null hypothesis is rejected if the t probability is less than the p value at 5% significance level. The overall significance of the model, the short run and long run relationship between economic growth and the independent variables were tested. The results are presented in tables9, 10 and 11.

R^2	F	Significance	DW
0.9885	0.893	0.01338	2.32

Table 9: Overall Model Statistics

From table 9, the R^2 was 0.9885 implying that 98.85 % variations in economic growth were explained by foreign direct investments, external debts, lending interest rates and the exchange rate jointly. The high value of R^2 indicates that the model was strong in predicting economic growth. The F value was 0.893 with a p value of 0.01338 < 0.05 hence the overall model was significant in predicting the relationship between economic growth and the predictor variables. The DW is 2.32 meaning that the data is free of autocorrelation.

Variable	Coefficient	Std.error	t-value	P value	R^2
LNGR	-0.0966	0.2297	-0.421	0.6785	0.0092
Constant	1.6733	0.4576	3.66	0.0017	0.4131
D4Lnfdi	0.1215	0.1693	0.718	0.4816	0.0264
D4Lnetrdbt	-0.9058	0.9552	-0.948	0.354	0.0452
D4Lnir	-0.3487	0.1639	-2.13	0.0467	0.1924
D4Lner	-6.271	0.0004	-0.0141	0.9889	0.0000
Dummy 1	-1.8124	0.8518	-2.13	0.0467	0.2135

Table 10: Short Run Error Correction Model

From table 10, it was observed that in the shortrun, all the independent variables except lending interest had no significant statistical effects on economic growth because their t probabilities are greater than 0.05. Therefore, the null hypotheses that FDI, external debts, and exchange rate have no statistical significant effects on economic growth were accepted. This implies that in the short run none of these variables affects the economic growth of the country. This might be explained by a number of explanations from economic theory. First, the debt servicing occurs in the long run thus external debts won't have major effects on economic growth in the shortrun. Again, fluctuations in the exchange rate and FDI inflows might not be steady in the short run to affect growth. The null hypothesis that lending interest rates have no significant statistical effect on economic growth was rejected in the short run because the p value for interest rates is less than 0.05. This implies that in the short run increase in the lending interest rates will adversely affect economic growth.

Variable	Coefficient	Std. error	t-value	P value	R^2
LNGR	0.0050	0.0026	1.909	0.0000	1.0000
Constant	1.6733	0.7099	2.357	0.0000	1.0000
D4Lnfdi	0.1216	0.1204	1.010	0.0000	1.0000
D4netrdbt	2.0524	-1.2764	-1.608	0.0000	1.0000
D4Lnir	-0.3487	-0.1678	2.078	0.0000	1.0000
D4Lner	-1.8124	-0.7839	2.312	0.0000	1.0000
Dummy	-0.7996	0.3848	-2.078	0.0000	1.0000
residuals	1.00000	0.1335	7.490	0.6973	0.0091

Table 11: Long Run Error Correction Model

Table 11 shows the results of the long run error correction model. The P-values for FDI, external debts, lending interest rates and exchange rate are less than 0.05 and therefore these variables have statistically significant effects on economic growth in Kenya with coefficients of 0.1216, 2.0524, -0.3487 and -1.8124 for FDI, external debts, lending interest rates and exchange rate respectively. The constant is 1.6733, which is the value of economic growth that is not dependent on FDI, external debts, lending interest rates or the

exchange rate. Political shocks have significant statistical effects on economic growth as shown by the P-value 0.000>0.05. The coefficient for the dummy is negative which means that political instability negatively affects the relationship between economic growth and its determinants.

The model is presented as follows,
LNGDP=1.6733+0.1216D4LNFDI+2.0524D4LNEXTDBT-0.3487D4LNIR-1.8124D4LNER-0.7996D+1.00

4.6.1. Effects of Foreign Direct investments on Economic Growth

The study established that foreign direct investments and economic growth are positively and significantly related. This is indicated by the positive coefficient of 0.1216 and P- value of 0.0000<0.05.the results imply that a unit increase in FDI results into an increase in economic growth by 0.1216 units holding other factors in the model constant. The results also indicate that foreign direct investments are statistically significant in determining economic growth rate in Kenya (P-value of 0.000<0.05) Therefore the null hypothesis that FDI has no significant effects on economic growth was rejected and concluded that FDI has statistically significant effects on economic growth. The findings imply that an increase in FDI inflows into the economy will boost economic growth.FDI boosts economic growth by enhancing investments, creation of employment opportunities, technology transfer, boosting foreign exchange earnings and boosting government revenue. The findings are similar to those of Arcade (2009) who studied the relationship between FDI and economic growth in 16 COMESA countries who found out that FDI inflows expand exports volume thus accelerating economic growth. Similar results were found by Mwangi (2014) who found out that foreign direct inflows boost economic growth by expanding output and exports.

4.6.2. Effects of External Debts on Economic Growth

From table 11 there exists a positive significant relationship between external debts and economic growth with a P value 0f 0.000< 0.05. The coefficient for external debts is 2.0524 implying that a unit increase in external debts results into 2.0524 units increase in economic growth holding other factors in the model constant. The null hypothesis that external debts do not have statistical significant effects on economic growth at 5% significance level was rejected leading to the conclusion that external debts significantly affected economic growth in Kenya. The findings imply that a unit increase in external debts would result into a more than proportionate increase in economic growth. These findings were similar to those of Siti, Ahmad and Saini (2013) in Malaysia who found out that external debts had a long run and positive relationship with economic growth. They were also similar to those of Faraji and Makame who found out that total external debt stock affected economic growth of Tanzania positively while the debt servicing affected economic growth negatively. They differed with those of Utomi (2014) in Nigeria who found an insignificant and bidirectional relationship between external debts and economic growth. In Kenya, a study by Were (2001) found out similar results where external debts promote investments although the study established that there exists a debt overhang problem in Kenya.

4.6.3. Effect of Interest rates on Economic Growth

The relationship between lending interest rates and economic growth was found to be inverse and significant with a coefficient of -0.3487 and P- value of 0.000<0.05 at 5 % level of significance. This means that a unit increase in interest rates results in 0.3487 units decline in economic growth. The null hypothesis that interest rates had no significant statistical effects on economic growth in Kenya was thus rejected and concluded that interest rates are significant in the determination of economic growth in Kenya. The findings imply that an increase in interest rates result into a marginal decrease in economic growth. This could be attributed to persistence of investors and utilization of past earnings than loans which moderates the negative effect of an increase in interest rates on economic growth. The findings of this study are compatible with those of Mutindi (2014) in Kenya who found out that there is a negative relationship between interest rates and economic growth and Adede's (2015) in Kenya also who established that high interest rates hurt growth. The findings are also similar to those of Obamuyi's (2009) in Nigeria who found out that lending interest rates had significant effects on economic growth but did not establish whether the relationship was positive or negative

4.6.4. Effect of Exchange Rate on Economic Growth

The findings also indicate that there exists a significant inverse relationship between exchange rates and economic growth in Kenya with a coefficient of -1.8124and P- value of 0.000 < 0.05 at 5% significance level. This implies that a unit increase in exchange rate results to 1.8124 units decline in economic growth holding other factors in the model constant. Further, the null hypothesis that exchange rate had no significant effects on economic growth in Kenya was rejected and concluded that exchange rate has significant statistical effects on economic growth in Kenya. These findings imply that an increase in exchange rate would result into a more than proportionate decline in economic growth. The findings of this study are similar to those of Oure (2013) who found out that fluctuations in the exchange rate have adverse effects on Kenyan economic growth such as lowering real output growth and demand for investment, and those of Asid, Mulok, Lily and Loganathan (2012) in Malaysia who found out that exchange rate fluctuations cause economic instabilities. However, the findings contradict those of Baziul, Sayema and Mohammad (2012) in Bangladesh who found out a positive relationship between exchange rate and economic growth and Onyango (2014) who found an insignificant relationship between exchange rates and growth in Kenya.

5. Summary, Conclusion and Recommendations

5.1. Introduction

This chapter summarizes the findings of the study as per the study objectives. It also provides the conclusion, recommendations and suggestions for further research.

5.2. Summary of the Findings

The purpose of this study was to analyse the macroeconomic determinants of Economic growth in Kenya. This was achieved by analyzing the effects of foreign direct investments, external debts, lending interest rates and exchange rate on the economic growth rate in Kenya. Time series data on the variables for the period 1985 to 2015 was used for the analysis. The error correction model was used for analysis using Stata, Eviews and PcGive ox metrics softwares.

The study revealed that there existed a negative significant relationship between lending interest rates and economic growth in Kenya. The coefficient for interest rates was – 0.3487, implying that a unit increase in lending interest rates resulted in 0.3487 units decrease in economic growth. The P-value was 0.000<0.05 meaning that lending interest rates were statistically significant in determining economic growth in Kenya.

Similarly, the relationship between exchange rate and economic growth was also found to be negative with a coefficient of -1.8124. A unit increase in the exchange rate therefore lead to a decline in economic growth to the magnitude of 1.8124 units when other factors in the model are held constant. The exchange rate was found to be significant in determining economic growth rate in Kenya with P-value 0.000<0.05 at 5% level of significance.

The relationship between economic growth and external debts was found to be positive and statistically significant with a coefficient of 2.0524 and a P-value of 0.000<0.05 at 5% level of significance. Therefore, a unit increase in external debts would lead to increase in economic growth by 2.0524 units holding other factors in the model constant. The null hypothesis that external debts have no significant effects on economic growth was rejected and a conclusion made that external debts have statistically significant effects on economic growth in Kenya.

Foreign direct investments had a positive significant relationship with economic growth with a coefficient of 0.1216 and P-value of 0.000<0.05. This implies that a unit increase in FDI results into 0.1216 units increase in economic growth holding other factors constant. The null hypothesis that FDI do not have statistically significant effects on economic growth in Kenya was rejected and concluded that FDI have significant effects on economic growth in Kenya.

The R^2 was 0.9885 implying that 98.85% of the variations in economic growth are explained by foreign direct investments, external debts, lending interest rates and the exchange rate. The overall significance of the model was tested using the F statistics and an F statistic of 0.493 with a p value of 0.01338 was obtained implying that the model was significant and reliable in predicting economic growth in Kenya.

5.3. Conclusions

Conclusions were made from the findings of the study. First it was established that FDI had a positive significant relationship with economic growth. It was therefore concluded that an increased inflow of foreign direct investments will accelerate the economic growth rate of Kenya. Hence the null hypothesis that FDI are statistically not significant in determining economic growth was rejected and concluded that FDI had a significant statistical effect on economic growth at 5% level of significance.

The relationship between external debts and economic growth was also found out to be positive and statistically significant. A conclusion was therefore reached that accumulation of external debts stock in the economy lead to an increase in the growth rate of the economy. The null hypothesis was rejected at 5% level of significance and the researcher therefore concluded that external debts had statistically significant effects on the economic growth of Kenya.

The research findings also revealed that lending interest rates had a negative significant relationship with economic growth. A conclusion was thus reached that economic growth rate was bound to decline when the cost of credit in the country went up. The null hypotheses that lending interest rates had statistically insignificant effects on economic growth was rejected and a conclusion made that interest rates had statistically significant effects on the economic growth Kenya at 5% level of significance.

Lastly, the exchange rate had a significant but inverse relationship with the economic growth rate in Kenya. A conclusion was thus made that rise in the exchange rate negatively affects economic growth. The null hypothesis that exchange rate had no significant effect on economic growth in Kenya was rejected and concluded that the exchange rate has statistically significant effects on economic growth in Kenya at 5% level of significance.

5.4. Recommendations

Following the findings of this study, the following recommendations are suggested:

i. Policy makers should create a conducive environment for foreign investments inflows to boost FDI as it accelerates economic growth.
ii. External debts though found to promote economic growth should be controlled to avoid a debt overhang problem. This is because the average debt for the study period was beyond 50% of GDP and this implies that the country might experience future problems in debt repayment.
iii. Interest rates should be kept within the range that does not interfere with investments and aggregate demand in the economy.

iv. The central bank should take measures to prevent the exchange rate from going up because increases in the exchange rate hurt economic growth.

5.5. Suggestions for further Research

From the findings of this study, the following areas are suggested for further research:

i. To determine the effects of interest rates on economic growth since the interest rates have reduced considerably following the implementation of law capping interest rates.
ii. To determine the effect of foreign direct outflows on the economic growth of the country to establish whether it has similar effects with the foreign inflows.

6. Abbreviations and Acronyms

- ADB : African Development Bank
- ADF : Augmented Dickey Fuller
- AIC : Akaike Information Criterion.
- ASAL : Arid and Semiarid Land
- CBK : Central Bank of Kenya
- COMESA : Common Market for Southern and Eastern Africa
- DW : Durbin Watsons Statistic
- ECM : Error Correction Model
- ERS : Economic Recovery Stimuli
- FDI : Foreign Direct Investment
- GDP : Gross Domestic Product
- GNI : Gross National Income
- IMF : International Monetary Fund
- LAPSSET : Lamu Port Southern Sudan Ethiopia Transport corridor
- LDCs : Less Developed Countries
- LM : Lagrange Multiplier
- MTP : Medium Term Plan
- NAAIP : National Accelerated Agricultural Inputs Project
- NACOSTI : National Commission for Science Technology and Innovation
- SGR : Standard Gauge Railway
- UK : United Kingdom
- USA : United States of America
- VAR : Vector Auto Regression
- VIF : Variance Inflation Factor

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APPENDICES

APPENDIX I: DATA COLLECTION CHECKLIST

Year	Economic growth rate (%)	Exchange Rate (annual average Exchange Rate)	External Debt (as a % of GDP)	Lending Interest Rate (Annual average)	Foreign Direct Investment (nominal foreign inflows)
1985	4.300562	16.43212	70.56247	14	28845949
1986	7.177555	16.22574	65.76979	14	32725777
1987	5.937107	16.45449	75.2014	14	39381344
1988	6.203184	17.7471	72.3342	15	394430.6
1989	4.690349	20.57247	73.25897	17.25	62189917
1990	4.192051	22.91477	85.97473	18.75	57081096
1991	1.438347	27.50787	95.82897	18.9975	18830977
1992	-0.79949	32.21683	87.8233	21.0675	6363133
1993	0.353197	58.00133	131.8993	29.98917	1.46E+08
1994	2.632785	56.05058	104.9897	36.24	7432413
1995	4.406217	51.42983	83.76172	28.79583	42289248
1996	4.146839	57.11487	57.64622	33.78667	1.09E+08
1997	0.474902	58.73184	49.94901	30.245	62096810
1998	3.290214	60.3667	48.86876	29.49	26548246
1999	2.305389	70.32622	51.29001	22.38	51953456
2000	0.599695	76.17554	49.21462	22.33917	1.11E+08
2001	3.779906	78.5632	43.37655	19.66583	5302623
2002	0.54686	78.74914	47.48143	18.45333	27618447
2003	2.932476	75.93557	47.04352	16.57333	81738243
2004	5.1043	79.17388	43.80711	12.53167	46063931
2005	5.906666	75.55411	34.67708	12.8825	21211685
2006	6.472494	72.10084	25.98917	13.63553	50674725
2007	6.85073	67.31764	23.68505	13.34034	7.29E+08
2008	0.232283	69.17532	21.24461	14.01694	95585680
2009	3.30694	77.35201	23.25846	14.80454	1.16E+08
2010	8.402277	79.23315	22.11071	14.3715	1.78E+08
2011	6.111613	88.81077	25.00388	15.04676	3.35E+08
2012	4.554912	84.5296	23.39461	19.72341	2.59E+08
2013	5.687231	86.12288	24.99804	17.31346	5.14E+08
2014	5.328058	87.92216	26.69319	16.51393	-1E+09