THE EFFECT OF NATIONAL DEBT ON ECONOMIC GROWTH IN KENYA

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DECLARATION

This research project is my original work and has not been presented to any other institution of higher learning for an award of a degree, diploma or certificate.

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

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I dedicate this MBA project to my family. Special gratitude goes to my ever loving parents Mr. John Kang'ara and Mrs. Lucy Kang'ara for their unremitting moral support and prayers.

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LIST OF ABBREVIATIONS AND ACRONYMS

GDP Grosses Domestic Product

NNP Net National Product

OLS Ordinary Least Squares

ABSTRACT

Kenya recorded a Government Debt to GDP of 49.80 percent of the country's Gross Domestic Product in 2014. Government Debt to GDP in Kenya averaged 55.06 percent from 1998 until 2014, reaching an all-time high of 78.30 percent in 2000 and a record low of 42.80 percent in 2008. However, this has been fluctuating overtime due to lack of economic stability in Kenya. This study therefore sought to investigate the effect of national debt on economic growth in Kenya. To achieve this goal, the study used a descriptive research design. The used secondary data for a period of ten years (2005-2014), this data obtained from Central bank of Kenya. A regression model, descriptive statistics and Correlation analysis were used for analyzing the data. The study concluded that national debt was negatively related to economic growth in Kenya. This implied that increase in national debt impacted negatively on economic growth. The regression model used in this study was statistically insignificant in explaining the effect of national debt on economic growth in Kenya. Further net exports and consumption contributed positively to GDP. An increase in national debt, interest rates and inflation was found to impact negatively on economic growth. Due to time and funding constraints the study limited itself to Kenya only. It would have been more appropriate for the researcher to conduct a comparative study in East Africa and other neighboring countries that are similar in terms size and areas of intervention, the findings can then be compared and conclusion drawn on concrete facts. The Kenya government should find ways of increasing consumption and net exports in order to enhance economic growth. The Kenya government should look for alternative means of raising revenues other than use of debt either internally or externally. This country should try and raise adequate revenues through taxes, treasury bills and bonds and privatization to mitigate national debt and borrowing in order to boost economic growth. A comparative study should be conducted for a period of more than ten years in order to obtain more detailed and conclusive results that can be used to make generalization in another middle income country like Kenya that is similar in terms of size and areas of intervention. Findings can be compared and conclusion made on concrete facts.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The world over, external debt has become the central problem for the less developed countries. National debt plays a crucial role in any country's financial system. It is used to finance huge infrastructure development projects as well as bridge fiscal deficits of a country. Cecchetti and Zampolli (2011) posit that high levels of government debt do not cause instability instead it prevents a deeper recession. National debt may be used in funding of investment and infrastructure improvements, which leads to higher growth. This aids in economic recovery and in reducing unemployment hence improving the economy of a country.

Krugman (2010) argued that the national debt is a burden for the next generations, which comes in the form of a reduced flow of income from a lower stock of private capital. Globally, all governments experience deficits due to high costs of expenditure and lack of enough revenues. Governments collect revenues through taxes, printing money, external borrowing and use of previous budget surplus. When the governments make a decision to borrow other than introducing more tax measures to finance the budget, it creates a liability known as public debt.

The government has various alternatives to borrow in order to finance its fiscal deficit. Among them include borrowing from the domestic markets i.e. local commercial banks, fund managers, insurance companies, hedge funds, individuals as well as from external sources. Corsetti (2012) argue that each of the method used by the government to raise finances impacts on the economy. It is therefore important for

the government to choose the most appropriate and economical method that has less impact on economic growth of a country (Panizza and Andrea, 2012).

1.1.1 National Debt

Panizza and Andrea (2012) define national debt as the amount of total government debt a country has. This is also referred to as 'public sector debt. National debt is the composition of debt that the government has borrowed through various means for instance; domestic borrowing through treasury bills, treasury bonds and sovereign bonds.

The national debt seeks to bridge the budgetary deficits. This enables the government to access funds for investment. There are several instruments that the government uses to borrow locally for instance; Infrastructure bonds is a treasury bond specifically issued by government for raising finances for infrastructure projects only. Treasury bonds could also be used to raise funds specifically to cater for the government cycle. This debt is mostly allocated to priority budgetary areas. Repurchase agreements are used to control money in circulation in order to control the exchange rate and inflation. The government also uses Euro-bond to raise foreign debt. A Eurobond is an international bond that is denominated in a currency not native to the country where it is issued (Perotti, 2012).

External debt exposures have remained prominent in policy debates while less attention is being paid to domestic debt. Domestic debt stimulates the development of deep and liquid internal financial markets, protects from unfavorable external shocks, and mitigates foreign exchange risk (Del, 2003). However, domestic debt has a crowding-out effect on risky private sector investments. Its benefits notwithstanding, domestic debts are understood to be more expensive than external

financing. This is because the interest load of domestic debt has the potential of absorbing important government revenue hence crowding-out pro-poor and growth enhancing expenditures. High-yielding government debt held by commercial banks may also make these financial institutions to be self-satisfied about costs hence decreasing their mobilization of deposits and financing of private sector projects.

1.1.2 Economic Growth

According to Reinhart (2010) economic growth is the total physical output or real income of an economy. It can also be referred to as an increase in real output or per capita output of an economy. The definition correctly recognizes that the standard of living of the people in an economy is best measured in terms of real output per person. The standard of living could decline in an economy if the population increased at a faster rate than the volume of the real output. It is therefore a steady process by which the productive capacity of the economy is increased over time to bring about rising level of national income. Economic growth must be maintained if a nation is to improve the standard of living of the people (DeLong and Lawrence, 2012).

Gross Domestic Product is measured by the total value of all the goods and services produced in a country annually. GDP defines how rich or poor a country is in terms of performance. Raising the GDP of a country can improve the country's standards of a living. Muhdi and Sasaki (2009) argue that GDP estimates are commonly used to measure the economic performance of a whole country or region, but can also measure the relative contribution of an industry sector. This is possible because GDP is a measure of value added rather than sales; it adds each firm's value added the value

of its output minus the value of goods that are used up in producing it (Cecchetti and Zampolli, 2011).

1.1.3 The Relationship between National Debt and Economic Growth

Economic theory suggests that reasonable levels of borrowing by a developing country are likely to enhance its economic growth. When economic growth is enhanced by at least more than 5% growth rate could impact positively on the level of poverty in a developing economy (Schclarek, 2004). In order to encourage growth, countries at early stages of development like Nigeria borrow to augment what they have because of dominance of small stocks of capital hence they are likely to have investment opportunities with rates of return higher than that of their counterparts in developed economies. This becomes effective as long as borrowed funds and some internally ploughed back funds are properly utilized for productive investment, and do not suffer from macroeconomic instability, policies that distort economic incentives, or sizable adverse shocks (Reinhart and Kenneth, 2010).

According to Kumar and Jaejoon (2010) growth of a country is likely to increase and allow for timely debt repayments. When this cycle is maintained for a period of time growth will affect per capita income positively which is a prerequisite for poverty reduction. These predictions are known to hold even in theories based on the more realistic assumption that countries may not be able to borrow freely because of the risk of debt denial.

Savvides (1992) argues that countries that were unable to meet their external debts were negatively linked to economic performance. The study findings revealed that economic benefits that mostly accrue out of external debts for instance increased

output and exports are minimized due to debt serving requirements this negatively affects economic growth.

1.1.4 The Relationship between National Debt and Economic Growth in Kenya

Kenya being a developing country compliments its revenue through exports of primary commodities. In an attempt to add to available domestic resources, successive governments have acquired huge sums of external debt to finance national development plans. High levels of external debt in Kenya pose great challenges on the economy because a large proportion of exports revenue is devoted to servicing these debts instead of being put into domestic investment thus reducing the prospects of economic growth.

Ochiel (2013) concentrated on the effects of domestic debt owing to the shifting composition of public debt in favor of domestic debt in Kenya. The study used advanced econometric techniques and quarterly time series data from 2000 to 2010. The Jacque Bera (JB) and Augmented Dickey-Fuller (ADF) tests were used to investigate the properties of the macroeconomic time series in the aspect of normality and unit roots respectively. There was evidence of co-integration hence an error correction model has been used to capture short run dynamics. The results demonstrated domestic debt expansion in Kenya, for the period of study. There was a positive and significant effect on economic growth. Due to this, the researchers recommended that the Kenyan government should encourage sustainable domestic borrowing provided the funds are utilized in productive economic avenues (Del and Piero, 2003).

1.2 Research Problem

National debt plays a crucial role in a country's financial system as government securities form an important part of the reserves of its financial institutions (Cecchetti and Zampolli, 2011). It is worth noting that effective utilization of debt is a key ingredient towards achieving economic growth of a country. Corsetti (2012) investigated the role of public debt in economic growth of different countries. The results revealed that proper use of debt impacted positively on economic growth.

Kenya recorded a Government Debt to GDP of 49.80 percent of the country's Gross Domestic Product in 2014. Government Debt to GDP in Kenya averaged 55.06 percent from 1998 until 2014, reaching an all-time high of 78.30 percent in 2000 and a record low of 42.80 percent in 2008. Government Debt to GDP in Kenya is reported by the Central Bank of Kenya (Government Printers, 2015).

Studies have been conducted on the relationship of government debt and economic growth in different countries: Reinhart and Rogoff (2010) examined the relationship between public debt and economic growth in a sample of 20 developed countries over a period spanning about two centuries (1790-2009). The results revealed that there was a weak relationship between government debt and long-term growth of the economy. Schclarek (2004) examined the impact of external debt on per-capita growth in a in a panel of 59 developing countries over the period 1970-2002. The results revealed that there was a linear negative impact of external debt on per-capita growth. Pattillo and Poirson (2002) examined the relationship between external debt on per-capita GDP growth using a large panel dataset of 93 developing countries over 1969-1998. The study found that external debt was negatively related to per-capita GDP growth.

Moki (2012) analyzed the relationship between public debt and economic growth In Africa. The study found that public debt had a significant positive relationship on economic growth in Africa. Mwangi (2013) and Atieno (2012) assessed the relationship between public debt and economic growth of Kenya. The study findings revealed that there was a negative relationship between public debt and economic growth.

Most studies that have investigated the effect of public debt on economic growth have ignored unemployment, net export and consumption which are key determinants of economic growth. These studies have laid much focus on external debt and government revenues and little focus on treasury bills and treasury bonds which are fundamental measures of national debt. The findings of these studies are however inconclusive since they have not factored key determinants that affect economic growth; this therefore created a need to investigate the effect of national debt on economic growth in Kenya by making an attempt to answer the question: what is the effect of national debt on economic growth in Kenya?

1.3 Research Objective

To determine the effect of national debt on economic growth in Kenya

1.4 Value of the Study

The study findings will be resourceful to policy makers; central bank and the ministry of finance. The empirical findings in this study might be used for policy setting in guiding on the best way to finance government debt with minimal effects on economic growth. The national treasury could also be motivated to formulate and promote polices that create a culture of efficient economic use of financial resources to avoid waste and therefore productive use of government expenditure.

The study will be useful to the government of Kenya. The government will know the negative effects of external sources of funds and how they impact on the economic growth. Thus, the findings will act as an eye-opener on government spending laying more focus on priority areas in order to grow the economy.

This study will contribute to the theory; it will add to the existing information on national debt and economic growth. Students will learn ways in which national debt impact on the economy and ways of minimizing national debt. Researchers interested in this and related topics might use the findings of this study as a base for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter covers the theoretical framework of the study, determinants of economic growth, empirical review and summary of the literature review and knowledge gaps.

2.2 Theoretical Framework

This section covers the theories that support the relationship between national debt and economic growth. The theories are; Modigliani's View of Debt, Endogenous Growth Theory and Ricardian View on Public Debt.

2.2.1 Modigliani's View of Debt

Modigliani (1961) argued that an increase in national debt is beneficial to the current population at the time of the increase however; it is the next generation which will bear the burden of paying the taxes of the current public debt by a reduction in the private capital stock. However, the reverse is true that a reduction in the level of national debt is a burden to the current generation and a gain to the next generation.

The burden or gain of future generations is determined by the rate of interest at which the national government borrows which can be taken as a proxy to represent the marginal productivity of the private capital. Tax burden in this case might be offset in part, totally or more than the offset if there is an increase in debt, this leads to an increase in the public expenditure that leads to an increase in the real income of the future generation through channels such as gainful public investments and productity (Modigliani, 1961). This is supported by Diamond (1965) who argues that through the impact of taxes needed to finance the interest payments, both types of public debt

reduce the available lifetime consumption of taxpayers, as well as their saving, and thus the capital stock. In addition, he contends that internal debt can produce a further reduction in the capital stock arising from the substitution of government debt for physical capital in individual portfolios.

Adam and Bevan (2005) find interaction effects between deficits and debt stocks, with high debt stocks exacerbating the adverse consequences of high deficits. In a simple theoretical model integrating the government budget constraint and debt financing, they find that an increase in productive government expenditure, financed out of a rise in the tax rate, will be growth-enhancing only if the level of (domestic) public debt is sufficiently low.

2.2.2 Endogenous Growth Theory

El-Mahdy and Torayeh (2009) argue that the endogenous growth theory was developed as a reaction to omissions and deficiencies in the Solow- Swan neoclassical growth model. It is a new theory which explains the long-run growth rate of an economy on the basis of endogenous factors as against exogenous factors of the neoclassical growth theory. The Solow-Swan neoclassical growth model explains the long-run growth rate of output based on two exogenous variables: the rate of population growth and the rate of technological progress and that is independent of the saving rate (Brue, Flynn, McConnell, 2009).

As the long-run growth rate depended on exogenous factors, the neoclassical theory had few policy implications. As pointed out by Romer In models with exogenous technical change and exogenous population growth, this model did not matter what the government did (Cunningham, 1993). The new growth theory does not simply criticize the neoclassical growth theory. Rather, it extends the latter by introducing

endogenous technical progress in growth models. The endogenous growth models have been developed by Arrow, Romer and Lucas, among other economists. The implications of this theory are that the endogenous growth models emphasize technical progress resulting from the rate of investment, the size of the capital stock, and the stock of human capital.

The assumptions of this theory are that there are many firms in a market, knowledge or technological advance is a non-rival good, and there are increasing returns to scale to all factors taken together and constant returns to a single factor, at least for one. Technological advance comes from things people do. This means that technological advance is based on the creation of new ideas. Many individuals and firms have market power and earn profits from their discoveries. This assumption arises from increasing returns to scale in production that leads to imperfect competition (Diamond, 2005).

2.2.3 Ricardian View on Public Debt

This is an economic hypothesis that holds that consumers are forward looking and so internalize the government's budget constraint when making their consumption decisions. This leads to the result that, for a given pattern of government spending, the method of financing that spending does not affect agents' consumption decisions, and thus, it does not change aggregate demand. Thus, this theorem is used as an argument against tax cuts and spending increases aimed to boost aggregate demand (Brue, Flynn and McConnell, 2009).

According to the Ricardian equivalence theorem, the society's burden from the government spending is brought about by the wastage use rather the source of financing the expenditure. Therefore, it does not matter how the funds are raised

through taxation or by borrowing loans. If the current expenditure is financed through borrowing, this reduces the amount of taxes to be paid by the current generation. Future taxation of generations is much higher to repay, this means that the disposable income in future will reduce (Contessi, 2012).

The burden of tax is postponed rather than being reduced. If the population is aware that the tax burden will increase in future, they are more likely to increase the level of consumption but not save or make an investment that is equivalent to the amount of reduced tax. Government debt is seen as an equivalent to future taxes since there is no crowding effect of capital and consumption by the population. This remains unchanged implying that neutrality of debt to growth (Elmendorf and Mankiw, 1999).

The effect of government bonds has a huge effect on the population of a country. For a bondholder, government bonds are an asset but a liability to the tax payers. A debt-financed tax cut makes bondholders wealthier while the taxpayers become poorer. Thus, the net effect of debt is that no wealth creation. Household are no richer than they were and hence they are should not increase on their consumption as a result of tax cut (Barro, 1974).

National government may finance its expenditures through taxes or issuance of bonds. Bonds in this case are loans; this is repaid by raising adequate taxes in future. The decision is therefore tax now or later. For instance, if the government finances extra spending through deficits that is borrowing now to pay later, the tax payers will prospect of having to pay higher taxes in the future. This will lead to an increase in their savings to make pay for future tax increases that are they mitigate their current consumption however; the effect on the aggregate demand will be the same if the government was to choose tax now (Cameron and Trivedi, 2005).

2.3 The Determinants of Economic Growth

There are various determinants of economic growth. This study has discussed the following determinants of economic growth:

2.3.1 Inflation

Inflation refers to the rate at which the general level of prices for goods and services is rising, and, subsequently, purchasing power is falling. Central banks attempt to stop severe inflation, along with severe deflation, in an attempt to keep the excessive growth of prices to a minimum. Rate of inflation is controlled or indicated by level of interest rates. Interest rates affect an individual's ability to purchase residential property. They affect the cost of financing and mortgage rates which in turn affects property. These rates also affect returns on substitute investments and price changes (Brue et al., 2009).

Inflation is a condition, when cost of services coupled with goods rise, this might negatively impact on the economy. However, whenever there is expected inflation, governments around the world take appropriate steps to minimize the ill effects of inflation to a certain extent. Inflation and economic growth are parallel lines and can never meet. Inflation reduces the value of money and makes it difficult for the common people to afford a living; this might affect economic growth (Cameron and Trivedi, 2005).

2.3.2 Interest Rates

Muhdi and Sasaki (2009) explain that economic growth may affect the interest rate level directly or indirectly. A higher GDP growth more than the expected amount is considered to be inflationary, causing the central bank to raise the interest rate in order to slow down the growth. Interest rate, saving and investment are among the

central variables influencing the economic growth rate. Usually a reduction in the real interest rate increases economic growth. Most investments, especially in developing countries, are of governmental origin and decisions about their realization are primarily affected by the real interest rate.

An increase in interest rates means that consumers have to pay more to finance their Consumption. Then higher required payments discourage the consumers from buying durable goods, which reduces consumption. The same goes for investments, which can be seen as consumption by firms. Higher interest rates for financing of equipment and machinery discourage firms to do investments. In other words, when interest rates increase, investments go down, since it gets more expensive to borrow money and more tempting to save money (El-Mahdy and Torayeh, 2009).

2.3.3 Human Capital

Kumar (2010) argues that human capital is the productivity of workers; this will be determined by levels of education, training and motivation. Increased labor productivity can help firms take on more sophisticated production processes and become more efficient. This brings about growth and expansion of firms thus creating employment opportunities. This improves economic growth.

According to Easterly (2001) human capital is another determinant of economic growth; human capital is workers' acquisition of skills and know-how through education and training. A number of studies have indicated that the quality of human capital using proxies related to education for example the rates of school enrolment and scientific skills contributes to economic growth of a country.

2.3.4 Technology Innovation and Infrastructure

Development of technology influences economic growth, in the long run, development of new technology is a key factor in enabling improved productivity and higher economic growth. Diamond (2005) explains that the adoption of and use of modern technologies improves efficiency and effectiveness of firms in an economy. This improves efficiency and performance of organizations leading to economic growth. The level of infrastructure affects economic growth of a country. Investment in roads, transport and communication can help firms reduce costs and expand production. Without necessary infrastructure it can be difficult for firms to be competitive in the international markets. This lack of infrastructure is often a factor holding back some developing economies (Krugman, 2010).Innovations and research and development are key determinants of economic growth. Research and development play an instrumental role in economic progress this improves productivity and growth. This is due to increased use of information communication technology that enables the firm to introduce new and superior products and processes (Barro and McCleary, 2003).

2.3.5 Net Exports

Barro and McCleary (2003) argue that net exports are the difference between a country's total value of exports and total value of imports. Depending on whether a country imports more goods or exports more goods, net exports can be a positive or negative value. Net exports are measured by comparing the value of the goods imported over a specific time period to the value of similar goods exported during that period.

The formula for net exports is: Net Exports = Value of Exports - Value of Imports. Net exports is an important variable used in the calculation of a country's GDP. When the value of goods exported is higher than the value of goods imported, the country is said to have a positive balance of trade for the period. When taken as a whole, this in turn can be an indicator of a country's savings rate, future exchange rates, and to some degree its self-sufficiency (Diamond, 2005).

2.3.6 Consumption

Brue et al. (2009) define consumption , as the aggregate of all economic activity that does not entail the design, production and marketing of goods and services for example the selection, adoption, use, disposal and recycling of goods and services. Easterly (2001) indicate that the final purchase of goods and services by individuals constitutes consumption, while other types of expenditure in particular, fixed investment, intermediate consumption, and government spending are placed in separate categories. Consumption is the value of goods and services bought by people. Individual buying acts are aggregated over time and space. Consumption is normally the largest GDP component. Many persons judge the economic performance of their country mainly in terms of consumption level and dynamics.

2.4 Empirical Review

This section consists of the empirical studies both locally and internationally in relation to the relationship between national debt and economic growth. Below is the discussion as follows;

2.4.1 Local Evidence

Kuria (2001) studied the impact of external debt on economic growth in the Kenyan context. The amount of external debt stock is quite huge. The debt servicing has taken

the country into an economic crisis. Large external debt accumulation causes debt overhang that has adverse consequences on investment and growth because investors expect that current and future taxes will be raised to effect the transfer of resources abroad. The study has used both a linear model and a quadratic model to explain the impact of external debt on economic growth. The linear regression results have shown that the external debt has a negative impact on growth. Thus an increase in external debt worsens growth performance of the Kenyan economy.

Moki (2012) did an analysis of the relationship between public debt and economic growth in Africa. A causal research design was used to carry out this study. The target population of this study was all the 53 recognized countries. The study covered data spanning a period of 30 years from 1980-2010. A multiple regression analysis was done for analysis. The dependent variable was economic growth as measured using GDP while independent variables were public debt, investments, human capital, monetary policy, trade openness, foreign direct investment and political climate. The study found that debt was positively related to economic growth.

Ochiel (2013) surveyed the relationship between public debt and economic growth in Kenya. The study used secondary data collected from various sources collected from the Kenya National Bureau of Statistics and the Central Bank of Kenya. The study period included 2002/2003-2011/2012 financial periods. The data was collected using data collection sheet which was edited, coded and cleaned. Data was obtained covering the period 1992/1993-2011/2012 financial periods. The results revealed that domestic debt is characterized by higher interest rates compared with those on external debt, which is contracted mainly on concessional terms, and it is therefore expensive to maintain. Domestic debt reduction could be achieved using proceeds from the privatization programme of public corporations, or the use of externally

borrowed resources which are mainly on concessional terms to retire more expensive domestic debt.

Mukui (2013) investigated the effect of external public debt on economic growth in Kenya. The study used a linear model to analyze Kenyan data from 1980 to 2011 with GDP growth rate as a function of external debt. Foreign direct investment, labor force, capital formation, domestic saving, inflation and external debt service are taken as control variables. The result indicates that external debt and, debt servicing have negative effects on economic growth. Other factors found to affect growth negatively include, inflation, labor force and domestic savings. Capital formation and foreign direct investment as also supported in the literature have positive effects on economic growth.

Muinga (2014) examined the relationship between external public indebtedness and economic growth in Kenya. It uses data from 1970 to 2010 from World Development Indicators and Kenya National Bureau of Statistics. The GDP is the proxy for economic growth. The explanatory variables are capital, labor, and interest payments on external debt, external public debt, debt service payments, and inflation. Since the data is in time series the augmented Dickey Fuller Unit Root test is used to ascertain stationarity. The econometric technique of Ordinary Least Square (OLS) is employed in the data analysis. The results indicate that external debt and interest payments on external debt payments contribute negatively to economic growth in Kenya. Capital formation and labour force have a significant positive contribution to economic growth. The simulation results show that any percentage increase of external debt holding other factors constant, will reduce the GDP hence slow economic growth.

2.4.2 International Evidence

Weeks (2000) investigated the relationship between national debt and economic growth in America and high performing Asian economies. The study did an estimate of a cross-country growth regression using data on 18 Latin American countries and data averaged over five-year intervals for the period 1970 to 1994. A meta-analysis was used to review and evaluate published and unpublished empirical research. Using a panel threshold regression model, the results concluded that external indebtedness had a large and negative impact on GDP growth, with a 1 percent rise in foreign debt service lower long-term growth by 1.6 percent.

Schclarek (2004) examined the impact of external debt on per-capita growth. The study sampled 59 developing countries in Europe. Panel data was used for a period of 39 years (1970-2002). Data analysis was done using both regression and descriptive statistics. The study found that there was a linear negative impact of external debt on per-capita growth.

Reinhart and Rogoff (2010) examined the relationship between public debt and economic growth. The study used non-experimental time series in a sample of 20 developed countries. A period of two centuries was used between (1970-2009). Data analysis was done using a regression model. The results revealed that there was a weak relationship between government debt and long-term growth of the economy.

Balassone, Francese, and Pace, (2011) studied the relationship between Debt-to-GDP ratio and real per capita growth in Italy for the years between 1861 and 2009. Data analysis was carried out using a regression model and the result indicate that national debt was negatively related to GDP growth. Debt and investments were also found to have a negative relationship.

Maji and Okon (2013) used the error correction model to investigate the relative potency of external and domestics dent on the economic growth of Nigeria. The used non-experimental time series researches design. Secondary was used for period of ten years. Economic growth is determined by external debt, domestic debt, gross domestic investment, exchange rates and inflation while gross domestic investment is influenced by external debt, domestic debt and interest rates. Domestic and external debt were found to have a positive effect on economic performance but while external debt had a significant impact, domestic debt had an insignificant impact. External debt was negatively related to GDI and insignificant while the domestic debt was positively related to GDI. This has the implication that external debt and not domestic debt has a crowding out effect on the level of investments in Nigeria.

2.5 Summary of the Literature Review

Ricardo views evident as having no effect on investments and growth; he argues that debt is a means of achieving optimal rates of interest for private investment. Modigliani posits that debt has a negative impact on to the economy in terms of reduction in capital stock and payment of interest payments. With regard to the endogenous growth model, debt reduces the economic growth rate and future generations. The above theories support the study hypothesis that there exists a negative relationship between national debt and economic growth.

With regards to the empirical relationship between national debt and economic growth, researchers such as Reinhart and Rogoff (2010), Schclarek (2004), Balassone, Francese, and Pace, (2011), Mukui (2013) found a negative relationship between national debt and economic growth. However, the empirical literature deals with either domestic debt or external debt separately. This conforms to the hypothesis of

the study which predicts that there exists a negative relationship between national debt and economic growth. Although studies have been done in this field most studies are inconclusive and have managed to address tentatively the macroeconomic factors that affect the relationship between national debt and economic growth. This study will therefore seeks an answer the research question: what is effect of national debt and economic growth?

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter covers the research methodology that was used to achieve the objective of this study. It was structured as follows; research design, data collection, data analysis, analytical model and the tests of significance.

3.2 Research Design

Kothari (2004) posits that a quantitative research design is usually the best methods for collecting information that will demonstrate relationships and describe the world as it exists. This study used a descriptive research design to explain the relationship between national debt and economic growth in Kenya.

3.3 Population

The study used Kenya as the population of study. Kothari (2004) defines a population as a complete set of objects of units that share similar characteristics. The study chose Kenyan population because it was easier for the researcher to understand the implications of the various factors that affect economic growth in Kenya to effectively bring out a clear relationship between national debt and economic growth in Kenya.

3.4 Data Collection

The study used secondary data for ten years that was obtained from central bank of Kenya on the specific measures of national debt and economic growth. Secondary data was collected for a period of ten years (2005-2014). The study used secondary data sources of data because the nature of the data to be collected was quantitative.

Data on all issued and accepted volumes for both domestic and external debts was collected and collated.

3.5 Data Analysis

Kothari (2004) explains that data from the financial statements was cleaned, coded and properly analyzed in order to obtain a meaningful report. The data collected was sorted and organized before capturing it in Statistical Package for Social Sciences (SPSS) for analysis.

3.5.1 Analytical Model

The model was in the form of a regression model where all the indicators of economic growth were regressed against the national debt. The study sought to extend the model as advanced by Moki (2012) who concentrated on public debt and economic growth in Africa. This study focused on national debt and economic growth in Kenya. The regression model for this study was as follows;

$$Y = \beta 0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + €$$

Where Y is economic growth which was measured using Gross Domestic Product (GDP)

X_1 is national debt which was measured using external debt, treasury bills and treasury bonds

Control variables were as follows:

X_2 is interest rates was a control variable for the study. These rates were obtained from central bank of Kenya.

X_3 is inflation was a control variable for the study. The rates of inflation were obtained from central bank of Kenya.

X_4 is the net export expressed as a percentage of GDP (control variable). The percentages were obtained from central bank of Kenya.

X_5 is consumption which was a control variable. This is expressed as a percentage of GDP.

ε = Error or random term

0 and βi = regression constants

3.5.2 Tests of Significance

T-test was used to test the hypothesis that there is a negative relationship between national debt and economic growth. Alternative hypotheses assumed that there was a negative relationship between national debt and economic growth in Kenya. The level of significance was expressed using p-values from the tests of coefficients. If the p-value(s) were more than 5% then the null hypothesis was true since this meant that that there was no statistically significant relationship between national debt and economic growth. Similarly, if the p-value was less than 5% then the alternative hypothesis was considered true since this meant that there was a positive relationship between the variables. Coefficient of determination (R^2) was used to provide a measure of how well the observed outcomes were replicated by the model, as the proportion of total variation of outcomes explained by the model. Correlation analysis was used to determine if there was multicolinearity between the variables.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter discusses the major findings which were analyzed using secondary data that was obtained from Central Bank of Kenya. The secondary data covered a period of ten years (2005-2014). This constitutes 40 data points obtained through quarterly average. The analysis include: descriptive statistics, correlation analysis and regression analysis. This was done in line with the objective of this study which was to determine the effect of national debt on economic growth in Kenya.

4.2 Descriptive Statistics

Descriptive statistics has been used to give a summary of the results in form of mean, standard deviation, minimum and maximum values in the period of study (2004-2014). It shows a trend analysis of how the variables performed over the period of study. The findings have are presented in the Table 4.1 below:

Table 4.1 Descriptive Statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
GDP	40	.00	11.50	5.2024	2.57366	-.006	.724
National Debt	40	.00	.11	.0708	.01999	2.865	.724
Interest Rates	40	.00	19.35	7.8119	3.32281	4.081	.724
Inflation	40	.00	16.83	8.7300	4.31019	-.892	.724
Next Exports	40	.00	.00	-.0027	.00105	-.222	.724
Consumption	40	.00	.05	.0197	.01263	-.277	.724
Valid N (listwise)	40						

Source: Research findings (2015)

The above findings in Table 4.1, the minimum percentage of GDP was 0 while the maximum percentage. 11.5%. Within the study period (2005-2014), GDP increased

gradually from 2005 to 2006. In 2007, it decreased in the last two quarters. GDP performed very poorly in 2008 and 2009. Then, it rose rapidly to 11.5% in the last quarter of the year 2010. This was the highest mark. In the year 2011, there was a sharp decrease of GDP and in the year 2014, GDP declined by a huge margin.

National debt increased rapidly for the last ten years from 5.6 percent to 10.9 percent. This was an indication that Kenya's economy largely depend on debt to finance on capital projects. Further, interest rates declined from 8.5 to 6.6 percent, in 2007. Similarly, interest rates faced a huge decrease up to 1.8 percent in year 2010, on the last quarter of year 2011, interest rates increased rapidly to 11.64 percent. In 2013, there was a decrease in interest rates by a small margin of an estimated figure of between 0.5 and 1 percent. Further, there was a slight decrease in year 2014 of an estimated 0.5 percent, from 9.1 in quarter one to 8.63 in quarter four.

The level of inflation fluctuated over the study period. However, year 2007 in the last quarter, the lowest level of inflation was experienced, recorded at 4.4%. The average percent of inflation was 8.7 percent, this was an indication that the economy was performing poorly.

Net exports increased rapidly over the study period from 0.01 percent to 0.044 percent. This was an indication that even though the net export increased in the study period national debt still impacted negatively on the economic growth in Kenya. The findings also observed that the rate of consumption fluctuated over the study period. However, in the second quarter of year 2014 it had 4.7 percent. This was the highest rate of consumption in the entire study period. The mean value of consumption was estimated as at 2 percent, this rate of consumption was low and might have been attributable to poor economic growth in Kenya.

4.3 Pearson's Product Moment Correlation Coefficient

The study conducted a Pearson's correlation coefficient to determine the association between variables. The correlation scale is defined as follows: values between 0.0 to 0.3 indicate that there is no correlation, between 0.31 to 0.5 shows a weak correlation, between 0.51 to 0.7 a moderate correlation and between 0.71 to 1.0 indicates that there is a strong correlation between the study variables. Below are the results the Table 4.2 below:

Table 4.2 Pearson's Correlation Coefficient

	GDP	National debt	Interest rates	Inflation	Net Exports	Consumption
GDP	1					
National debt	.176	1				
Interest rates	-.384*	.305	1			
Inflation	-.449**	-.192	.542**	1		
Net exports	.057	-.906**	-.359*	.088	1	
Consumption	-.005	.288	.123	-.053	-.212	1

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

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

From the above results in Table 4.3, the findings revealed that there was no correlation between GDP and national debt, net exports and consumption. The correlation scores were as follows: .176, .057 and -.005 respectively.

On the other-hand, there was a weak relationship between correlations between the following variables: interest rates and inflation with GDP. The correlation scores were: -.384 and -.449 respectively.

4.4 Regression Analysis and Hypothesis Testing

A linear regression model was used to test the hypothesis for this study which had predicted a negative relationship between national debt and economic growth in Kenya.

4.4.1 Model Summary

The model summary gives information on regression line's ability to account for the total variation in economic growth. The results are presented in the Table 4.3 below as follows:

Table 4.3 Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.479[a]	.230	.117	2.31799

a. Predictors: (Constant), Consumption, Inflation, Net exports, Interest rates, National Debt

The coefficient of determination was .230 this implied that national debt only explained 23 percent of the variability in economic growth in Kenya. This was an indication that the model was insignificant.

4.4.2 Analysis of Variance

The study did a regression analysis to determine whether there was a statistically significant relationship between the variables as shown in Table 4.4:

Table 4.4 Analysis of Variance

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	54.523	5	10.905	2.029	.099[b]
	Residual	182.685	34	5.373		
	Total	237.208	39			

a. Dependent Variable: GDP

b. Predictors: (Constant), Consumption, Inflation, Net exports, Interest rates, National Debt

P-value

The regression model was statistically insignificant since the probability value .099>5 percent which means that the model is statistically insignificant. These findings are consistent with the hypothesis of this study which predicted a statistically insignificant relationship between national debt and economic growth in Kenya.

4.4.3 Model Coefficients

This table gives a summary of the results of the regression equation. The values in column B represent the extent to which the value of that independent variable contributes to the value of the dependent variable. The other column shows the level of significance of the study variables. Below are the results in the Table 4.5 below:

Table 4.5 Model Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.559	2.372		3.608	.001
	National Debt	-1.425	56.609	-.010	-.025	.980
	Interest rates	-.149	.164	-.188	-.907	.371
	Inflation	-.209	.120	-.349	-1.738	.091
	Net exports	31.310	940.117	.012	.033	.974
	Consumption	1.054	31.601	.005	.033	.974

a. Dependent Variable: GDP

The regression model for this study is as follows:

$GDP = 8.559-1.425X_1-.149X_2 -.209X_3+31.310X_4+1.054X_5 +€$

National debt, interest rates and inflation had an inverse relationship with economic growth in Kenya. This implied that a unit increase in these variables would result into a corresponding decrease in economic growth in Kenya. On the other-hand, consumption and net exports had an inverse relationship with economic growth in Kenya. This implied that a unit increase in these variables resulting into a corresponding increase in economic growth.

The findings revealed all the variables under investigation these are: national debt, interest rates, inflation, net exports and consumption were statistically insignificant in explaining the effect of national debt on economic growth in Kenya. This is because their p-values were above 5 percent as follows: .980, .371, .091, .974 and .974 respectively. This conforms to the hypothesis of this study which had predicted a negative relationship between national debt and economic growth in Kenya.

4.5 Discussion and Findings

The findings revealed that GDP fluctuated over the study period (2005-2014) however; there was a rapid increase of 11.5 percent. This was the highest percentage in the study period. This implied that Kenya's economies largely depended on debt to finance its capital projects. Interest rates decreased from 8.5 to 6.6 percent, in 2007. Further, there was a slight decrease in year 2014 at 0.5 percent, from 9.1 in quarter one to 8.63 in quarter four. This implied that the economy was performing poorly. Inflation fluctuated constantly over the study period. The highest level of inflation that was recorded in the study period was 16.8 percent.

Net export increased rapidly in the study period which was an indication that national debt impacted negatively on the economic growth in Kenya. The rate of consumption fluctuated over the study period. However, in the second quarter of year 2014, it had 4.7 percent. This was the highest rate of consumption in the entire study period. The mean value of consumption was estimated at 2 percent; this rate of consumption was significantly low and was attributable to poor economic growth in Kenya.

Correlation analysis found that there was no correlation between GDP and national debt, net exports and consumption. The correlation scores were as follows: .176, .057 and -.005 respectively. These findings are consistent with a study by Kuria (2001) who concluded that there was no correlation between GDP and public debt in Kenya. Further, there was a weak relationship between interest rates and inflation with GDP. The correlation scores were: -.384 and -.449 respectively. These findings are consistent with Ochiel (2013) who concluded that there was a weak relationship between interest rates and GDP.

The regression results found that the coefficient of determination explained 23 percent of the variability in economic growth. The linear regression model adopted for this study was statistically insignificant because the probability value was .099>5. These findings are consistent with the hypothesis of this study which predicted a statistically insignificant relationship between national debt and economic growth in Kenya.

These findings are also consistent with a study by Moki (2012) who concluded that the regression model was statistically insignificant. National debt, interest rates, inflation, net exports and consumption were statistically insignificant in explaining the effect of national debt on economic growth in Kenya.

This is because their p-values were above 5 percent as follows: .980, .371, .091, .974 and .974 respectively. These findings are consistent with Muinga (2014) who concluded that net exports and consumption were statistically insignificant in explaining the effect of External public debt and economic growth in Kenya.

CHAPTER FIVE
SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter consists of the major findings that were drawn from chapter four of this study. This chapter consists of the summary of the findings, conclusion, recommendations and suggested areas for further studies.

5.2 Summary of Findings

The findings revealed that GDP fluctuated over the study period (2005-2014) however; there was a rapid increase of 11.5 percent. This was the highest mark in the study period; which implied that GDP performed poorly. National debt increased rapidly for the last ten years from 5.6 percent to 10.9 percent. Kenya's economies largely depended on debt to finance its capital projects. Interest rates decreased from 8.5 to 6.6 percent, this was an indication that the Kenya's economy was performing poorly. The level of inflation fluctuated constantly over the study period. The highest level of inflation that was recorded in the study period was 16.8 percent. Net export increased rapidly in the study period which implied that national debt impacted negatively on economic growth in Kenya. The mean value of consumption was estimated at 2 percent; this rate of consumption was significantly low and was attributable to poor economic growth in Kenya. Correlation analysis found that there was no correlation between GDP and national debt, net exports and consumption. Further, it was revealed that there was a weak correlation between interest rates and inflation with GDP in Kenya.

Coefficient of determination explained 23 percent of the variability in economic growth. The linear regression model adopted for this study was statistically insignificant because the probability value was above 5 percent, .099>5. These findings are consistent with the hypothesis of this study which predicted a statistically insignificant relationship between national debt and economic growth in Kenya. National debt, interest rates, inflation, net exports and consumption were statistically insignificant in explaining the effect of national debt on economic growth in Kenya.

5.3 Conclusion

The study concluded that national debt was negatively related to economic growth in Kenya. This implied that an increase in national debt impacted negatively on economic growth. When a country borrows more to invest in capital projects it is more likely to impact negatively on economic growth of a country in the long-run. The regression model used in this study was statistically insignificant in explaining the effect of national debt on economic growth in Kenya.

The study further concluded that net exports and consumption contributed positively to GDP, this implied that an increase in net exports and consumption led to an increase in economic growth. It was also concluded that an increase in national debt, interest rates and inflation might impacted negatively on economic growth.

5.4 Limitations for the Study

Due to time and funding constraints the study limited itself to Kenya. It would be more appropriate for the researcher to conduct a comparative study in East Africa and other neighboring countries that are of similar in terms economic power and demographics and then compare findings and draw conclusions based on more facts.

The study confined itself to a period of ten years which is this period short when determining the effect of national debt on economic growth of a country. This is because the effect of this relationship could vary fundamentally depending on period. How the variables manifest themselves and their implications could affect this relationship in the short-run and in the long-run. Therefore, the results obtained herein are not conclusive.

The study also limited itself to five variables which are: national debt, gross domestic product, inflation, interest rates, consumption and net exports. Economic growth is affected by a myriad of factors other than the ones discussed in this study like technology, politics and infrastructure among other factors. It is imperative to consider incorporating other factors that affect economic growth in order to find out whether this relationship will hold.

The study adopted a linear regression model which is a statistical model which is often inappropriately used to model non-linear relationships. This model is limited to predicting numeric output. It is advisable to test the variables using other financial econometrics model like Chi square among other models. This will assist to drawn more plausible and reliable conclusion which are more accurate.

The study utilized secondary sources of data for a period of ten years. This kind of data is historical in nature and might not all the time reflect the actual needs of the researcher; this might affect the validity and reliability of the results obtained and impact negatively on the findings and the conclusion drawn in this study.

5.4 Recommendations

National debt and GDP were found to have a negative relationship with economic growth. This implies that an increase in government borrowing leads to a significant reduction in resources in the private sector which might be exposed to more taxes to pay interest on debt. This highly discourages private investments and impacts negatively on economic growth. It is however important for the government to find an optimal level of debt which promotes both the private investments and economic growth.

The study recommends that the Kenya government should find ways of increasing consumption and net exports in order to enhance economic growth. This is also supported by the findings of this study which has proved that an increase in consumption and net exports results into a corresponding increase in economic growth.

The government should look for alternative means of raising revenues other than use of debt either internally or externally. This country should try and raise adequate revenues through taxes, treasury bills and bonds and privatization to mitigate national debt and borrowing in order to boost economic growth. The study recommends that Kenya needs to adopt and implement strategies to reduce debt, stock and problems associated with debt service. The government should lay more focus on debt management profile particularly for its expenditure items. This can be achieved by putting borrowed funds into productive projects and programs which will boost economic growth.

The empirical findings concluded that there exists a negative relationship between national debt and economic growth. The study therefore recommends that the

government should set policies that create a platform for increased avenues to raise finances to finance capital projects like construction of roads and other infrastructural developments that requires a huge capital investment.

5.5 Suggestions for Further Research

The study was conducted within a limited time and scope. This however necessitated the need to study a period of ten years only. It would have been appropriate to conduct the study for a period of more than ten years in order to obtain more detailed and conclusive results that can be used to make generalization in another middle income country like Kenya that is similar in terms of size, economic power and demographics.

The study was limited to: national debt, economic growth, consumption, net export, inflation and interest rates. It is worth noting that a country's economic growth is affected by macro-economic variables that might affect the relationship between national debt and economic growth. Future researchers should incorporate other variables like technology among other factors that influence economic growth.

A comparative study should be conducted to include countries in East Africa or Africa that are similar in terms of size. This will increase the scope of the study and provide room for more accurate and reliable results.

The findings revealed that only net exports and consumption variables showed a positive relationship with economic growth. Therefore a comparative study should be conducted between consumption and interest rates versus national debt, inflation and interest rates. This will provide more insights in shaping and guiding the direction towards realizing improved economic growth.

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APPENDICES

APPENDIX I: LETTER OF INTRODUCTION

UNIVERSITY OF NAIROBI
SCHOOL OF BUSINESS
MBA PROGRAMME

Telephone: 020-2059162
Telegrams: "Varsity", Nairobi
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P.O. Box 30197
Nairobi, Kenya

DATE 23/9/2015

TO WHOM IT MAY CONCERN

The bearer of this letter LINUS MUTHAKI KANGARA

Registration No. D61/71308/2014

is a bona fide continuing student in the Master of Business Administration (MBA) degree program in this University.

He/she is required to submit as part of his/her coursework assessment a research project report on a management problem. We would like the students to do their projects on real problems affecting firms in Kenya. We would, therefore, appreciate your assistance to enable him/her collect data in your organization.

The results of the report will be used solely for academic purposes and a copy of the same will be availed to the interviewed organizations on request.

Thank you.

UNIVERSITY OF NAIROBI
SCHOOL OF BUSINESS
22 SEP 2015
P.O Box 30197 - 00100, NAIROBI

PATRICK NYABUTO
MBA ADMINISTRATOR
SCHOOL OF BUSINESS

APPENDIX II: DATA COLLECTION SCHEDULE

Yearly Quarters (1-10 yrs)	Interest Rates(%)	Inflation (%)	GDP %	Consumption (% of GDP)	National Debt (% of GDP)	Net Exports(% of GDP)
2005						
2006						
2007						
2008						
2009						
2010						
2011						
2012						
2013						
2014						

APPENDIX III: COMPUTED FIGURES OF STUDY VARIABLES

Yearly Quarters (1-10)	Interest Rates	Inflation	GDP	Consumption	National Debt	Net Exports
2005	8.493333333	12.64667	2	0.013955645	0.056938639	-0.001030849
	8.613333333	14.49	7.3	0.020407167	0.056755884	-0.001793758
	8.61	14.37	8.4	0.004285885	0.057714621	-0.001355326
	8.033333333	10.91667	5.9	0.011044904	0.056663631	-0.001461251
2006	7.95	8.993333	6	0.01783878	0.056014724	-0.00156342
	6.876666667	7.016667	6.2	0.024446295	0.056996569	-0.001757621
	6.1	5.666667	8.2	0.004413143	0.058685712	-0.001617885
	6.323333333	6.15	4.9	0.011726035	0.058421086	-0.001940209
2007	6.18	5.54	7.1	0.018659857	0.057787617	-0.001990438
	6.65	4.54	8.3	0.026317979	0.057997374	-0.00184259
	7.056666667	4.58	6.3	0.004599668	0.058901485	-0.00202768
	7.313333333	4.4	6.4	0.013025306	0.059640178	-0.002017726
2008	7.043333333	5.38	1.1	0.021968547	0.059432734	-0.002122849
	7.613333333	8.626667	2.2	0.030905363	0.058487141	-0.001825982
	7.913333333	11.92333	2.6	0.00469646	0.0572269	-0.002831042
	8.243333333	15.21667	0.3	0.013915838	0.059230888	-0.002590441
2009	7.773333333	16.83333	6.4	0.022032177	0.061810013	-0.002107326
	7.373333333	15.92	2.1	0.032336923	0.062976104	-0.002197292
	7.26	13.39333	1.9	0.006093905	0.064572741	-0.0020928
	7.1	10.3	0.8	0.014842781	0.065954459	-0.002582396
2010	6.25	7.85	5.3	0.02538992	0.065846205	-0.002082625
	4.12	5.866667	7	0.037813131	0.068184349	-0.002533195
	1.823333333	4.706667	9.5	0.005765262	0.070289678	-0.002631496
	2.203333333	4.033333	11.5	0.016545747	0.07133864	-0.003036314
2011	2.606666667	4.156667	9	0.026553272	0.073956899	-0.003010502
	5.853333333	6.013333	7	0.037875067	0.076214023	-0.003265047
	10.05	9.02	4.6	0.005593079	0.081220704	-0.003951432
	16.41333333	12.77667	4.8	0.017300831	0.080031245	-0.003934747
2012	19.35333333	15.82667	4.7	0.030215296	0.078715728	-0.003389956
	12.42666667	16.29	3.9	0.042124286	0.081860529	-0.003749264
	10.21666667	14.29667	4.4	0.007163905	0.084224664	-0.003650807
	9.026666667	10.69667	5.7	0.020131206	0.087899	-0.003688017
2013	8.78	7.256667	5.7	0.033077013	0.087874059	-0.003622849
	8.683333333	5.043333	6.3	0.050542508	0.091864112	-0.003306207
	8.51	4.563333	6.5	0.006555271	0.096163362	-0.003717209
	9.726666667	5.386667	4.5	0.019225222	0.098934421	-0.00384815
2014	9.133333333	6.203333	4.5	0.030570722	0.101111067	-0.003296983
	9.143333333	6.826667	5.3	0.046743736	0.104252436	-0.004066491
	8.816666667	7.236667	4.4	0.00693094	0.109030502	-0.004989115
	8.63	6.976667	4.3	0.022445238	0.109592973	-0.004390035

SOURCE: CBK (2014)