The Effect of Public Debt on Economic Growth in Kenya

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ABSTRACT

The impacts of public debt on any economy may be twofold, when employed into productive ventures and in sustainable levels, it improves societal welfare and stimulates economic growth and development. However, when improperly used for instance in meeting recurrent expenditure, and in excess, it results in debilitating effects on the economy. Many scholars and economists have divergent views on the effects of public debt on economic growth. Some believe it negatively affects growth while others hold that it has positive effects on the growth of an economy. This research seeks to investigate the impacts of public debt on Kenya's economic growth. The study also attempts to establish whether there exists an optimal debt level for the Kenyan economy. This research used secondary data collected from various sources including publications, reports and statistical databases of the International Monetary Fund, World Bank, Central Bank of Kenya, and Kenya National Bureau of Statistics.

The study period included 2002-2020. The data was collected using a data collection sheet that was edited, coded and cleaned. To establish the relationship between public debt and economic growth, the researcher carried out multivariate regression analysis and employ the descriptive research design to describe the relationship between public debt and economic growth. The study established a negative effect of public debt on economic growth. however, the relationship was insignificant for the period under study. The effect of external debt was also negative but not significant on changes in GDP; while its effect on inflation rates was positive but insignificant. Domestic debt had insignificant positive effects on changes in GDP while its effect on inflation was negative but insignificant as well. The insignificant effect of domestic debt could be in part attributed to the underdeveloped capital markets in the Kenyan economy. From the findings of this study, the researcher recommends that public debt should be the last resort to public finance as it depicted negative effects on economic growth and additionally, Kenya should pursue comprehensive debt relief measures.

INTRODUCTION

In this section, the researcher elucidates the background of this research, aims for this analysis and the research questions to be answered. Additionally, justifications, significance, scope and limitations of this analysis are discussed herein.

Background of The Study

The eighth goal of the United Nations Sustainable Development Goals requires member states to achieve an all-encompassing and workable economic growth as well as secure, productive & decent work for all by 2030 (United Nations, 2018). Member states of the United Nations have been struggling to meet this goal, making them have very huge budget deficits since most countries cannot raise adequate capital from taxation by governments alone, for such investment. The current industrial revolution necessitates the need for countries to capitalize in essential areas such as computer science, modern infrastructure, human capital, and technological advancements that would help to make the world a global village. These investments are capital intensive and dictate that countries have high savings and investments that would contribute to the capital stock. Most third-world countries do not have enough savings for investments, in addition to not

being able to raise adequate revenues from taxation, unlike most developed countries. According to Robert Solomon (1977), it therefore implied that, third-world countries had to borrow to finance these budget deficits.

In cases where local markets are not well-developed domestic debt provides only a little of the funds, external debt, therefore, contribute a substantial part of the funding to bridge the deficit (Charan, 1999). Continued borrowing without servicing the debts has led to a high debt burden in developing countries**.** This high debt burden can be attributed to; many developing countries adopted a policy of promoting exports and industrialization as they pursued diversification of their economy from agricultural to manufacturing economies. However, corruption siphoned off a substantial proportion of these loans, only negligible amounts were used for investment in infrastructure. The 1973 oil crisis hit developing countries having been reliant on oil importation and the ambition for industrialization magnified their oil demand and with the ballooning oil prices, countries couldn't afford to import, thus, many countries borrowed to boost their access to oil. The price shock additionally caused inflation further raising interest rates, implying that developing countries had to confront high debt coupled with higher interest payments. Monetization required that developing countries grip corresponding amounts of dollar, as such, LDCs borrowed dollars making the foreign debt levels unmanageable. (Wilkens, Herbert 1983)

Kenya has relentlessly strived to realize a medium-income country state since independence in 1963. As a result of its determination to attain economic stability, she has found herself resorting to external borrowing in addition to domestic debt to resolve its macroeconomic problems of unemployment, high lending charges, and persistent price changes. Debts have principally kept on being utilized by this Republic of Kenya to form and enhance agricultural, industrial and infrastructural base. It is presumed that once these improve, economic growth is achieved as a result of improved exports, which produces additional foreign exchange which will be used to service these debts (Were, 2001).

Public debt

Government obligation is defined as a sum of a country's indebtedness including both domestic and external debts to the government, indicative of what proportion is supported by borrowing rather than taxation (Makau, 2008). It additionally refers to cash owed by a government to creditors in or outside the country either in form of domestic or external. One in all how the government uses to finance its deficit budget is through borrowing which may involve merchandising of treasury bills and bonds, overdrafts from central banks, and commercial banks. Also, governments will resort to monetization to avoid high-interest rates paid for the debts. However, if this can be done, inflation rates would rise imposing devaluation of the currency. (Martin, 2009)

Economic Growth

Growth of an economy implies a rise of real GDP or GNP typically taken to be annual changes of Gross Domestic Product or GNP. An economy may have a positive or negative growth. A positive growth implies an expanding economy and is linked to an economic boom and economic recovery while negative growth will be referred to as a dwindling economy and is related to economic depression and recession. (Matiti C., 2013)

Economic growth refers to the cumulative output that the country's resources can produce over a given period, generally one year, the quantitative changes within the country's economic development (Abbas, 2005). Economic growth is a prerequisite for economic development in any country. Countries try to hasten the intensity of economic growth thanks to the craving to alleviate poverty, control inflation, unemployment, starvation and diseases, etc. Developing countries strive most to beat bound the barricades to growth of economy to interject the vicious cycle of poverty and thus got to bridge the gap between the

developing countries and developed countries (United Nations, 2018).

In a nutshell, growth of the economy entails the sustainable rise in the GDP per capita. It does not focus on objectives like the eradication of unemployment, control of inflation, wealth inequality and re-distribution, within the economy. Growth models assume that these issues are going to be solved mechanically through what's known as the trickle-down effect through the process of growth. (Ayres, Robert, Warr, and Benjamin 2006).

Affiliation between Economic Growth and Public Debt

Domestic borrowing ends up in a reduction in domestic savings, making interest rates too high, resulting in reduced money supply ensuing in low investment in private sectors. Attributable to the rise in interest rates, borrowing by the private sector becomes costly leading to a crowding effect of the private investors. Higher interest rates conjointly have an effect on trade balance since a nation's resources become additionally lucrative to foreigners, thus, demand for local currency would increase tending to raise the worth of local currency compared to other currencies. The demand for imports increases while exports deteriorate as it becomes costly to export. Therefore, massive balance of payment deficits dominates thus, discouraging growth and development. (Mankiw, 1995)

Public debt from external lenders invariably helps to facilitate long-run development though these loans would possibly create a challenge particularly attributable to high interest and conditions in the reimbursement period.

Public debt is just like the biblical two-edged sword; once with wisdom employed in productive activities and moderately it improves social group welfare and stimulates economic growth and development. However, once improperly used, and excessively borrowed might result in devastating effects on the economy and general welfare. (Cecchettti et al. 2011).

Global perspective of public debt on economic growth

Public debt, whether from local sources or external influence economic growth. However, many scholars are still divided on the effects of domestic borrowing on a country's economy in academia and policymaking fora (Akram, 2010). Experimental as well as theoretic analyses attempted to examine the rubric of if ballooning domestic borrowing has positive or negative effects on economic growth. In keeping up with Abbas (2007), superfluous public sector demand for domestic funding increases domestic interest rates that in turn raise the cost of funding the private sector resulting in crowding-out effect thus, limiting growth of the economy and economic development. High rates of interest conjointly have an effect on the deficits balance since a nation's resources become additionally lucrative to foreigners, thus, demand for local currency would increase tending to raise the worth of local currency relative to other currencies. The demand for imports increases while exports deteriorate as it becomes costly to export, thus, huge trade deficits arise and successively deter economic growth.

The increase in developing countries' external debt due to the international economic and finance crises led to significant concerns of debt sustainability and the economic impact. Massive stocks of debts are to be expected to grave effects on a country's accumulation of capital and productive capacity thus, growth declines. Future interest rates, higher future tax distortion, an increase in inflation, unpredictability, and susceptibility to crisis all have an impact on economic growth. If economic activity suffers as a result, fiscal sustainability issues appear to worsen, thus, complicating financial fine-tuning efforts to shrink debt levels to a more sustainable level. (Hamilton, 1947)

Countries like Japan and Singapore with some of the highest debt to GDP percentages are still developed

and among the first world countries. As of September 2020, the two countries had government debt to value percentages of 224.8% and 150.2% respectively. Despite these vast debts to GDP percentages, these countries have still managed to develop in terms of their infrastructure, technology, and production. Implying that public debt, no matter how high, if well managed and accounted for, could still translate to higher economic growth. (CEIC data,2020)

Public debt and economic growth in Kenya

Kenya's constitution establishes a legal framework for regulating government borrowing. In these guidelines, only the aspect of domestic borrowing through Central Bank of Kenya overdraft that appears to be legally constrained. Debt mostly through Treasury bills and bonds appears to be unrestricted by law (The Internal Loans Act Cap 420). This may explain why domestic borrowing through these domestic debt instruments. In contrast, external lenders' debts are limited by law through the External Credit and Lending Act, CAP. 422 Kenyan laws, limited to a major amount of Ksh 500 billion or more that Parliament can pass by resolution. (Constitution of Kenya, 2010). In the recent past, the national assembly has been used to raise the debt ceiling to Ksh 9 trillion.

Kenya received little debt relief in the 1990s due to mismanagement in use of public resources from donors as well as development partners at the time. The debt increase was also influenced by the Goldenberg scandal, which caused the government to lose billions of dollars in a fake gold scandal, resulting in decreased donor inflows; as a result, the government resorted to external debt to fund its expenditures (Mwangangi, 2016).

According to the Institute of Economic Affairs' website (2019), during President Moi's regime, the country experienced substantially large debt to GDP ratios, averaging between 53% to 63% between 1999 to 2002. In the year 2000 the debt to GDP ratio peaked at 78.3% a notably high debt-to-gdp share for this regime. These borrowed funds were majorly to finance expenditure deficits. President Kibaki's era inherited these high debts to GDP ratios, it successfully managed to reduce these ratios to 44% by the end of the regime in 2013. President Uhuru's regime has experienced spontaneous rise in debt to GDP ratio from the inherited 44% in 2013 to 59% by the end of 2018; gradually taking us back to the high debt regimes of the Moi era. According to Eurodad website (2020), by 2023, Kenya's public debt is expected to reach 69.8% of GDP. According to Cytonn (2020), government debt is forecasted to be 70% of GDP in 2021 notwithstanding the growing debt levels and feeble revenue growth. IMF in its 2021 report on Kenyan debt, the institution projected that Kenya's public debt to GDP would be 72.9% by the year 2023. The IMF recommends that for developing countries the value of debt to GDP should be around 40% to 50% for middle income nations and 70% for advanced economies (IMF, 2016), therefore if these projections are to go by, then the country risks suffering debt unsustainability.

While poor management and corruption have been blamed for economic problems, debt has correspondingly interrupted the economy and intricated macroeconomic management leading to high cost of living for many Kenya citizens (Government of Kenya, 2007). This borrowed fund delinquent was aggravated through snowballing financial crises and imbalance in payments for imports from exports, sluggish evolution in exportation trades, overreliance in raw material exports; negative real interest rate and overvalued exchange rates, also contributed to an estimated increase in public debt up to 53% of GDP (Government of Kenya, 2012).

The credit investment, private sector, and the economic growth relationship have been crowded out by the increase of internal borrowing by the government. While the country is spending a lot of its expenditures on servicing debts, little funds are set aside for development. There has been an increase in domestic debts in Kenya and several of the developing countries. (Kenya National Bureau of Statistics, 2016).

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External debt has been growing more rapidly but also more unpredictably. As shown in Table 1.1, external debt grew much faster than domestic debt, especially between 2012/13 and 2014/15. More specifically, growth in external commercial loans grew at a faster rate than that of all other borrowings. For example, external commercial debt grew by 298 percent between 2012/13 and 2013/14 attributed to the over Ksh 200 billion received from the initial sovereign bond. (Kinuthia and Rugo, 2020)

Kenya's borrowing and overall debt are now mostly from external sources. The share of public debt that is domestic versus external has changed significantly between 2012/13 and 2018/19. In 2012/13, internal debt denoted 56 percent of Kenya's entire public debt, 11 percentage points greater than the share of external debt. However, the relative proportions narrowed rapidly in 2014/15 and 2015/16, when the shares approached a 50-50 ratio. Around this time Kenya floated its initial sovereign bond and took the loan for the Standard Gauge Railway from the China Exim Bank. This elucidates the substantial foreign loan injection and the fast increase in the share of external debt. (Kinuthia and Rugo, 2020)

In order to understand borrowing demands in Kenya, the researcher attributes it to the changes in budget deficit along the budget cycle for various fiscal years. The level of Kenya's deficit between the approved budget and actual spending is expressive of budget financing required for a particular year. The budget deficit level is often lower compared to the final budget deficit as presented in the Budget Review and Outlook Papers. Furthermore, outstanding changes happen through supplementary budgets which increase the deficit significantly within the year. This disparity intensifies the need to borrow. (Kinuthia and Rugo, 2020)

Statement of The Problem

A major catastrophe that comes with the debt is that the country has been borrowing faster than it has been repaying debt. As of December 2020, Kenya's cumulative debt reached Ksh 7.28trillion, and with still ongoing parliamentary proceedings to increase the government borrowing ceiling from the current Ksh 9trillion to Ksh 12trillion. (Nation Newspaper, 5th Jan 2021). The repayment of debts is competing with several of the country's wants and needs, such as healthcare, education, and other fiscal policies aimed at realizing the current regime's Big 4 Agenda. Generally, the Debt Overhang Theory exactly defines Kenya's debt status; with the government realizing less revenue than required for sustenance and debt servicing (Wambui, 2009).

Recently, political instability, tribal conflict, and government transition have been linked to be the leading causes of Kenya's poor economic growth and external debt crisis by some economists and researchers. Despite the inflation in the value for money, there is a notable increase in the spending by the current administration and a venomous desire for external debt. As the external debts grow aggressively, there is a possibility that higher imbalance scenarios will hinder the sustainability of these borrowed funds. From the IMF reviews, Kenya is relatively low regarding her risk for external debt distress. However, there is a necessity to regulate or reduce the deficit over the medium-term plan (Moody, 2018).

With increasing concern about the antagonistic effects of government borrowed funds on economic process, especially in developing countries, and this association of government borrowed funds and advancement of an economy being the foremost apprehension for policymaking representatives as well as the citizenry, few pragmatic studies exist to examine this association. Thus, it created a need for examining impacts of the country's rising government obligation in her growth of economy through attempts to answer this fundamental question: What effect does government borrowed funds have on growth of the Kenyan economy?

Objectives of the Study

The aims attached to the analysis will be discussed under two considerations, the general objective as well as specific objectives.

General Objective

The main objective of the study will be to assess the effect of public debt on economic growth in Kenya.

Specific Objectives

1. To examine the effect of domestic debt on economic growth in Kenya
2. To investigate the effect of external debt on Kenya's economic growth
3. To determine the optimum level of public debt for the Kenyan economy

Research questions

1. What is the effect of domestic debt on economic growth in Kenya?
2. What is the effect of external debt on Kenya's economic growth?
3. What is the optimum level of public debt for the Kenyan economy?

Justification of the study

In the recent past, Kenya's public debt blew up to be (and is still) one of the major concerns of the countrymen, policy makers, leaders as well as professionals. The mass media has recently been swarming with discussions on Kenya's public debt even as the debt level keeps on skyrocketing. Previous studies have shown mixed results for impacts of government borrowed funds on growth of an economy, thus, indicating that this topic of how government debts and growths in an economy are related is still an open topic of research. This necessitated our interests for studying these implications of government borrowed funds on our country's growth and development. In response to the objectives and questions in this study, the researcher conducted multivariate regression analyses from this period 2002 to 2020. This study attempts to make a point of view to this impression of debts on evolution of the Kenyan economy.

Significance of the study

Studying the relation between the growth of economy and Kenya's government borrowed funds will form fundamental basis for policy making to develop sound debt management strategies for sustainable national economic growth. This study is valuable to investors because investors use debt to GDP ratio to quantify a nation's ability to repay debt, which affects debt servicing costs and bond-yields for that country. This study's findings are invaluable to researchers and students as they will become the basis for further analysis. This study will serve as a reference center for prospective researchers on associated themes.

Limitations of the study

This research only investigates effects of government obligation on evolution of an economy. This researcher's extent of analysis is limited toward Kenya only; thus, findings obtained herein may not be generalized to other countries. It only spanned cover the period from 2002 and 2020 and not any other period. The researcher also faced time constraints since the timeframe given of this study was shorter as would otherwise be ideal for such a study. Additionally, same data obtained from the sources WB, IMF and CBK were not consistent, therefore the researcher selected data mainly from the WB database.

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Scope of the study

This research will include economic data obtained from the CBK, WB, IMF and KNBS. Data used is on yearly basis. The study was restricted to the 2002-2020 period. The period may be divided into two sections identified as, 2002-2012 for which public debt was relatively lower and 2013-2020 for which public debt has been on a spontaneous upsurge.

LITERATURE REVIEW

Introduction

Here, this researcher offers an appraisal to theoretic and pragmatic literature for these effects that government borrowed funds have on Kenya's economic growth. The researcher develops a conceptual framework that depicts a diagrammatic interrelation amongst Kenya's government borrowed funds and growth of her economy. Additionally, the chapter shall explicate on the gaps identified that justify this research.

Theoretical literature review

This investigation shall be grounded in the models discussed below:

Debt Overhang Theory

Howard first proposed this theory in 1972. In 1988, Paul Krugman coined the phrase "debt overhang" to describe the undesirable consequences of government borrowed funds on growth of an economy: furthermore, capacities for repayment for outstanding facilities falls below the signed value. When the cost of possible forthcoming resource transfers is less than the debt, a country faces a debt overhang problem; a situation in which certain nations' inheritable debt exceeds the present worth in expected funds transference that lenders anticipate these nations to forego during repayment (Krugman, 1988). Both debt and its servicing have an effect on growth by depressing private investment. The country's deficit continually will increase because of higher external interest payments, thus, decreasing public savings if private savings don't counter the resulting effect. Debt servicing adversely affects the growth of an economy by decreasing amounts for which public funds are available for physical and human capital ventures (Clements et al., 2005).

Debt overhang is well-known as a primary source of economic distortion and stagnation in economies with significant debt obligations (Sachs, 1989; Bulow and Rogoff, 1990). Since these nations lose their grip on private investors, economic development has slowed. Furthermore, debt servicing depletes the revenue of the indebted country to a larger extent than the possibility for revamping the initial paths of growth is reduced (Chowdhury & Levy-Livermore, 1998). Debt overhang occurs not just when a nation acquires considerable amounts of debt; this also happens when the circumstances of a country change, thus becoming problematic to regulate and service the accumulating debt stock, this is according to Arslanalp and Henry (2004). These situations may arise as a result of negative economic shocks or ineffective economic policy.

Bamidele & Joseph, (2013) debt servicing burdens thwarts rapid growth and development, worsening societal welfare. As debt service tends to be increasing proportion of a country's output, resources that could otherwise be employed for growth and development are taxed away by the lenders. This increases uncertainty in an economy thus, foreign investors are discouraged, and private investment in the economy is reduced.

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Kenya is already battling with high debt to GDP ratios which keeps rising even further, every fiscal year. Larger proportion of the GDP is likely to be used in servicing the loans than on development. This has devastating effects on the economy through underemployment and declined output. The debt overhang has caused the Kenyan economy to be relatively stagnant, and led to diminishing purchasing power of citizens for necessities.

This theory is important for this research since it helps explain that debt can only be useful up to a certain extent, after which the taxes and other revenues collected by government will be used to service the debts instead of being channeled to productive avenues and development projects. This theory will facilitate us in responding to the research question three; what is the optimal level of government debt for the Kenyan economy?

The Crowding Out Effect Neoclassicists Theory

Neoclassical economists popularized the concept in the 1970s, arguing that increasing government sector investment, and as such debt, has the unintended consequence of replacing the private sector's anticipated borrowing and investment (Powell,2019). Increases in budget deficits, according to Neo-Classical economists, lead interest rates to rise. As a result, government deficits "crowd out" private expenditure due to the higher interest rates, and consequently the private sector borrows less (Carrasco, 1998). According to Willem Buiter (1976), crowding out may be either direct or indirect. Direct crowding out happens when government production consumes resources that could otherwise be used by the private sector, which constrains economic growth. Indirect crowding out occurs when government spending, taxes, and borrowing create disincentives to productive activity, especially in employment and investment (Balcerzak &Rogalska, 2014).

Lending the government by local banking institutions reduces available credit for private sector. (Swianiewicz, 2004). Crowding out thus brings about a reduction in individual consumption since it increases the level of government expenditure causing a decline in individual spending pattern.

According to classicists, public debt necessitates a shift of resources from private sectors to the government via additional tax levies. This theory is significant to the study as it helps us respond to this first study inquiry; What is the impact of domestic debt on Kenya's economic growth?

Buchanan Theory of Debt

James Buchanan in 1958 through his publication, *Public Principles of Public Debt* developed this theory of debt. According to James Buchanan, (1958) public debt transfers cost from present to future when compared against revenue from taxation. The prime real burden of government debt is shifted from current generations to future generations. The claim is placed in terms of a transfer between generations implying that every member of a generation is identical or that equivalently the generation is reduced to a representative. He argues that it does not matter whether or not the debt was held within the state or to foreigners and that the impact of the government debt was autonomous of any possible effect of debt in minimizing the capital stock in future years, thus, the debt would allow the cost of activities in the present to be shifted to the future (Tempelman, 2007). Buchanan further argued that debt implies a mandatory sacrifice of future generations. He held the view that the burden of debt ought to be thought of in terms of reduction in personal satisfaction. Once debt is floated, the lenders voluntarily purchase bonds, there's no loss in satisfaction within the method of exchanging additional liquid cash for fewer liquid bonds.

As a consequence, in the long run, income and tax revenues would fall and the government would raise tax rates in order to boost tax revenues, this slows down capital accumulation and eventually may lead to

national bankruptcy (Wagner, 2018).

Taking a keen look at Kenya's debt structure, most of the debt currently is from external sources, these debts accrue interests and thus when required to pay, the government has to increase taxes for the ensuing generations for servicing of these debts. This heavy taxation on the will-be taxpayers becomes burdensome to these future generations given that huge debts are to be serviced alongside the development projects for their time. Even as we currently enjoy these Ksh 7.28 trillion debts, servicing these debts will require future generations to be heavily taxed if debt management measures won't be executed in time.

This theory will help us address the research question; What effects does foreign debts have on growth and development of the Kenyan economy?

The Solow Theory

Robert Solow and Trevor Swan posited the Solow model in 1956, and it is highly regarded among the most imperative premises in economic growth concepts. This model depicts a simplified version of the overall economy, which aids in comprehending the causes of economic growth and the reasons for wealth disparities across countries (Acemoglu, 2008, ch2). The principal factors of economic development, according to Solow-Swan model, are the amounts of savings, exponential rate of growth of population, and the technological advancement rates that are exogenously attained (Jones, 2002, ch.2).

Savings are the major way of capital accumulation. Since most third-world countries do not have enough savings for investments, in addition to not being able to raise adequate revenues from taxation, government borrowing is often used as an alternative source of public finance for capital. Capital may take two forms, that is human capital and physical capital. Human capital is described as the traits that increase a worker's production and efficiency (Acemoglu, 2008, ch.3), and often includes factors like well-being and training (Weil, 2013). Physical capital is defined as those goods and machinery used in the production of other goods and services. These types of investments are beneficial since their use improves production output. Human capital and physical capital are generated from real income through the process of saving and investment.

The owners of the two types of procure financial gain. The main distinction is that owners of human capital must labor to get returns, but possessors of physical capital require not to devote considerable amount of time for them to earn returns (Weil, 2013). Moreover, Mariano and Villanueva (2005), assert that debt affects the technology modification indirectly through accumulation of capital. Thus, government debt conjointly has growth effects within the long run.

The Mankiw-Romer-Weil (1992) study adds to Solow&Swan concept by presuming that the country is rich if it has substantive amounts of humanoid resources in addition to considerable quantities of physical resource endowment. Increasing the physical resource endowment, highest production levels are attained, resulting at higher levels of human capital and the total volume of total production. Furthermore, it still contributes to higher levels of income the property yields. Higher incomes provided to human capital owners, the larger the contribution of human capital to the level of revenue (Acemoglu, 2008). A major bottleneck in the Solow model is the assumption of the exogenously given mechanical development rate, that is seen as the principal driver of long-term financial development. The Solow-Swan model fails to specify the factors that influence inventive development or rate of mechanical improvement (Acemoglu, 2008, ch.2). The fundamental drawback of the full paradigm is the assumed exogenously given rate of advancement in technology, which is seen as the primary foundation for long-term economic growth. A full-powered construct also fails to mention a component that influences the rate of technological advancements. (Acemoglu, 2008, ch.2)

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This theory therefore will facilitate us in addressing our major research objective for this study by examining whether or not capital accumulation by instruments of borrowing has an effect on economic growth and development. And additionally, establish wherever convergence happens and the optimal debt level within which it happens.

Empirical Literature Review

Here, the researcher reviews studies conducted by other scholars on the effect that total government debt, foreign loans, domestically borrowed loans has on evolution of economies. Additionally, a review of studies on growth maximizing debt levels are also carried out. This was deliberated on in the sub-sections that follow.

Public debt on economic growth

Scholars have held various premises on the effect on economic growth attributed to public debt for various economies, and in the Kenyan economy in particular. According to Wanjuki (2016), there exists with statistical significance that an increase in domestic debt is crowding-out private investment. Excessive long-term external debt leads to over-indebtedness problems as all debt servicing has a negative impact on real GDP. The study was carried out in the period 1980-2013 using OLS regression techniques to model debt in real GDP and the investment function. In the long term, however, domestic loans had no significant affiliation to Gross Domestic Product with no vital shocks over a short term (Achwoga, 2016). Akram (2010) used the Solow growth model studying the national debt outcomes on Pakistan's growth of economy from 1970-2009, observed national liability almost always led to the deterioration of economic growth because of its impact on investment. This present research relies profoundly on this research, including the model used. Musyoka's (2016) study examining the result of national debt-obligation on evolution of the Kenyan economy concluded an existence of deterred economic growth adversely influenced by government debt According to Mbah (2016), the Keynesian school believes that government loans can stimulate economic growth by financing public expenditure deficits, thereby stimulating aggregate demand, thereby encouraging increased private investment, which has a positive impact. However, excessive public debt will bring a heavy debt burden to the country, so this investigation attempted to bridge this breach through examining the impression of government obligation as well as all its components on Kenya's economic growth. Our current research will use multivariate regression to model the connection between government borrowed funds and growth of the economy.

Domestic debt on economic growth

Although Kenyan domestically acquired debt-liability seems moderately sustainable, borrowing from local institutions and banks consumes a significant portion of public revenue, that constitutes a hazard to the sustainability of public finances and therefore requires the Kenyan government to formulate and implement domestic debt agreements (Matiti C., 2013). According to Ochieng (2013), domestically acquired debt-liability for Kenya's economy is sensibly workable by use of Harrod-Domar growth model. Our research will use Solow-Swan growth construct to determine the relationships in this study. Putunoi and Mutuku (2013) showed that markets for domestic debt are playing a progressively vital part in promoting economic growth, and found out long-term expansion of domestic debt to have a beneficial paraphernalia on growth of economies. In keeping up with Sheikh et. al (2010), whose study of a developing economy, Pakistan using the OLS technique was conducted from 1972-2009, established positive relation of domestic debt and growth of an economy. In addition, domestic borrowing has been used in part to fund government spending that contributes to GDP growth and specifying that domestically borrowed funds ought to be used for tenacities of long-term growth and development.

Additionally, the positive relation could be associated to the fact that domestic debt may be marketable. According to Maana et al., (2008), between 1996 and 2007 domestically borrowed funds had a negligible favorable effect on growth of the Kenyan economy. However, their study found no evidence that domestic debt growth crowded-out lending to the private stakeholders. Based on these findings, this analysis tries establishing whether there exists noteworthy relationship of domestically acquired debt-liability on evolution of economies. This study linked its results to the conclusions of these previous studies.

External debt on economic growth

Mukui, (2013) utilized linear models examined Kenya's debt from 1980 to 2011 when studying the consequence of externally acquired debt-liability on growth of the Kenyan economy. Mukui utilized Gross Domestic Product growth rate as a linear expression of externally borrowed funds to establish that externally borrowed funds and the debt-servicing adversely affects the growth of an economy. Umaru, Aminu, & Musa (2013) argued that debt obtained from the external sources has an adverse effect on growth of the economy, while domestically acquired debt-funds was favorable to growth development of a country. According to Osewe (2013), by using Solow model, there was no long-term cause-effect affiliation of domestically acquired debt-liability and growth of the economy with a 5% significance level in Kenya.

According to Rabia & Kamran (2012) in the Pakistan economy, external borrowing slackened growth in the economy more relative to domestically acquired debt-liability. They associate this to the fact that repayment of external borrowing is often in terms of overseas currency despite the worth of the Pakistan currency just like other developing countries' currency is weaker compared to the creditor countries' currency. They suggest existence of the yearning for effective external-debt management in turn therefore, the debt ought to be used in a way that it adds worth to the economy. This seems to mirror the Kenyan situation in which external borrowing is majorly done in terms of dollars, as such, servicing these external debts would be quite expensive considering the fluctuations in the exchange rates, as opposed to the domestic debts which are borrowed in terms of the Kenyan shilling. Thus, was relevant to the current study.

Optimum public debt level for the Kenyan economy

According to previous literature, public debt can have a positive or negative impact on the entire economy. The effect is subject to the volume of debt and its purpose. Commonly, the amount of debt to be borrowed is measured using the debt-to- GDP ratio. Checherita and Rother (2010), have argued that additional foreign loans only have a negative impact on growth above a certain threshold due to the fact that debt overhang is taken into account, debt reduces the chance that creditors will be repaid. Reinhart and Rogoff (2015), stated that the threshold should not exceed 90% and that the economy could still grow at the debt limit of below 90%. Public debt will have a negative impact on the economy, which is empirically proven using the example of developing countries, where the debt ceiling was 88.2% (Karadam 2018). The economy can grow positively if the debt level is below the threshold; However, when the public debt-to-GDP ratio exceeds the threshold, growth begins to decline. According to Abbas and Christensen (2010), in their study for period 1975-2004, they found that moderate tradable domestic debt in relation to GDP had a significant positive impact on economic growth and that more than 35% of total bank deposits deter the economic process. The IMF recommends for developing countries that the debt-to-GDP ratio should be around 40-50% for middle-income countries and 70% for advanced economies (IMF, 2016). The aim is to determine the debt ratio in order to maximize Kenya's economic growth.

Research Gap

Numerous studies have been done on effect of government debt on economic growth for various economies. Their findings are divergent on the impacts of government borrowing on economic growth. Some scholars

argue that debt is directly related to growth while others hold that this relation is inverse. From the literature reviewed, there is no existing research that studied an optimum for public debt for Kenya's economic growth. Unlike these former studies, this current research seeks to establish the existence of an optimal public debt to GDP ratio for the Kenyan economy. These studies greatly focused on public debt and government revenues with less focus on treasury bills and treasury bonds, which are essential components of a country's domestic debt. This current study seeks to carry out regression modelling by employing a longitudinal research to determine the impact of foreign and domestic debt between the period 2002 and 2020, on Kenya's economic growth.

The discoveries of those studies are nonetheless unconvincing since they do not feature in crucial variables of public debt that influence economic growth; thus, informed the necessity to examine the effect of public debt on economic growth in Kenya by attempting to answer the question: What is the impact of public debt on economic growth in Kenya?

Conceptual Framework

This research will analyze the interaction between external government borrowing to economic growth, affiliation between internal borrowing and economic growth, and the general relationship between total government borrowing and economic growth.

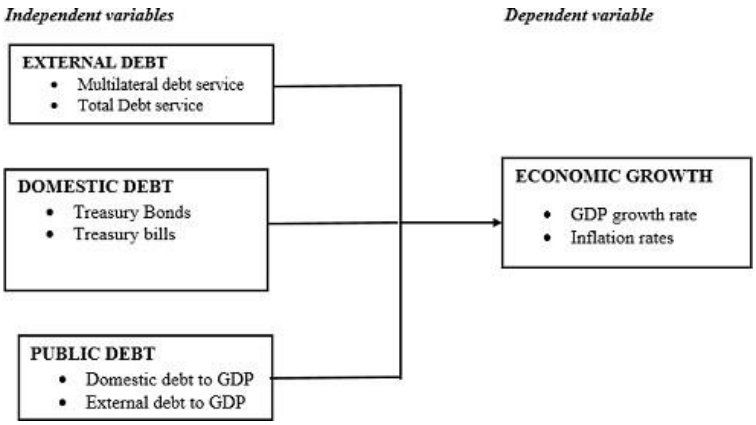

Figure 2.1: Conceptual Framework (Author, 2021)

RESEARCH METHODOLOGY

Introduction

This section highlights the research design, target study population, sampling techniques and sample size and for collection of data. Analysis techniques used to model the data and analytical model as well as diagnostic tests that will drive the study will also be discussed.

Research Design

The researcher defines the research design as the approach employed in the choice of participants, to gather data, and analyze data. It is the abstract edifice for which we conduct a research study (Kothari, 2004). To assist in defining the relationship under examination, a descriptive research design will be employed in this research (Mugenda&Mugenda, 2003). This descriptive criterion is essential for developing an outline for the affiliation of government borrowed funds on the growth of an economy.

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Target Study Population

A population of a study can be defined as a complete assemblage of items of interest for which the scholar wishes to analyze. During this research, the study population is the universe of all data associated with debt and economic growth. This was narrowed down for only the corresponding data available for the Kenyan economy which made up the study's target population.

Sampling Techniques and Sample Size

Sampling is defined as the method of choosing variety of people or components of a study so that components selected represent the population of interest. Sampling techniques refer to mechanisms employed in selecting the sample units, which may be probabilistic or non-probabilistic techniques. During this study, so as to select a sample for the population of interest, the researcher employs a non-probability sampling technique, one within which random choice procedure is not used. Thus, the researcher will select the sample using the purposive sampling technique. Our sample therefore will be the data relating to government debt and economic growth parameters from 2002 to 2020. Our sample size will encompass all data involving government borrowed funds and growth of economy linked to the parameters for interest between 2002 to 2020 period. The period is selected because between 2002-2012 the country experienced relatively lower debt to GDP ratios as compared to the previous regimes and to the current regime's public debts from 2013 to 2020. This research seeks to establish whether the increased borrowing between the 2002-2020 period has a noteworthy effect on economic growth.

Data Collection

Here this researcher examines how data utilized for the study would be generated, whether primary or secondary sources. This study will make use of secondary data. Our utilization of secondary data is moored on the contention by Rudestam&Newton (2017), who affirm data obtained from secondary sources probably tends to have excellent value than the researcher's own collected primary data, since the organization charged with gathering these statistics have adequate funding as well as sophisticated gadgets essential for gathering and preserving a perfect database.

Consequently, data on inflation was acquired from the Kenya's Statistics Bureau, total public debt, external debt and domestic debt as well as domestic debt instruments of treasury bills and treasury bonds was collected from the Central Bank of Kenya database. Data on annual GDP growth rates, total debt service as a percentage of export of goods and services and primary income and multilateral debt service as a percentage of public and publicly guaranteed debt service was collected from publications, reports and statistical databases World Bank Development Indicators. Additionally, data on debt-to-GDP ratio was obtained from International Monetary Fund. The collected data in a data collection sheet, was edited, coded, and cleaned. The period under analysis was 2002-2020. This period was selected on account of the many changes that occurred within the economy among them the changes in the country presidency, promulgation of the new constitution, and the electioneering periods, that had broad outcomes on Kenya's macroeconomic factors. This examination utilized yearly data since public financial plans are structured yearly with associated shortfalls and surpluses that are major determining factors for debt financing are subsequently established.

Data Analysis techniques

The researcher mainly used STATA Version 15 to aid in data analysis. The researcher will employ the Ordinary Least Square techniques for this study. The P-value approach as well as Sir Williams Gosset's non-parametric statistics test; the paired t-test will be used in testing for the significance of the variables in this

research (Mugenda&Mugenda, 2003). The analysis was conducted at 95% confidence interval. Furthermore, to study affiliations between government debt and growth of the Kenya economy, the researcher will conduct multivariate regression analyses, establishing the effects of government borrowed funds on both inflation and percentage changes in annual Gross Domestic Product, that this research used as the indicators of economic growth and development. The augmented Solow-Swan growth construct will form a major basis in this research, on the premises that an upsurge in physical and human capital (through saving and investment), a rise in amounts and quality for labor; and technological enhancements are essential factors that stimulate economic growth. For governments to capitalize their resources in development, they must have met the recurrent expenses. Therefore, capital available for long-run venture principally relies on the quantity of revenue attainable by the Exchequer in terms of taxes and public borrowed funds either domestic or external. This study will be based on a simplified model in which economic growth is taken to be as a function of public debt.

Analytical Model

As depicted above, the analysis will be modelled based on the Solow-Swan augmented linear construct for growth (Solow, R. 1956). According to Sala-i-Martin, (2004) who concurs with Barro's seminal work (1991), whose pragmatic literature on economic growth had known a considerable variety of variables that are partly related with the rate of economic growth. The fundamental procedure involved running cross-sectional regressions of the formula:

Where implies the vector rates of economic growth, the response variable, and are vectors of predictor variables/regressors that vary with researcher's interest and specialization. are coefficients of correlation between economic growth and the regressors,

Thus, the choice of making use of a regression construct to examine the correlation of externally borrowed funds, domestically borrowed funds and total government borrowed funds variables against economic growth. Consequentially, we obtain a multiple linear regression of the form;

Where:

This model is further long-drawn-out to obtain the model below:

The researcher uses the F-statistic as well as R^2 obtained from the Analysis of Variance (ANOVA) table at 95 percent confidence level to determine whether this construct was significant in evaluating the link between public borrowed funds and rate of growth of an economy. Assuming the obtained significance value from the ANOVA table is smaller than the critical value, then model must have been adequate in explaining this association.

Diagnostic Tests

Diagnostic techniques are techniques used to examine a fitted model to inspect the adequacy of the model and its better fit for the data, by assessing whether the underlying assumptions in the analysis have not been met. When carrying out this multivariate regressions for the data, the researcher tends to concentrate on the subsequent diagnostic tests;

Linearity

Linear regression models assume a linear relationships between the regressors and predictor variables, as such any curvilinear relationships are ignored. It is mostly evaluated by scatter plots, and residual plots. The researcher will examine the residual versus predicted plots.

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Heteroskedasticity

In this test, the researcher needs to examine whether the constant variance of the random errors assumption was violated or not. This study will assume a constant variance or homoscedastic relation, since if this variance is not constant, a heteroskedastic relation is obtained which reduces precision when estimating the regression parameters

Normality Test

This was conducted to examine whether the error term is independently, normally and identically distributed. A histogram is ordinarily utilized. The researcher examined the normal probability plot; if all the residuals fall within the confidence intervals of the normal probability plot, then the normality assumption will probably have been achieved. The Shapiro Wilk and Kolmogorov-Smirnov test was used to carry out the this test.

Multicollinearity test

Multicollinearity refers to the existence of near-linear relationship between the set of regressor variables. It may cause erroneous estimation of the coefficients, overblown standard errors of regressor coefficients, deflate partial t-tests, give incorrect non-significant p-values and lower the model predictability. The multicollinearity test helps examine presence of correlation between the regressors. The researcher initially begins by examining pairwise scatter plots of the regressors to point out near-perfect relationships. Additionally, variance inflation factors are considered such that a larger VIF flags collinear regressors.

Operationalization and Measurement of variables

The author operationalizes the variables indicating how the variables in this study were measured.

VARIABLE NAME	ABBREVIATION	DESCRIPTION	DATA SOURCE
Annual GDP growth	GDP	the rate at which GDP grows from one year to another. As a percentage change in GDP	World Bank Development Indicators
Inflation rates	INF	The rate of change in average prices through the economy. Taken as 12-month inflation rates using CPI	Kenya National Bureau of Statistics
Total Public Debt	TPD	Total public debt owed by the government both local institutions and individuals, and external creditors. Measured by total value in Ksh Millions	Central Bank of Kenya
External debt	ExD	Obligations owed by a country to external creditors. Measured by total value in Ksh Millions.	Central Bank of Kenya
Domestic debt	DoD	Total public debt owed by the government to local institutions and individuals. Was measured as total value in Ksh Millions	Central Bank of Kenya
Treasury bills	TBILL	A short term domestic debt instrument with a yielding period of one year or less. Measured as total value in Ksh Millions	Central Bank of Kenya

Treasury bonds	TBOND	A long term domestic debt instrument with a maturity period of more than one year. Measured by total value in Ksh Millions	Central Bank of Kenya
Multilateral debt service	MDSPPG	Servicing of the Obligations owed by a country to international financial institutions. Measured as a % of public and publicly guaranteed debt service.	World Bank Development Indicators
Total debt service	DSE	Percentage of gross annual income that is needed to pay all loans and obligations. Taken as a % of export of goods and services and primary income.	World Bank Development Indicators
Debt-to-GDP	PERCENTPD	the ratio between a country's government debt and its gross domestic product. Given as percentages	International Monetary Fund

Table 1 Operationalization and Measurement of variables (Author,2021)

DATA ANALYSIS AND PRESENTATIONS

Introduction

In the sections of this chapter, the researcher presents an analyses for this relation between public debt and growth of the Kenya economy and the interpretation of data findings from 2002 to 2020, financial years. The data used in the study was obtained from WB, IMF, CBK and KNBS. It also highlights the data presentation descriptive statistics, inferential statistics and interpretation of the findings.

Data presentations

In this section we discuss the trends in the data over the study period of 2002-2020. The trends are discussed for economic growth, inflation, total public debt, and domestic and external debt.

Economic growth

From the graph between 2002 to 2007 the debt to GDP ratio had increased and peaked at 6.85 in 2007. The GDP growth between 2007-2008 declined its lowest at 0.2323 in 2008 attributed to the 2007 to 2008 fiscal crises and the violence that arose after the elections which caused instability in the period. In 2009-2010 there was a high increase in GDP growth rate from 3.307 to 8.405 due to the stability in the political environment and general stability in the government. Between 2019-2020 there was a significant drop in the GDP level partly attributed to the negative effect of covid 19 on the economy.

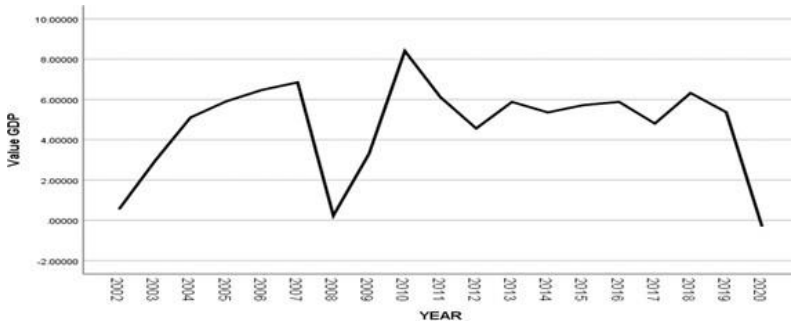

Figure 2 Trends in percentage changes in GDP

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Inflation

The CBK formulates the monetary policy such that the inflation is maintained within the range of 2.5%to 7.5% (CBK, 2017). During the study period, 2006 to 2013,2014,2015,2016 and 2020 had inflation rates within the allowable margin. Only 2002 had the lowest inflation rate below the 2.5% margin. The inflation rate was above the allowable 7.5% margin for the remaining years of the study period.

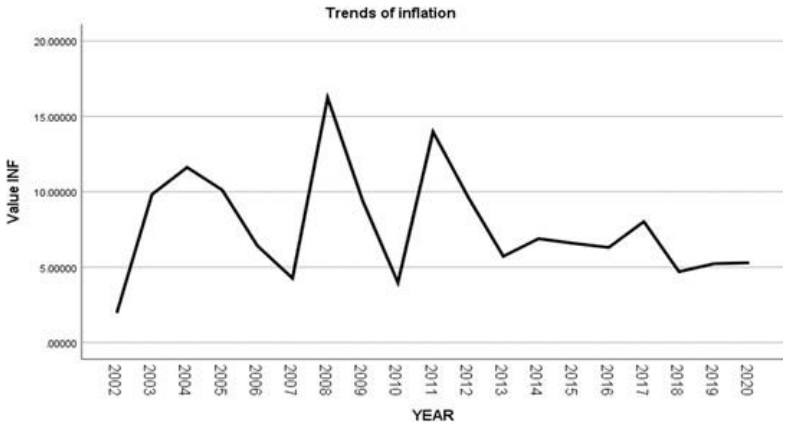

Figure 4.2.2 Trends in annual inflation rates

Total public debt

For the period 2002-2012 the public debt a slight but an increasing rate, however between 2013-2020 there was rapid increase in the level of public debt.

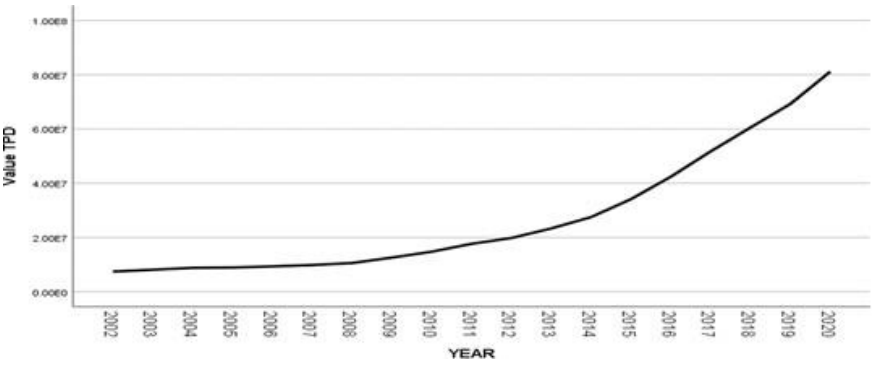

Figure 4 Trends in total public debt

Domestic debt and external debt

Between 2002-2007 amounts of locally borrowed funds were lower relative to externally borrowed funds. Between 2007-2009 levels of domestic debt and external debt were relatively the same with 50-50 ratio.

Between 2009-2015 domestic debt uptake was higher compared to external debts. Between 2015 -2016 the levels were approximately a 50-50 ratio. Afterwards the levels of external debt have dominated, rising relatively more than domestic debt.

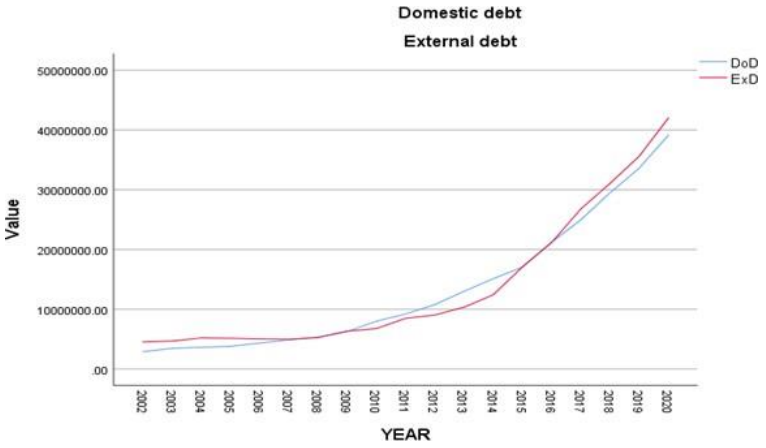

Figure 5 Trends in Domestic and External Debt

Descriptive statistics

The summary statistics describing the variables used for this study are presented in the table-below. The table shows that each of the variables had 19 observations. The mean change in GDP rate for the period was 4.708, inflation rate was 7.690, the mean debt-to-GDP ratio was 49.75% total debt service as percentage of export of goods, and services and primary income was 12.535%. Mean multilateral debt service as a percentage of public and publicly guaranteed debt service was 36.849%. Mean treasury bills and treasury bonds were 4094586.348 and 9071990.155 respectively. Mean public debt was 27251478.37 while mean domestic debt and external debt were 13474031.73 and 13777446.63 respectively. The variables seem like they did not conform to a normal distributed because the skewness statistics ranged away from zero i.e., they were greater or smaller than zero. All the variables except Treasury Bills and debt-GDP ratio portrayed a relatively peaked distribution, since they had positive kurtosis statistics.

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
DoD	19	36241164.10	2886669.19	39127833.29	13474031.73	11216106.85	1.080	.524	.089	1.014
ExD	19	37489590.34	4521607.96	42011198.30	13777446.63	11833109.25	1.306	.524	.516	1.014
TPD	19	73730754.42	7408277.15	81139031.57	27251478.37	23003655.20	1.206	.524	.323	1.014
TBILL	19	10325452.60	1223722.00	11549174.60	4094586.348	3669479.642	1.194	.524	-.121	1.014
TBOND	19	26260145.71	1295989.40	27556135.11	9071990.155	7497385.335	1.068	.524	.482	1.014
%MDSPPG	19	59.01415	15.68252	74.69667	36.8489441	15.69772731	1.157	.524	.818	1.014
DSE%	19	33.88360	4.31467	38.19827	12.5350726	10.39502668	1.759	.524	2.461	1.014
percentPD	19	27.43000	38.37000	65.80000	49.7500000	8.29334874	.462	.524	-1.036	1.014
GDP	19	8.71320	-.30750	8.40570	4.7076622	2.35455711	-1.031	.524	.424	1.014
INF	19	14.27083	1.96000	16.23083	7.6899629	3.60275125	.821	.524	.471	1.014
Valid N (listwise)	19									

Table 2 Descriptive Statistics (Author, 2021)

Diagnostic tests

In this section, the researcher examines the data and fitted model to inspect the adequacy of the model and its better fit for the data, by assessing whether the underlying linear regression assumptions in the analysis have not been met

Normality Test

The Shapiro Wilk test is a specific test of normality, while the Kolmogorov Smirnov (KS) test is more common, but not as robust. This means that you correctly reject the null hypothesis of low normal probability more often. This test compares sample points to a set of normally distributed points with the equal means and square roots of variances. The test assumes the null hypothesis that the sample is normally distributed. If we obtain that this value is significant when compared to the associated p-value, then the distribution does not conform to a normal distribution. Smaller samples have little power to reject the null hypothesis, thus, normality tests are likely to be ignored. The KS test is very sensitive to extreme values. Therefore, by modifying Lilliefors, the conservatism of this test is reduced. (Ghasemi et al., 2012). Most researchers recommend the Shapiro-Wilk test as the best way to confirm normality. P-values ??greater than ? = 0.05 implies a normally distributed sample. You can see using the Kolmogorov Smirnov test on the dataset, Domestic debt, the treasury bills, debt ratio to GDP, multilateral debt repayment ratio for repayment of public and public guarantee debt, inflation data follows a normal distribution, while all other variables follow a normal distribution Absent. Using the Shapiro Wilk test, follow a normal distribution of GDP debt and inflation only.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
DoD	.175	19	.129	.851	19	.007
ExD	.246	19	.004	.779	19	.001
TPD	.206	19	.033	.816	19	.002
TBILL	.274	19	.001	.753	19	.000
TBOND	.157	19	.200*	.884	19	.025
%MDSPPG	.191	19	.066	.872	19	.016
DSE%	.223	19	.014	.749	19	.000
percentPD	.162	19	.200*	.930	19	.170
GDP	.212	19	.024	.872	19	.016
INF	.167	19	.168	.945	19	.330

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

a. Lilliefors Significance Correction

Table 3 Tests of Normality (Author,2021)

Multicollinearity

The variables inflation, GDP growth rates had weak negative correlations with all variables. Multilateral debt service as a percentage of public and publicly guaranteed debt service showed average negative correlation with all other variables. Debt to GDP ratio was fairly positively correlated with all the variables and only negatively correlated with multilateral debt service as a percentage of public and publicly guaranteed debt service. All other variables had correlations coefficients above 0.7 thus indicating severe multicollinearity. Additionally, all the variables except dse and mdsppg had very high VIF, thus indicating multicollinearity.

	dod	exd	tpd	tbill	tbond	mdsppg	dse	percen~d	gdp	inf
dod	1.0000									
exd	0.9921	1.0000								
tpd	0.9979	0.9981	1.0000							
tbill	0.9783	0.9838	0.9830	1.0000						
tbond	0.9950	0.9812	0.9899	0.9529	1.0000					
mdsppg	-0.5691	-0.5423	-0.5564	-0.5449	-0.5694	1.0000				
dse	0.7937	0.8400	0.8191	0.8244	0.7664	-0.4660	1.0000			
percentpd	0.5386	0.6091	0.5759	0.5856	0.5060	-0.5394	0.8280	1.0000		
gdp	-0.0423	-0.0894	-0.0666	-0.0189	-0.0551	0.3596	-0.3103	-0.4123	1.0000	
inf	-0.3385	-0.3343	-0.3370	-0.3793	-0.3127	0.1802	-0.3840	-0.3337	-0.2259	1.0000

Table 4 Correlation Coefficients (Author, 2021)

Variable	VIF	1/VIF
dod	53073.86	0.000019
tbond	27600.76	0.000036
tbill	6660.38	0.000150
exd	527.06	0.001897
percentpd	13.89	0.071982
dse	8.45	0.118302
mdsppg	3.85	0.259864
Mean VIF	12555.47	

Table 5 Variance Inflation Factors (Author, 2021)

Heteroskedasticity

In order to test the data for heteroskedasticity, The Breusch-Pagan test was conducted as shown in Figure 4.3.1.3 below. This test assumes a prior belief of existence of homoskedasticity in the given dataset if the significance value obtained is greater than the P-value, ? = 5%. For this data this P-value (0.7439) obtained is greater than ? = 5% thus we fail to reject the null hypothesis and hence assume that constant-variance in random error term as a linear assumption has been met.

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of gdp

         F(1 , 17)     =      0.11
         Prob > F      =    0.7439
```

Table 6 Heteroskedasticity test (Author, 2021)

Regression results

In order to establish the effect of total public debt on economic growth in Kenya, researchers regressed total public debt against GDP growth rates and inflation. The results are shown in the table below.

```
. mvreg gdp inf = tpd

Equation             Obs    Parms        RMSE    "R-sq"          F         P
----------------------------------------------------------------------------
gdp                   19        2    2.313657    0.0044   .0756975    0.7865
inf                   19        2    3.490197    0.1136   2.178079    0.1583

------------------------------------------------------------------------------
             |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
gdp          |
         tpd |  -6.52e-09   2.37e-08    -0.28   0.787    -5.65e-08    4.35e-08
       _cons |    4.933565    .836121     5.90   0.000     3.169503    6.697626
-------------+----------------------------------------------------------------
inf          |
         tpd |  -5.28e-08   3.58e-08    -1.48   0.158    -1.28e-07    2.27e-08
       _cons |     9.12986   1.261305     7.24   0.000     6.468739    11.79098
------------------------------------------------------------------------------
```

Table 7 Multivariate Regression Results for total public debt (Author, 2021)

On the effect of the total public debt on GDP growth rates; total debt was found to have a negative but insignificant effect on the growth in GDP at 95% significance level. R^2 was 0.4% implying that the model was not adequate to establish the relation between total public debt and percentage change in GDP. The F-statistic (2.313657) with p-value 0.7865 > 0.05 thus the model was insignificant. Similarly, total public debt had an insignificant negative effect on inflation rates. The inflation-total public debt has R^2 = 11.36% and with P-value 0.1583 > 0.05. Thus, the model was not adequate to explain the relation between the variables.

The researcher also analyzed the effect of domestic and external debt on economic growth using the parameters of inflation rates and percentage in GDP the results for the regression model is as below.

```
. mvreg gdp inf = dod exd

Equation             Obs    Parms        RMSE    "R-sq"          F         P
----------------------------------------------------------------------------
gdp                   19        3    2.210663    0.1446   1.351935    0.2868
inf                   19        3    3.595316    0.1147   1.036509    0.3773

------------------------------------------------------------------------------
             |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
gdp          |
         dod |   5.92e-07   3.70e-07     1.60   0.130    -1.93e-07    1.38e-06
         exd |  -5.73e-07   3.51e-07    -1.63   0.122    -1.32e-06    1.70e-07
       _cons |    4.68366   .8136768     5.76   0.000     2.958742    6.408577
-------------+----------------------------------------------------------------
inf          |
         dod |  -1.39e-07   6.02e-07    -0.23   0.821    -1.42e-06    1.14e-06
         exd |   2.86e-08   5.71e-07     0.05   0.961    -1.18e-06    1.24e-06
       _cons |    9.165753   1.323325     6.93   0.000     6.360429    11.97108
------------------------------------------------------------------------------
```

Table 8 Multivariate Regression Results for domestic debt and external debt (Author, 2021)

The GDP-domestic and external debt model, had R^2 =14.46% implying inadequate fit for the data. The F-statistic 1.351935 with P-value (0.26868) > 0.05 thus indicating insignificant relation between external and domestic debt and gdp. Domestic debt was positively but insignificantly related with changes in GDP, while external debt was negatively but with significant effects on changes in GDP. The inflation model had R^2=11.47% thus an inadequate fit for the data. F-statistic 1.036509 with P-value (0.3773) > 0.05 thus an insignificant relation between the variables and inflation. Domestic debt had a negative effect on inflation which was insignificant at ?=0.05 while external debt had an insignificant positive effect on inflation rates.

The economic growth parameters were also regressed with all the variables; dod, exd, tpd, tbill, tbond, mdsppg, dse and percentpd. The results are given in the table below.

```
. mvreg gdp inf = exd dod tbill tbond mdsppg dse percentpd

Equation             Obs    Parms        RMSE    "R-sq"          F        P
------------------------------------------------------------------------------
gdp                   19        8    1.609723    0.6882   3.467937   0.0325
inf                   19        8    3.429657    0.4462   1.265873   0.3486

------------------------------------------------------------------------------
             |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
gdp          |
         exd |  -9.15e-07   7.36e-07    -1.24   0.240    -2.54e-06    7.05e-07
         dod |   9.72e-06   7.79e-06     1.25   0.238    -7.43e-06    .0000269
       tbill |  -7.73e-06   8.44e-06    -0.92   0.379    -.0000263    .0000108
       tbond |  -9.19e-06   8.41e-06    -1.09   0.298    -.0000277    9.32e-06
      mdsppg |   .1265041   .0474138     2.67   0.022     .0221469    .2308612
         dse |  -.1853047   .1061191    -1.75   0.109    -.4188712    .0482618
  percentpd |   .1320708   .1705193     0.77   0.455    -.2432398    .5073813
       _cons |  -7.495241   8.929152    -0.84   0.419    -27.14817    12.15769
-------------+----------------------------------------------------------------
inf          |
         exd |   3.50e-06   1.57e-06     2.23   0.047     5.02e-08    6.95e-06
         dod |   .0000179   .0000166     1.08   0.304    -.0000187    .0000544
       tbill |  -.000023    .000018     -1.28   0.226    -.0000626    .0000165
       tbond |  -.0000213   .0000179    -1.19   0.260    -.0000607    .0000182
      mdsppg |  -.1685777   .1010193    -1.67   0.123    -.3909198    .0537644
         dse |  -.0096542    .226096    -0.04   0.967    -.5072881    .4879797
  percentpd |  -.6815968   .3633064    -1.88   0.087    -1.481229    .1180351
       _cons |   45.91467   19.02434     2.41   0.034     4.042382    87.78696
------------------------------------------------------------------------------
```

Table 9: Multivariate Regression Results for full model (Author, 2021)

On the growth model, R^2 = 68.82% implying a better fit for the data. The F-statistic =3.467937 with P-value (.0325) < 0.05 indicated the model was significant in explaining the relationship in the variables. however, on specific coefficients, only mdsppg was obtained as significant with P-value (.022) < 0.05. All other variables had insignificant effects on the changes in GDP. External debt, treasury bills, treasury bonds and total debt service as a percentage of export of goods and services, and personal income had negative insignificant effects on changes in GDP, while domestic debt, multilateral; debt service as a percentage of public and publicly guaranteed debt service and debt to GDP ratio was found to have positive insignificant effects on changes in GDP.

The inflation model with R^2 = 44.62% indicated a relatively adequate model with F-statistic = 1.265873 having P-value (0.3486) >0.05 indicated that the model was insignificant in establishing the relationship between inflation and the variables. External debt had a significant effect on inflation which was positive, while domestic debt had positive insignificant effect on inflation. All other variables had insignificant negative effects on inflation.

Analysis and Results for Research Questions

Here, the researcher interprets the findings of the study in relation to the research questions for the study

What is the effect of public debt on economic growth in Kenya

Total public debt has a negative impact on the economic growth parameters used in this study. These results are consistent with studies conducted by Akram (2010), Kumar and Woo (2010), Mbah et. al (2016) and Umaru et. al (2013). This adverse effect on economic growth can be attributed to the fact that higher levels of public debt negatively affect capital accumulation and economic growth due to rising long-term interest rates, higher taxation, inflation and other factors. lead to increased volatility and lower growth rates. (Rugy and Salmon, 2020) Although there is some evidence that public debt negatively affects economic growth,

this correlation may not be causal. In addition, the observed negative correlation between debt and growth may be related to a third factor such as corruption, mismanagement and inefficient use of public debt funds which may have a common effect on the two this variable. (Panizza and Presbitero, 2013). However, this negative relationship was not significant during the study period.

What is the effect of domestic debt on economic growth in Kenya?

Domestic debt has a positive effect on GDP growth, which is consistent with the studies by Mbah et al. (2013), Maana et. al (2008) and Putunoi and Mutuku (2013), who studied the impact of domestic debt on Kenya's economic growth and also found the relationship to be significant. The positive impact of domestic debt on economic growth is due to the fact that the level of domestic debt remains moderate and sustainable and thus promotes growth. This is also evidenced by the fact that domestic debt markets promote financial depth and economic efficiency due to increased expansion of capital markets and financial sector liberalization, which stimulates growth, such as training of the Capital Markets Authority, which increased its activity on the Nairobi Stock Exchange (Kiprop and Mose, 2015). For this study period, the relationship was insignificant. In addition, domestic debt has a negative impact on inflation. This may be because Treasury bills, which make up the bulk of domestic debt, are short-term securities with high interest rates. As a result, banks or the non-banking public sector buy Treasury bills and earn higher yields, which increases aggregate demand and the price level. In addition, the cost of domestic debt is a heavy burden on the budget and to finance the budget deficit, the government has to resort to different sources and the financing of the deficit leads to a decrease in the value of the currency, eventually cause inflation. (Ahmad, 2012). For this study period, this positive effect was not significant.

What is the effect of external debt on economic growth in Kenya?

This research found out that foreign debt has a negative impact on changes in GDP. These findings are consistent with Halima's 2013 study on the impact of foreign debt on Kenya's economic growth. This means that due to the economic impact of excessive debt servicing costs, each unit increase in the level of external debt will reduce Kenya's economic growth (Checherita, 2010). Since an increase in external debt will increase the country's risk premium, the interest payment on the total external debt will also increase. Household disposable income declines, the amount of savings in GDP decreases, and the resources accumulated by capital decrease, so the economic growth rate declines. With the increase in external debt, the economic growth stimulated by the depreciation of the real exchange rate and the attraction of resources to tradable sectors is offset by the outflow of resources to external lenders caused by the burden of external debt. And the subsequent reduction in the savings/GDP ratio. (Casares, 2015). This effect was not significant during the study period. In addition, as Okech (2016) discovered, external debt produced positive results in theory, and he used multivariate regression to examine the impact during the 1972-2012 period. However, unlike this study, during their research period, this effect was significant, and the impact on inflation was negligible. This positive effect may be due to the government's tendency to increase debt, and inflationary pressures depend on the level of development of the financial market (Reinhart and Rogoff, 2009 and 2010).

What is the optimum level of public debt for the Kenyan economy?

In order to establish the optimum level of public debt for the Kenyan economy the optimum debt for the Kenyan economy the researcher carries out quadratic curve estimation technique to generate the growth maximizing level of debt to GDP ratio as illustrated in figure 4.4.4. The study established that debt to GDP ration0f about 47% to 51% would maximize the level of economic growth for the Kenyan economy which was consistent with the IMF recommendations of 40% to 50% for middle income economies like Kenya (IMF, 2016).

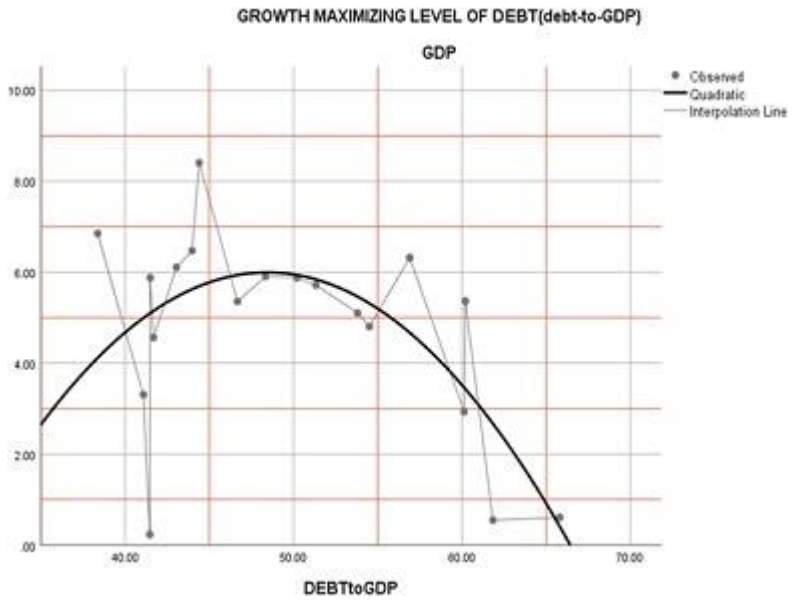

Figure 6 Debt Maximizing Debt-to-GDP ratio

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Introduction

In this chapter, the researcher gives the summary of findings, conclusions of the study and presents recommendations and policy interventions based on the findings of the study and recommends areas for further research.

Summary of findings

Public debt in Kenya has in the recent past been an area of concern for policymakers, professionals, investors as well as the local countrymen. With these increasing concerns and the incessant increase in public debt levels, the researcher carried out this study with the main objective of determining the effect of public debt on economic growth. the specific objectives of the study were to determine the effect of domestic and external debts on economic growth as well as to establish the economic growth maximizing level of public debt. The study used annual data from 2002 to 2020. The data was extracted from publications and databases of World Bank Development Indicators, International Monetary Fund, Kenya National Bureau of Statistics, and The Central Bank of Kenya. The researcher used the OLS technique in a multivariate regression model to analyze the data. The study established a negative effect of public debt on economic growth. however, the relationship was insignificant for the period under study. The effect of external debt was also negative but not significant on changes in GDP; while its effect on inflation rates was positive but insignificant. Domestic debt had insignificant positive effects on changes in GDP while its effect on inflation was negative but insignificant as well. The insignificant effect of domestic debt could be in part attributed to the underdeveloped capital markets in the Kenyan economy. This further ruled out the presence of the crowding effect of domestic debt on Kenya's economic growth. consequently, domestic debt was thus sustainable for the Kenyan economy during the period of study. These findings were consistent with the study done by Ochieng, (2013). The study also established that debt-to-GDP ratios of about 47% to 51% maximize the economic growth in Kenya.

Conclusion

The insignificance effect of public debt on economic growth obtained in the findings of the study is attributed to the mismanagement of debt funds in the recent past. Thus, the government through policy making must revolutionize how public debt funds are injected into the economy through productive ventures in order to stimulate economic growth and stability. The existence of a negative effect on public debt on economic growth must be a concern to the government based on the findings of this study.

Recommendations and policy interventions

From the findings of this research, there is a negative relationship between public debt and economic growth in Kenya. This is indicative of debt vulnerabilities if appropriate measures are not put in place. The researcher therefore, recommends the following policy interventions. The researcher recommends that to make public debt funds more productive, borrowing should be done on project basis. External debt should mainly be borrowed on concessional terms since these would be cheaper to service and would not pose greater costs on debt service. The researcher also recommends efficient management of resources as it would determine the country's ability to service the debts which in turn would improve the country's credit ratings in the international markets. There is also a pressing need for effective and efficient debt management strategy and this can be achieved by making the Debt Management Office more operational and autonomous. The government should also introduce better ways of managing shocks and crises. The researcher further recommends debt restructuring of the current debts to enhance debt sustainability. Boosting alternatives to borrowing such as advancing the export sector and creating an enabling environment for private investors should be pursued by the government. From the findings of this study, the researcher recommends that public debt should be the last resort to public finance as it depicted negative effects on economic growth and additionally, Kenya should pursue comprehensive debt relief measures.

Recommendations for future study

This study obtained insignificant effects of the variables on economic growth using OLS technique thus recommends that the effect could be studied using other methods of analysis that could help validate the existing relation between public debt and economic growth. there is also a need to study the effect of domestic debt on inflation since the effect was not consistent with theory. This could help policy makes make more informed decisions on public debt management.

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REFERENCES

1. Abbas, S. M. (2007). *The Role of Domestic Debt Markets in Economic Growth.* International Monetary Fund.
2. Hussein, M. E. (2017). Fiscal deficit and its impact on economic growth. *Evidence from Bangladesh Economies*

, 5(4).

3. Kenya, C. B. (2018). *Annual report and financial statements 2017/2018.*
4. Makau, J. K. (2008). *External public debt servicing and economic growth in Kenya: An empirical analysis.* Department of Arts-Economics.
5. Matiti, C. (2013). THE RELATIONSHIP BETWEEN PUBLIC DEBT AND ECONOMIC GROWTH IN KENYA. *International Journal of Social Sciences and Project Planning Management*, 65-86.
6. Munda, C. (n.d.). Uhuru to leave Kenyans with ksh 7Trn debt end of his term. *Daily Nation*.
7. MWANGANGI, M. P. (November, 2016). *THE RELATIONSHIP BETWEEN PUBLIC DEBT AND LEVEL OF ECONOMIC GROWTH IN KENYA.* Nairobi: University of Nairobi.
8. Mwere, D. (n.d.). President Kenyatta defends government borrowing. *Daily Nation*.
9. Nations, U. (2018). *Transforming our world: THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT*. United Nations.
10. Nations, U. (n.d.). *TRANSFORMING OUR WORLD:THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT*. 2018: UNITED NATIONS.
11. Osewe, V. O. (November 2013). *EFFECT OF EXTERNAL DEBTAND INFLATIONON ECONOMIC GROWTH IN KENYA.* Nairobi: KCA University, .
12. Putunoi, G. &. (2013). Domestic debt and economic growth nexus in Kenya. *Current Research Journal of Economic Theory*, , 5(1),1-10.
13. Solomon, R. (1977). *A Perspective on the Debt for Developing Countries.* Brookings Institution.
14. Statistics, K. N. (2020). *Economic survey (various issues).* Kenya Government Printers.
15. Were, M. (2001). *The Impact of External Debt on Economic Growth in Kenya: An Empirical Assessment.* United Nations University.
16. Wilkens, H. (1983). The Debt Burden of Developing Countries. *ECONSTOR*, 55-59.
17. Akram, N. (2010). Impact of public debt on economic growth in Pakistan. *The Pakistan Development Review, 50*(4), 599-615.
18. Checherita, C., & Rother, P., (2010), The impact of high and growing government debt on economic growth an empirical investigation for the euro area, *Working Paper Series* No.1237.
19. Reinhart, Carmen M, Vincent R Reinhart and Kenneth S Rogoff (2012), "Public debt overhangs: Advanced-economy episodes since 1800", *Journal of Economic Perspectives*, 26(3): 69-86.
20. Clements, B., Bhattacharya, R., & Nguyen, T. Q. (2005). External Debt, Public Investment, and Growth in Low-Income Countries, IMF *Working Paper No. 03/249.*
21. Cunningham, R.T. (1993): The Effects of Debt Burden on Economic Growth in Heavily Indebted Nations, *Journal of Economic Development*, pp. 115-126.
22. Karagol, E. (2002): The Causality Analysis of External Debt Service and GNP: *The Case of Turkey, Central Bank Review* pp. 39-64.
23. Karazijien?, Ž.; Sabonien?, A. 2009. Valstyb?s skolos strukt?ra ir valstyb?s skolinimosi ?taka Lietuvos ekonomikai [Structure and effects of national debt on the Lithuanian economy], *Ekonomika ir vadyba* [Economics and Management] 14: 271–279.
24. Kibui, P. (2009). The impact of external debt on public investment and economic growth in Kenya (1970-2007). *Unpublished MBA Project*, University of Nairobi.
25. Krugman. (1988). Financing vs. Forgiving a debt overhang. *Journal of Development Economics*, 29 (3), 253-268.
26. Kumar, M, S & Woo, J. (2010). Impact of high public debt on long run economic growth for a panel of advanced economies (1970-2007),.*Published thesis*, Pakistan. 62
27. Levy, A. & Chowdhury, K. (1993) An integrative analysis of external debt, capital accumulation and production in Latin America, Asia-Pacific and Sub-Saharan Africa.
28. M'Amanja, D. & Morrisey, O. (2003). *Fiscal policy and economic growth in Kenya*. Centre for Research in Economic Development and International Trade credit research paper no. 05/06. Nottingham, United Kingdom: University of Nottingham.

29. Maana, I. et al, (2008), Domestic Debt and its Impact on the economy – The case of Kenya, *Paper presented during the 13th Annual African Econometric Society Conference in Pretoria, South Africa.*
30. Makau, J.K. (2008). External Public Debt Servicing and Economic Growth in Kenya: An Empirical Analysis. *Unpublished MBA Project*, University of Nairobi
31. Mishkin, F.S (2009). *The Economics of Money, Banking, and the Financial Markets*, 7th edition.
32. Mugenda, O. M. & Mugenda, A. G. (2003). *Research Methods: Quantitative & Qualitative Approaches*. Nairobi: ACTS Press.
33. Mwaniki, C. (2013). Kenya's public debt surges to Sh1.9 trillion. *Business Daily* – Monday October 13, 2014.
34. Njuguna, N, Kamau, T & Owino, O. (2008). Unlocking the future potential for Kenya: The Vision 2030 preliminary draft chapter 4. Nairobi: Government printer.
35. Njuru, S.G. (2012). Determinants of domestic private investment in Kenya (1970–2001). *Unpublished master's thesis*. Kenyatta University, Nairobi, Kenya.
36. Putunoi, G.K., & Mutuku, C.M. (2013). Domestic Debt and Economic Growth Nexus in Kenya. *Current Research Journal of Economic Theory, 5(1): 1-10.*
37. Qureshi, M.N. & Ali, K. (2010), Public Debt and Economic Growth: Evidence from Pakistan, *International Research Journal of Finance and Economics*, Issue 53, pp. 100-108.
38. Republic of KenAya, (2007*). Kenya Vision 2030: A globally competitive and prosperous Kenya*. Nairobi: Government Printer.
39. Sheikh, M. R., M. Z. Faridi., & K. Tariq (2010). Domestic Debt and Economic Growth in Pakistan: An Empirical Analysis. *Pakistan Journal of Social Sciences (PJSS), 30(2), 373-387.*

ABBREVIATIONS

CBK	Central Bank of Kenya
DoD	Domestic Debt
DSE	Total debt service as a percentage of exports of goods and services and personal income
ExD	External Debt
GDP	Gross Domestic Product
GNP	Gross National Product
IMF	International Monetary Fund
KNBS	Kenya National Bureau of Statistics
KSH	Kenya Shillings
LDCs	Less Developed Countries
MDSPPG	Multilateral Debt Service as a Percentage of Public and Publicly Guaranteed Debt Service
PercentPD	Debt-to-GDP ratio as a percentage

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SPSS Statistical Package for Social Science

TPD Total Public Debt

WB World Bank

OPERATIONAL DEFINITION OF TERMS

Public Debt: Public debt refers to the total of the country's debts representing how much is funded by borrowing instead of tax sources. (Makau ,2008 & Aybarc, 2019).

External debt: will be defined as obligations owed by a country to external creditors. (Patenio & Tan-Cruz, 2007)

Domestic debt: refers to total debt owed by a government to local institutions and individuals. For this study, we focus on treasury bills and bonds. (Maana, 2008)

Economic growth: the quantitative changes in the country's economic development in a given time usually one year. In this study, it will be measured in terms of change in GDP. (Haller, 2012)

Crowding out effect: Refers to a situation in which the government uses a remarkable proportion of resources for public goods provision and servicing public debts thus leaving little or no resources for the private sector investments. (Rogalska & Balcerzak, 2014)

Debt overhang hypothesis: It occurs where there is a possibility of the public debts exceeding the government's capacity to repay the debts in the future. (Kobayashi, 2013)

Gross Domestic Product: is the total market value of all final goods and services produced within a country's borders over a given period usually a year. (Callen, 2020)

GDP growth rate: refers to the rate at which GDP grows from one year to another. (Callen, 2020)

Inflation rate: refers to the percentage change in average prices through the economy. (Oner, 2010)

APPENDICES:

TABLES

	DEBT TYPE	SHARE of debt 2012/13	growth of debt 2012/13 and 2013/14	growth of debt 2013/14 and 2014/15	growth of debt 2014/15 and 2015/16	growth of debt 2015/16 and 2016/17	growth of debt 2016/17 and 2017/18	growth of debt 2016/17 and 2018/19	SHARE of debt 2018/19
1	DOMESTIC DEBT								
	Central Bank	2%	68%	-4%	58%	-45%	103%	-1%	2%
	Commercial Banks	28%	18%	18%	27%	23%	11%	12%	24%
	Sub-total: Banks	*30%*	*21%*	*16%*	*29%*	*17%*	*15%*	*11%*	*26%*
	Non-bank Financial Institutions	26%	24%	4%	26%	16%	20%	15%	22%
	Total Domestic	*55%*	22%	11%	28%	16%	17%	12%	*48%*
2	EXTERNAL DEBT								
	Bilateral	12%	14%	63%	21%	36%	13%	21%	16%
	Multilateral	27%	17%	15%	17%	6%	-2%	10%	16%
	Commercial Banks	3%	298%	18%	56%	47%	31%	23%	18%
	Suppliers Credits	1%	8%	1%	0%	-8%	9%	1%	0%
	Sub-Total	42%	37%	26%	26%	24%	13%	18%	49%
	GUARANTEE DEBT	-							-
	Bilateral	2%	4%	-4%	43%	-7%	7%	39%	1%
	Multilateral	0%	2%	13%	-9%	15%	-3%	1%	0%
	Commercial	0%					-3%	1%	1%
	Sub-Total	2%	4%	-3%	38%	123%	1%	17%	3%
	Total External debt	45%	35%	25%	26%	28%	12%	18%	52%
3	**Total Debt**	*100%*	28%	17%	27%	22%	15%	15%	*100%*

Table 10 Source: National Treasury and Central Bank of Kenya

Year (Billions)	Deficit in the Approved Budget	Deficit in the Revised Budget	Increase in the deficit within the year
2014/15	-417.0	-732.0	76%
2015/16	-640.5	-732.6	14%
2016/17	-775.0	-871.6	12%
2017/18	-594.3	-670.4	13%
2018/19	-608.1	-760.6	25%
2019/20	-673.6	-789.9	17%

Table 11 Source: Budget Policy Statements (BPS) and Budget Review and Outlook Papers (BROPs) 2014-2020

FIGURES

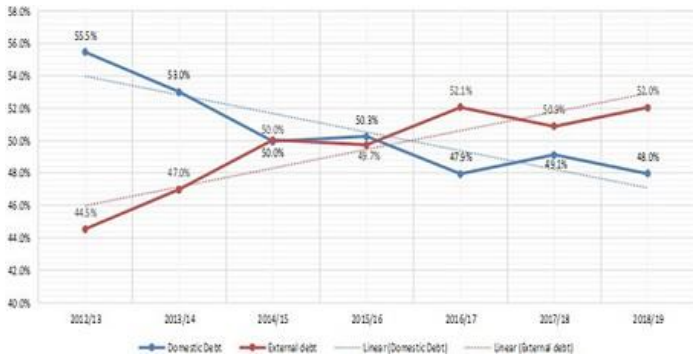

Figure 7 Source: Annual Public Debt Reports 2017/18 and 2018/2019

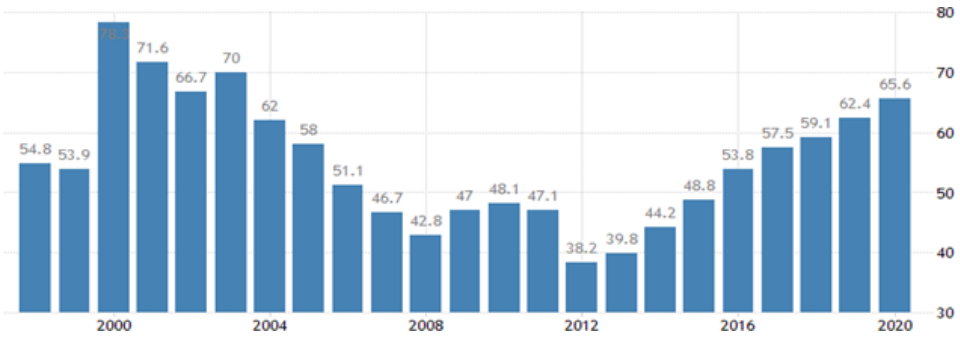

Figure 8 Source: Trading Economics.Com |Central Bank of Kenya

Research Program

Sn.	Activity	Time/Date
1	Start of the proposal	March 2021
2	Regular group meetings	2 days per week
3	Consultations with supervisor	Mondays and Fridays
4	Proposal presentation	June 2021
5	Data collection	March to June 2021
6	Data analysis	June 2021
7	Summary of findings	End of June 2021
8	Conclusions and recommendations	July 2021
9	Project presentation	July 2021

Table 12 Research Program (AUTHOR, 2021)

Research Budget

Sn.	Particulars	Amount (Ksh)
1	Printing costs	3000
2	Binding proposal and project documents	2500
3	Data collection bundles	2000
4	Data analysis	3000
5	Electricity	1500
6	Miscellaneous	2000
	GRAND TOTALS	**14,000**

Table 13 Research Budget (Author, 2021)

Data collection sheet

YEAR	DoD	ExD	TPD	TBILL	TBOND	%MDSPPG	DSE%	percentPD	GDP	INF
2002	2886669.19	4521607.96	7408277.15	1413721.00	1295989.40	26.08860466	16.35184602	61.84	0.54685953	1.96
2003	3442967.19	4667506.61	8110473.81	1298641.45	1926924.66	26.78892577	15.8395942	60.13	2.932475546	9.82
2004	3613737.77	5182974.80	8796712.56	1223722.00	2231816.36	40.56532004	8.282711143	53.80	5.104299776	11.62
2005	3786925.93	5132453.80	8919379.76	1279408.95	2350163.86	74.69666795	9.98729954	48.34	5.906666082	10.12
2006	4320247.93	5007444.18	9327692.14	1535431.40	2650729.57	65.35010759	7.135561691	43.98	6.472494299	6.42
2007	4871792.99	4958771.27	9830564.28	1559865.47	3233718.24	61.72816857	6.327983994	38.37	6.850729771	4.27
2008	5295986.39	5271713.50	10567699.89	1441016.10	3760340.94	36.93998262	4.88400727	41.47	0.232282746	16.23
2009	6260162.74	6327093.33	12587256.07	1796180.90	4347101.60	40.58306587	5.140200302	41.09	3.306939815	9.39
2010	7989837.60	6754527.68	14744365.28	2220697.30	5570148.90	41.63163817	4.403750851	44.40	8.405699224	3.97
2011	9198353.92	8477400.34	17675754.26	1799240.85	7074876.05	43.5640981	4.314674989	43.05	6.10826372	13.98
2012	10773682.03	9023059.59	19796741.62	2133810.30	8321600.73	34.84823412	4.803016806	41.69	4.563209131	9.64
2013	12992446.33	10339872.48	23332318.81	3457245.35	9155397.66	39.33576539	4.905137592	41.49	5.878680567	5.72
2014	15099067.66	12409982.73	27509050.39	3901264.25	10793050.01	15.68251579	11.52957601	46.67	5.357125644	6.88
2015	17049886.98	17077281.45	34127168.47	4214061.25	12363961.89	27.82089491	8.466290759	51.33	5.718507131	6.58
2016	21230103.62	21161844.10	42391947.74	6868407.45	13954723.88	25.76455518	11.20299341	50.20	5.8789493	6.30
2017	24948057.73	26779401.49	51727459.21	8476189.35	16105954.44	25.36191745	14.64315482	54.50	4.805696525	8.02
2018	29494330.52	31053772.59	60548103.09	10672166.70	18248448.49	26.10841243	23.55203578	56.90	6.318450702	4.70
2019	33624513.12	35613579.72	69238092.85	11549174.60	21426731.16	23.63553293	38.19827218	60.20	5.365748965	5.23
2020	39127833.29	42011198.30	81139031.57	10956895.95	27556135.11	23.63553293	38.19827218	65.80	0.60749749	5.29