

FACTORS INFLUENCING PUBLIC DEBT IN KENYA

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DECLARATION

I declare that this dissertation is my original work and has not been previously published or submitted elsewhere for award of a degree. I also declare that this contains no material written or published by other people except where due reference is made, and author duly acknowledged.

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have been adequately addressed

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ABSTRACT

Public debt in Kenya continues to rise each year and now the country faces the possibility of plunging into a serious economic crisis due to inability of the government to repay what it owes. The purpose of this study was to investigate factors influencing public debt in Kenya. Specifically, the study sought to determine the influence of budget deficit, official development assistance, balance of trade and economic growth on public debt in Kenya. The study was anchored on the political business cycle theory, public choice theory and Ricardo's theory on public debt. This study adopted a historical time series research design. The study was based on Kenya and data was collected quarterly for 20 years starting in year 2000 to 2019. A time series regression model was applied to analyze the collected data. This section provides the summary of the study findings. The summary is provided in relation to the research objectives. Regarding budget deficit, the study findings indicated that the first lag of budget deficit had a significant positive effect on public debt ($\beta = 0.54$, $p = 0.009$). The study findings also determined that the first lag of ODA did not have any significant influence on public debt ($\beta = -0.15$, $p = 0.591$). Concerning balance of trade, the findings showed that the first lag of balance of trade had a significant negative effect on public debt ($\beta = -0.45$, $p = 0.008$). However, the study findings indicate that the first lag of economic growth did not have any significant influence on public debt ($\beta = -0.002$, $p = 0.971$). Considering the findings made in the study, the study makes some vital recommendations. The governments should ensure that budget deficit is returned to sustainable levels and fiscal discipline observed. Regarding ODA, the government of Kenya should seek more multilateral and bilateral cooperation with development partners so that to enhance ODA as a large proportion of financing government recurrent and development expenditure. Further, the government of Kenya should enhance its balance of trade through expenditure-reduction measures that are intended to limit expenditure on imports and regulate demand, by putting downward pressure on demand, and thereby promoting private sector and household saving. Lastly, the study recommends stimulation of key sectors that contribute significantly to the economic growth such as agriculture, technology and manufacturing.

Key words: Public debt, Budget deficit, Exchange rate, Balance of trade, Economic growth, official development assistance.

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ACRONYMS AND ABBREVIATIONS

ANOVA	Analysis of Variance
CBK	Central bank of Kenya
GDP	Gross Domestic Product
IMF	International Monetary Fund
KNBS	Kenya National Bureau of Statistics
KPSS	Kwiatkowski Phillips Schmidt-Shin
OECD	Organization for Economic Co-operation and Development
SPSS	Statistical Package for Social Sciences
UK	United Kingdom
UNCTAD	United Nations Conference on Trade and Development
US	United States

TERMS AND DEFINITIONS

Balance of trade - Difference between the exports from a country and the imports into the country in a particular period of time (Osoro, 2013).

Budget deficit – A situation where expenses exceed revenues received through standard operations; and is used to show a country's financial health (Gramlich (2015).

Economic growth - Increase in the production of services and goods in an economy in a given period of time (Mannur, 2012).

Official development assistance – Voluntary transfer of resources from one country to another country; usually in form of capital from industrialized countries to developing countries (OECD, 2019).

Public debt - Also referred to as national debt, this is the total amount of money owed by the government to creditors such as businesses, other governments and even individuals (Gargouri & Ksantini, 2016).

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Public debt, also referred to as national debt is the total amount of money owed to creditors by the government. Creditors can include businesses, other governments and even individuals. Public debt is usually expressed as the percentage of a country's Gross Domestic Product (GDP). Others define public debt as the total annual budget deficits. A country's deficits impact on its debt and vice versa. Public debt is as a result of government having more expenditures than what it is able to collect through tax revenues (Gargouri & Ksantini, 2016). Though some levels of public debt is required to bridge gaps in necessary spending and development, Yared (2019) notes that large public debt build-up can ultimately leads to reduced economic activity, either by forcing an increase in distortive taxes and decrease in public investment or by crowding out private capital investment. Therefore, public debt should be maintained at sustainable levels.

According to Salsman (2017), in the modern world, government needs keep increasing; thus, the government has to use more resources to meet these needs. Government expenditures are funded by public revenues such as property and enterprise revenues, taxes, stamp duties, penalties, fines and fees. However, the government is sometimes faced with budget deficits due to various reasons like war, natural disasters, development financing, expanded infrastructure investments, economic crises and ever-expanding ordinary public expenditures. To fill this deficit, the government is forced to borrow.

Worldwide, governments spend money mostly on essential services such as education, healthcare, defence activities, infrastructures. Sometimes governments have to borrow money to finance these activities when they fail to hit revenue collection targets, and the governments can

only cover the temporary deficit either through budget cuts through borrowing. Sometimes the deficit is not temporary and the government is experiencing a structural shortfall that is common in countries with ageing population, and expenditure on healthcare and pensions in relation to GDP growth and fiscal revenues significantly goes up (Swamy, 2015).

Debt is good for economic growth of a country but fiscal discipline is absolutely necessary. Continuously operating on deficits implies that at some point the government will default, and if default is avoided, the cost of financing these huge debts is passed over to future generations. This calls for prudent financial management including timely repayment of public debts. The best way for government to manage its debt is that it must run a primary surplus adequate to repay what was borrowed on or before the set deadline.

The 2008 economic crisis that ravaged across Europe was as a result of high level of government debts in many countries within the region. To handle this situation, each country within the region had to put in place various structural reforms and stringent austerity measures in order to stabilize fiscal imbalances. The most affected country during that economic crisis was Greece which had to be bailed out through debt relief and rescue loans (Forslund, Lima & Panizza, 2011). A decade after the economic crisis, these countries seem not to learn from their past mistakes. Data from IMF and OECD proves these countries have been accumulating debts yearly; and the trends seem not stopping soon. What is becoming more alarming is that IMF has issued warnings that at least 24 of the 59 developing countries are either battling with debt crisis; or on the brink of falling into another crisis. If that happens, as expected, low-income countries like Greece are the most vulnerable.

Similarly, the OECD area has been recently experiencing a significant rise in sovereign debt since the world financial crisis, although at a lower rate when compared to that of 2008-2012

crisis. The governments within the OECD has borrowed close to \$10.5 trillion yearly, and overall, their total sovereign debt rose to \$45.0 trillion in 2018 from \$43.6 trillion in 2017. These are absurd figures compared to 2008 which was just \$25 trillion. Still, by 2025, these countries are projected to have accumulated about \$83.6 trillion in debts (Gargouri & Ksantini, 2016).

Between 2012-2017, while some countries managed to live within their means and those that borrowed did so with some sense of sustainability, others went on an irresponsible borrowing spree. For instance, Denmark, Czech Republic, New Zealand and Iceland successfully paid their debts; pulling themselves out of pre-crisis situations. However, others like Chile, Australia, Portugal, France, Spain, United States and Slovenia continued to build up debt burdens, and in some cases, public debt was above 100% of GDP. The increase in debt burden in these so called “wealthy countries” is mainly due to continued budget deficits and refinancing of debts which are as old as 30 years (Swamy, 2015).

As analysed by Forslund, Lima and Panizza (2018), public debt ratios in the United Kingdom rose from 40 percent of the GDP in 2007 to approximately 90 percent of the GDP in 2015. Similarly, in the United States, the public debt ratio increased from 60 percent of GDP to approximately 105% at the end of 2015. Japan government had the same borrowing appetite. By the end of 2015, public debt ratio in Japan was 229% of GDP up from 183% in 2007. This sharp increase in public debts among the above countries is attributed to fall in revenues due to recession and support program these countries received during the economic crisis of 2008. It is therefore clear that the increase in the ratio of public debt is majorly influenced by the growth of fiscal deficits.

Africa has also had major challenges in containing the rise of public debts. Many countries in Africa are still servicing loans that were created more than 40 years ago. In Tunisia for example,

the public debt to GDP ratio reached a high of 57.39% in 1986, even after the drying up of external loans following the outbreak of international debt crisis that occurred in early 1980. It took the implementation of structural adjustment program and intervention of IMF to bring down the public debt ratio of 57.39% in 1987 to about 40% in 2010 (Omrane & Gabsi, 2012). Since then, favourable growth dynamics in Tunisia have continued to keep the debt to GDP ratio at 40 percent, a relatively manageable level compared to other countries located in the horn of Africa (IMF, 2014). In around 2015, the security climate in the Northern Africa region worsened the situation. The famous Arab spring which affected Algeria, Egypt and Tunisia worked negatively on the performance of the economy. Besides the persisting political turmoil, the economy in this region was rescued by oil prices easing on the world market (Swamy, 2015).

In the past decade, due to rapid rise of debt levels, many countries have had their credit levels fall, thus increasing the level of borrowing costs. The interest rates have also gone up posing serious fiscal challenges to governments. IMF has noticed that sovereign debts in both emerging and advanced economies have grown to dangerous levels prompting it to tighten monetary conditions across the world. Further, it warns that if these conditions are ignored, the burden of debt is expected to grow even more (Adrian, 2019). Even after the world economic crisis was successfully managed in 2010, the public debt ratio in both advanced and developing countries continues to rise, indicating that there is still need to dig deeper to establish what is influencing this rise.

In the Sub-Saharan Africa region, the number of countries falling into debt crisis or at least have potential to default on external loans has nearly doubled between 2012 to 2018, mainly because of intensified borrowing particularly non-concessional loans. Around the same period, the foreign currency share rose by 12 percent to 36 percent of GDP in 2018. In 2019 alone, Benin,

Ghana and Kenya raised \$549 million, \$3 billion and \$2.1 billion respectively in sovereign bonds. By end of December 2019, Sudan, Mozambique and Cape Verde's public debt had already gone above 100 percent of their GDP. Uganda too is expected to have its fiscal deficits ballooning due to lower revenue collection and increased infrastructural financing. However, in Tanzania, the fiscal deficits and external loans seems to be under control (Muchira, 2019).

In Kenya, Kiptui (2019) determined that there was a positive relationship between inflation, government expenditure and government revenue with the levels of public debt. Another study by Mwega (2017) established that there was a positive correlation between budget deficits and total domestic debts. Further, a study by Juma (2017) established that growth in domestic debt negatively affected private investment in Kenya. Previously, a study by Mahiva (2016) had analysed the factors affecting fiscal deficits and public debt in Kenya and determined that fiscal policy was the main factor affecting fiscal deficits and public debt in Kenya.

A study was carried out by Koori (2013) on the macroeconomic impacts on budget deficit in Kenya between 1980 and 2009. The researcher used secondary time series data but employed regression analysis on private sector consumption, national income, private sector investment, net exports and government expenditures. The results indicate that income, price level and current account of balance of payments varied with budget deficit. The study also showed that the deterioration of trade balance amount and rise in domestic price levels were as a result of domestic borrowing by the government to finance budget deficits. However, these studies were conducted when the public debt relative to GDP was below the IMF prescribed limit.

1.1.1 Factors influencing public debt

The level of public debt in a country is influenced by many factors; mismatch between revenues and expenditure, reduction in tax revenue, foreign capital flows and macroeconomic factors (Azzimonti et al., 2014). Budget deficit is caused by excessive spending by government or reduced tax revenues that fail to cover expenditure. Increase in government spending through a fiscal stimulus could increase budget deficit, and hence lead to increase in borrowing to plug the gap. Besides, lack of fiscal discipline can make government spending to exceed revenues for a sustained period of time which could result to increased government borrowing (Yared, 2019). Foreign capital flows, such as official development assistance (ODA) can also affect the level of public debt in developing countries (Chudik et al., 2017). Among the macroeconomic factors that could affect level of public indebtedness are exchange rates (currency depreciation), inflation, real interest rates, balance of trade, gross capital formation, balance of payments and economic growth (Canofari & Piergallini, 2020). This study will focus on budget deficit, balance of trade, ODA and economic growth. These are the key factors that have been indicated to contribute to rise in public debt in developing economies by various scholars (Bradford Delong & Summers, 2012; Azzimonti et al., 2014; Ostry et al., 2015; Canofari & Piergallini, 2020).

Budget deficit is defined by Gramlich (2015) to describe a situation where government expenses exceed revenues received through standard operations; and is used to show a country's financial health. Accumulated deficits lead the government to increase national debt in its aim to plug the deficit. A budget deficit can be caused by increased government spending in key sectors such as infrastructure development, health and education or a reduced ability of the government to collect enough taxes due to inefficiencies or depressed economic activity. However, sustained budget deficits can be caused by wasteful spending by the government and fiscal indiscipline (De-

Córdoba et al., 2017). Due to limited resources in developing countries, governments are required to be disciplined, efficient, accountable, independent and transparent. However, most governments in developing countries have persistent deficits indicating weak fiscal management and inadequate fiscal discipline (Kholjigitov, 2013). To enable these governments to bridge the gap between the revenues and spending, they have persistently increased public debt.

The second factor included in the study that influences public debt is ODA. ODA or foreign grants refer to the voluntary transfer of resources from one country to another country; usually in form of capital from industrialized countries to developing countries. The main purpose of ODA is to promote economic growth of developing countries (OECD, 2019). This is because developing countries' domestic saving rates and foreign exchange through export earnings are insufficient to meet all investment plans. The effect is that these countries are constrained in their capacity to realize meaningful economic growth. Thus, capital inflows in the form of ODA are meant to fill the gaps (Hansen, Herik & Tarp, 2011). Increase in ODA is hence linked to reduction in public debt levels whereas reduced ODA may associate with increased public debt levels. When the levels of ODA are declining into developing countries, such countries are forced to turn to debt to finance spending (United Nations, 2019). On the other hand, countries that are able to attract more ODA could reduce their reliance on debt to fund government recurrent and development spending.

Balance of trade is another key factor that drives level of public debt. Balance of trade, also referred to as net exports, is the difference between the country's exports and imports for a given time period. This forms the biggest portion of a nation's balance of payments (BOP). In case a country is unable to fund its imports using the exports, it resorts to using foreign reserves, depleting them in the long run (Yared, 2019). When foreign reserves are depleted, the government must make up for that shortfall. This can be bridged by either attracting foreign investments into the

country or borrowing externally. Besides, when a country persistently experiences a trade deficit, it loses international revenue, creates less jobs and the economic growth is reduced (Cafiso & Cellini, 2014). This causes a reduction in gross national income which in turn can lead to reduced tax revenues to the government. This makes the government to turn to public debt to bridge the revenue gap, and thus leading to a rise in public debt.

Growth of the economy, measured through GDP growth rate, is another factor hypothesized to affect the public debt levels. Saungweme and Odhiambo (2018) observed that when the economy is sluggish or in recession, the government institutes expansionary fiscal policies that include increased spending, transfer payments, tax cuts and rebates. These policies have the effect of reducing tax revenues available to the government, and at the same increasing the spending (Égert, 2015). To finance these policies, the governments borrow internally or externally thus increasing the public debt level. Conversely, when the economy is growing, employment and productivity level increases which leads to increase in tax revenues that accrue to the government (Chudik et al., 2017). The government can use the increased tax revenues to reduce its borrowing or even retire debt which could lead to reduced public debt.

1.1.2 Effect of public debt

Among the public revenues, borrowing occupies an important position, so its social, economic, and political impacts have great value. Public debt affects the economy in various ways. Public debt affects prices generally. It is believed that borrowing will cause a deflationary effect only when it is seen as a bond sale. Since the private sector utilizes its own funds to purchase public bonds, thus, the total demand and private demand are shrinking. This situation creates deflation by lowering prices generally. But the government buys goods and services with the funds that are

generated from sale of bills or bonds; therefore, the total demand rises because of public demand. This comes with inflation since there would be general increase in prices due to the operation of different mechanisms (Salsman, 2017).

Public debt affects the distribution of income. This depends on which group will be burdened by debt costs and the income group that will benefit from the obtained debt resources. This often occurs in the repayment of borrowed money plus interests. The inequality in income distribution will not exist if lenders to the government and taxpayers are the same (Forslund, Lima & Panizza, 2011). Further, with external debts, cases of inequalities in income distribution across the economy and generations might be higher. This is because most of external debts have long term repayment plans, and governments especially in developing countries have the tendency to pass over these debts and tax burden to the next generation, causing income distribution inequalities and compromise of future quality of life (Frank, 2014).

Public debts also affect investments and savings volumes. As long as the government borrows internally from the savings to invest, the personal income, national income and personal saving culture will improve. If the government transfers the internally borrowed money to budget deficits, the private sector investment will reduce because the private sector savings will decrease. This is referred to as crowding out. If this happens, the national income growth will be slow. When public expenditure is financed by internal debts, the productivity of private sector is negatively affected.

Public debts also affect the economic development. If borrowed money is put into good use such as infrastructure financing, the new investments are increased through the multiplier effect. Consequently, employment and national income increases, and economic development is guaranteed. However, if the government does not invest the borrowed money properly, the

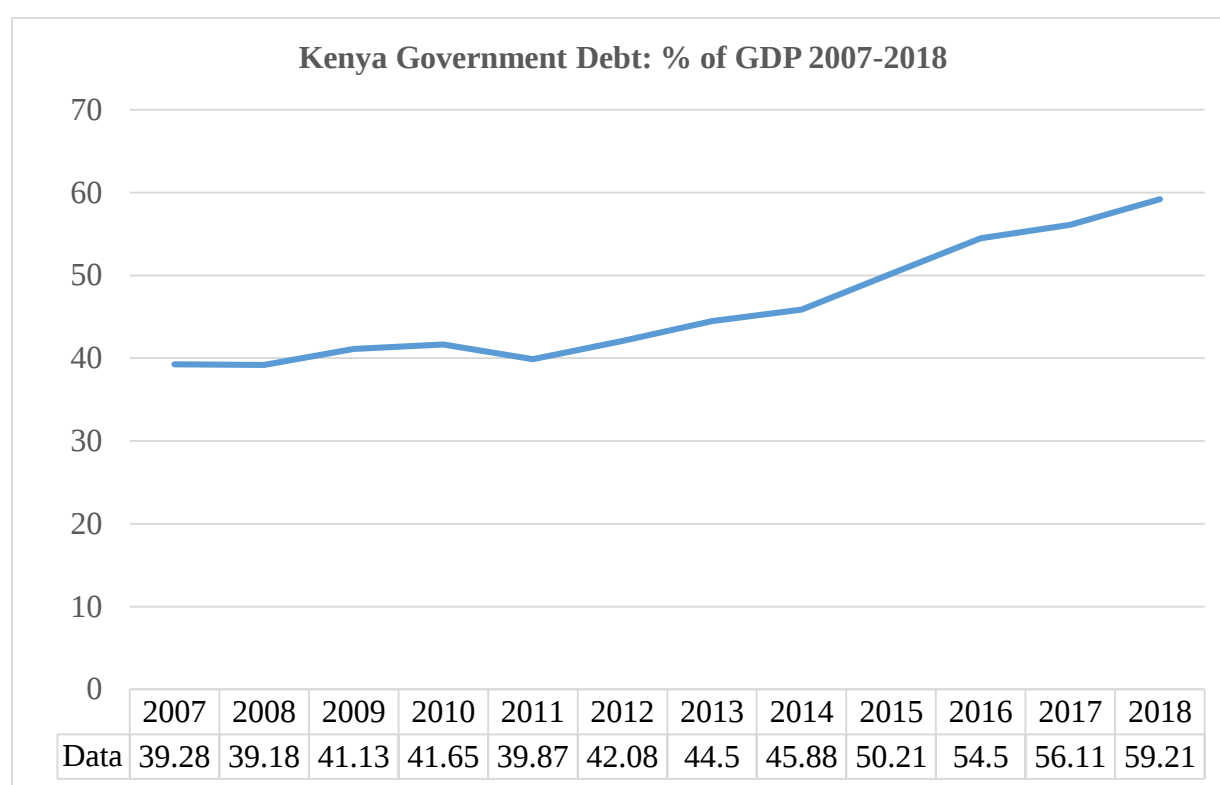
situation may change to debt financing debt, that is borrowing to repay another loan (Forslund, Lima & Panizza, 2011).

1.1.3 Public debt in Kenya

The following figure represents Kenya's public debt to GDP ratio between 2007 and 2018.

FIGURE 1

Kenya Government Debt, % of GDP



Source: CBK (2019), KNBS (2019).

CBK provided government debts in Kenya Shillings. Also, the Kenya National Bureau of Statistics provides Nominal GDP in Kenya Shillings. As shown in Figure 1, in December 2018, 59.2% of the country's Nominal GDP was accounted by Kenya's Government debt, which was higher compared to 56.1% in 2017. The Public Debt to GDP ratio was a record low at 39.2 % in December 2008 and reached a historically high of 59.2 % in Dec 2018. Between 2011 and 2018,

the Government Debt as percentage of Nominal GDP increased exponentially. In June 2019, government debt reached 57.1 billion USD while Kenya's Nominal GDP hit 24.8 billion USD (CBK, 2019; KNBS, 2019). Compared to previous years since independence, the trend in public debt ballooning is worrying. This study will analyse factors that have contributed to the constant rise in public debts in Kenya.

1.2 Statement of the Problem

World Bank Group has placed Kenya amongst countries with high risk of default on loans and plans to remove the country from that list in 2028 only if the authorities stick to a programme aimed to curtailing growth in government expenditure and growing taxes (World Bank, 2021). According to the principles of responsible borrowing advocated by UNCTAD, the government of the day must ensure public debts are at levels it can sustain. Also, as recommended by IMF, ratios of public debts to GDP should never go above 40% in developing countries like Kenya (Adrian, 2019). Even recently, the government of Kenya acknowledged that huge public debt is bad with the sagging productivity when it formed the National Debt Office (Public Debt Management Office, 2020). Perhaps this could also be a response to the world bank which has been cautioning developing countries about lack of public debt office. This office is mandated to develop debt policy after evaluating the risks, mobilize resources and draw up settlement plans for accrued debt. Borrowing is healthy and can be a recipe for rapid development if prudent spending of the funds is done (The Conversation, 2018).

Public debt in Kenya continues to rise each year and now the country faces the possibility of plunging into a serious economic crisis due to inability of the government to repay what it owes (Irungu, 2019). Currently, according to Central Bank of Kenya (2019), Kenya's debt stood at Kshs

5.9 trillion (USD\$49 billion) as at October 2019. This is equivalent to 56.4% of its GDP which is up from 42.8% in 2008. Policy analysts and economic scholars in Kenya have shown concern over the rising public debt levels. The Government may be forced to reduce or just stop investments in social and development programs since a big portion of tax revenues go into servicing loans. With the above statistics, Kenya might be unable to repay its loans leading to ceding control of some key national assets like Kenya Ports Authority to foreign creditors. It is not a new thing; it has happened in Sri-Lanka which had to surrender its national strategic port to Chinese government (Bellows, 2019). The major concern here is not about the levels of public debt, rather the source and the driving factors. Whereas the source is well understood as per the National Treasury of Kenya which lists foreign and domestic borrowing as major sources, the causes of rise of public debt calls for an urgent investigation; otherwise, the trend is worrying.

There have been several studies conducted regarding the factors influencing public debt levels. In Italy, a study by the Ministry of Economy and Finance (2018) established that levels of public debt are determined by fiscal discipline, budget deficits, economic growth and balance of trade. However, this study was conducted in a developed country and the findings may not be generalizable to a developing country like Kenya. A multicountry study by Swamy (2015) assessed the drivers of the rising public debt in both developed and developing countries. The study results determined that population growth, foreign direct investment, real GDP growth, inflation, and government expenditure had negative effects on debt. However, final consumption expenditure, gross fixed capital formation and trade openness had positive influence on public debt. This study did not focus on ODA and balance of trade which are critical factors affecting public debt in developing countries.

In Kenya, most of the studies conducted focus on the effects of public debt on macroeconomic factors, mostly economic growth (Matiti, 2013; Murungi & Okiro, 2018; Saungweme & Odhiambo, 2018). Among the few studies conducted on the factors driving public debt in Kenya include the study by Njoroge (2020) who assessed the relationship between GDP growth and public debt. The study established a negative relationship between economic growth and public debt levels. This study however, did not focus on other key aspects that could influence public debt such as budget deficit, ODA or balance of trade which will be included in the current study. Another study by Matiti (2013) assessed the relationship between economic development and public debt and establish a negative association. This study however, left some gaps as it did not include other key factors that can influence public debt such budget deficit and official development assistance which were incorporated in this study.

1.3 Objectives of the Study

The main objective of this study was to investigate factors influencing public debt in Kenya. Specifically, the study fulfilled the following objectives:

1. To determine the influence of budget deficit on public debt in Kenya
2. To establish the influence of official development assistance on public debt in Kenya
3. To examine how balance of trade influences public debt in Kenya
4. To evaluate the influence of economic growth on public debt in Kenya

1.4 Research Questions

1. What is the influence of budget deficit on public debt in Kenya?
2. What is the influence of official development assistance on public debt in Kenya?

3. How does balance of trade influence public debt in Kenya?
4. What is the influence of economic growth on public debt in Kenya?

1.5 Significance of the Study

The public debt in Kenya by June 2020, stood at KES 6.7 trillion (\$62 billion), which is equivalent to 66% of the GDP. This was an increase from KES 1.229 trillion (\$ 15.1 billion) which was 39% of GDP at June 2010. Besides, the country's debt repayment to ordinary revenues have grown steadily from 16.5% in 2011/12 to 42.8% in 2018/19 (Kinuthia & Rugo, 2020). This has increased debate on what is fuelling the increase in public debt and what needs to be done to ensure that the public debt does not go beyond sustainable levels. Analysis of factors influencing the rise of public debt in Kenya will provide insights for effective public debt policy development. This will help various stakeholders including the government of Kenya and its key entities such as Treasury, Central bank and the newly formed Public Debt Management Office, the public, politicians, finance and economic professionals and researchers and scholars.

1.5.1 Government of Kenya

The findings will help the government of Kenya to understand the key factors that drive public debt. This will enable the government to devise effective evidence-based interventions to deal with the rising level of public debt. This will assist the government to deal with the factors that will be indicated to be critical in driving public debt in the study.

1.5.2 Politicians, finance and economic professionals

The study findings will be valuable to politicians and finance and economic professionals who engage in discourse and advocacy regarding public debt. These stakeholders will use the findings of this study to inform their debate and advocacy regarding factors that influence public debt.

1.5.3 The public

The study findings will also be useful to the public as it will enable them to understand the factors that are critical in influencing public debt levels. Public debt is a critical subject in public discourse as public debt levels can influence other key factors such as economic growth and inflation which can significantly affect standard of living. The public could use these findings to engage in public discourse and influence decision making regarding public debt through their elected representatives in the national assembly.

1.5.4 Scholars and researchers

This study is also important to scholars and other researchers. It forms the basis for further research on the management of public debt. The study findings, conclusions and recommendations will also serve as a reference material for researchers conducting studies on related subjects.

1.6 Scope of the Study

This study intended to analyse factors influencing public debt in Kenya. Although there are other factors contributing to the growth of Kenya's debt, the study only focused on budget deficit, ODA, balance of trade and economic growth. Though there are other factors that influence public debt such as interest rate, inflation, exchange rate, openness and credibility of monetary policy, these factors were not included in this study as they have largely remained unchanged over the period that the public debt figures had risen significantly. The study only used secondary data. The study

used financial and economic data collected by Central Bank of Kenya and Ministry of Finance, KNBS, IMF and World Bank. Data related to domestic debt, external debt, budget deficit, ODA, balance of trade and economic growth were analysed on a quarterly basis. The study was limited to the period 2000 and 2019 since the researcher assumed that public debt accumulation escalated during this time. The study took a period of 3 months, between April and August 2020.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the literature on the factors influencing the rise of public debts. Both local and international past studies are reviewed. First, the chapter discusses the theoretical framework that will guide the study. Second, the chapter presents the empirical review related to motivators of rise of public debt. Third, the conceptual framework connecting all study variables is presented. The chapter ends with a summary of literature review and research gaps that this study sought to address.

2.2 Theoretical Review

This section examines theories that are relevant to public debt and factors affecting its rise. This study will be anchored on three theories, namely, the political business cycle theory, Keynesian economics theory and Ricardo's theory of public debt.

2.2.1 Political business cycle theory

This theory was developed by Nordhaus (1975). The theory of political business cycle is hinged on three assumptions. The first assumption is that a short-term trade-off exist between the rate of inflation and the employment and utilization in the economy. The second assumption is that politicians act rationally, giving priorities to their short-term political objectives. During election campaigns, they will make decisions that appear to solve problems in the short term at the expense of future economic wellbeing of the country. For instance, over-borrowing to finance short-term projects. The third assumption is that those who analyse political business cycle often think that

there is one policy solution in a particular situation that will safeguard the interest of the general public. That solution results into a natural equilibrium between unemployment and inflation.

In the modelling of the relationship between macroeconomic policies and political processes, there is one approach considered. Using the work of Downs (1957), one can argue that the main purpose of the formation and existence of political parties is to form and stay in the government. Thus, political parties do not care much about the effects of their policies on the economic performance of the countries. They only go with policies that will excite electorates and continue keeping them in government. Therefore, the policies of these political parties lead to reduced economic growth which in return affects tax revenues and thus leading to public borrowing.

This theory was highly relevant to the current study. The political impacts of public borrowing are addressed within the political business cycle theory framework. This theory argues that public expenditures go up during electioneering period because the government of the day increases public spending so as to excite voters. Most often government gets funds through domestic borrowing instead of using tax revenues. Once such government is re-elected it prefers not to disappoint the voters by increasing taxes, and transfers those debts to the next government in the long term. The net effect is that there is pile up of debt burdens. The situations worsen particularly in developing countries such as Kenya. Moreover, the theory relates effect of political party policies on economic growth which eventually leads to changes in borrowing patterns. When policies of political parties improve economic growth, this reduces future borrowing due to increased tax revenues and vice versa.

2.2.2 Public choice theory

The public choice theory by Rolf and Siebke (1996) indicate that excessive budget deficit tendencies is mostly brought about by politicians who want to please their voters by engaging in massive spending to seek re-election. Besides, the theory indicates that in a bid to please several constituencies such as importers, development partners, neighbouring countries and other political parties, the politicians in government can enter into trade agreements that can reduce balance of trade, thus requiring public debt to finance the erosion in foreign currency surplus.

The public choice theory also indicates that the public debt and fiscal deficit of the government are an aggregate outcome of the political conflict amongst the numerous groups of citizens, future and present politicians that arise from disagreements regarding the structure of the government expenses (Ghosh et al., 2013). This theory is in the school of normative approach to public debt which indicate that public debt is a deliberate act by government officials (De Grauwe & Ji, 2013). It emanates from the strategic conflicts among social groups and political parties as they exert simultaneous pressure on political decisions.

This theory was applied in this study to indicate that the behaviour, fiscal discipline and actions of the current government can influence the rise in public debt in a country. First, this can be caused by the government running persistent deficits, in a view to please voters, which necessitate it to borrow so as to finance the increased spending. Secondly, when a government lacks strategic focus, it does not engage in beneficial trade agreements. Instead, the government engages in agreements that erode its balance of trade. This erodes the foreign surplus which force it to borrow to bring back balance (Canofari et al., 2018). However, when the government has strategic focus, it engages in beneficial trade agreements that boost its balance of trade, thus reducing the level of public debt. Moreover, the government in place may engage in beneficial bilateral or multilateral agreements that increase or decrease the level of ODA accruing to the

country (United Nations, 2019). This would have an effect on the revenues available to the government for spending, thus affecting the government's decision to borrow.

2.2.3 Ricardo's theory of public debt

Ricardo's theory of public debt was developed by David Ricardo (Roberts, 1937). Its premise is that increase in public debt is due to increased and wasteful spending by the government (Alesina & Tabellini, 1992). The theory indicates that due to government's payment to unproductive labourers, it increases its expenditures extraordinarily which then forces it to have high negative balance of payments. These are then financed by taking up local or foreign loans. The theory indicates that if the government was not wasteful, there could be no need for loans since the revenues that the government collects through the various taxes would be enough to cater for productive expenditure and public goods.

Ricardo's theory of public debt has been applied in various studies that demonstrate why public debt rises due to unwarranted expenditure and waste by the government. This makes the revenue collected by the government to be less than the expenditure by the government (Karazijene, 2015). For instance, Mohamed, Evans and Tirimba (2015) used the theory to illustrate that inflation of expenses by government due to recurrent and unproductive costs make the budget deficit to increase over the years which force the government to borrow to finance the budget deficit. Due to political reasons, government do not deal with budget deficits by decreasing expenditure, but they borrow instead, thus increasing the public debt levels.

This theory was used in this study to link budget deficit with increase in public debt. The hypothesis supported by this theory is that due to waste and unproductive expenditure, the expenses of the government always surpass revenues. Instead of reducing expenditure through

austerity measures, the government seeks to borrow both locally and externally to finance the budget deficit. This leads to increase in public debt.

2.3 Empirical Review

2.3.1 Budget deficit and public debt

Budget deficit is expected to have a positive effect on public debt. This is because the government is expected to borrow to finance the deficit. Konopczyński (2021) investigated the link between economic development in Poland and a few fiscal policy variables including the structure of public debt, public consumption and the budget deficit relative to GDP. The study determined that given constant fiscal policy settings, the economy converges over time to a unique and globally asymptotically stable balanced growth path. The study used data from 2000 to 2016 and determined that economic development in Poland was mainly driven by capital accumulation after calibrating the model using statistical data (2.7 percent annually) and by fast improvement in human capital (at a pace of 5.4 percent per year). The study further determined that if current fiscal policy trends continue, the Polish economy will return to a more balanced development path, with GDP increasing by 3.7 percent. This rate might be enhanced if fiscal policy is modified effectively by reducing the budget deficit permanently.

A study was conducted by Kiptui (2019) on the deficit financing, fiscal lags and inflation levels in Kenya. The study investigated money supply, government revenue, inflation and government expenditure equations. The study applied a correlational design and analysed data using a time series regression analysis. The study findings showed that there was a positive relationship between inflation and lagged price level. A positive relationship also existed between

government expenditure and level of real income. Further, there was a positive relationship between government revenue and nominal income.

Mwega (2017) did an econometric study to establish the effect of changes in monetary variables on balance of payments, domestic price levels and controllability of credit. The study findings revealed that there was a positive correlation between budget deficits and total domestic debts. He concluded that as budget deficits increase so as domestic borrowing because the government strives to look for alternative sources of money to fill the void in the budget.

Further, a study was conducted by Juma (2017) on the relationship between domestic debt and private investment in Kenya. This study utilized secondary time series data that had been collected between 1963 and 2009. He also used regression analysis to understand the relationship between the two variables. He established that growth in domestic debt negatively affected private investment in Kenya. The researcher concluded that private investment is risked being significantly reduced with growing domestic debts as foreign investors shy away from investing in Kenya.

Mahiva (2016) also analysed the factors affecting fiscal deficits and adjustments in Kenya. The study used secondary data collected between 1972 and 2009. He used regression analysis to establish the relationship between the two variables. He established that new fiscal policy was the main factor affecting fiscal deficits and adjustments in Kenya.

A study was carried out by Desmond (2014) in Sweden on the relationship between budget deficits and public debt. The study used time series data and applied time series regression analysis. The study established that there was a strong positive relationship between budget deficits and public debt. He concluded that budget deficits pose greater risks to the economic performance due to increased prospects for future inflation and crowding out. Shekar (2014) analysed strategies for

domestic debt management among developing countries. The study concluded that for developing countries to effectively manage their debts, they need to assess sustainability of debts and make fiscal adjustments, integrate debt management into their macroeconomic strategy, devise an appropriate borrowing strategy, improve coordination between monetary management and debt, develop markets for government securities and generally improve debt management. He also concluded that government expenditures need to be reduced to match revenues collected to achieve low budget deficit.

In Nigeria, Folorunso (2013) investigated the relationship between Nigeria's national debt and the country's budget deficit. To examine the relative impact and causal link of both kinds of debt on fiscal deficit, public debt was disaggregated into foreign and domestic debt. From 1970 to 2011, time series data were gathered from the Central Bank of Nigeria's Statistical Bulletins. Except for the inflation rate, which was not stationary, the unit root test findings indicated that the rate of interest, public debt and its components, exchange rate, fiscal balance and income were all stationary at their first difference. The bi-directional link between public debt and fiscal balance, as well as its domestic component, was supported by pair-wise Granger causality studies, while causation runs exclusively from foreign debt to fiscal deficit. The presence of cointegrating linkages was further verified by Johansen Cointegration findings at a 5% level of significance. Furthermore, error correction estimates demonstrated that in both the short and long term, Nigeria's fiscal balance had a substantial positive connection with debt. According to the findings, a 1% rise in the budget deficit led to a 0.8% increase in the national debt. Furthermore, a 1% rise in public debt led to a 1.85% increase in the fiscal deficit. Domestic debt has a bigger influence on the fiscal deficit than foreign debt, according to the research. The report suggested that as a means of funding

the budget deficit, the Nigerian government should examine an appropriate combination of foreign and domestic debt.

A study was carried out by Koori (2013) on the macroeconomic impacts on budget deficit in Kenya between 1980 and 2009. The researcher used secondary time series data but employed regression analysis on private sector consumption, national income, private sector investment, net exports and government expenditures. The results indicate that income, price level and current account of balance of payments varied with budget deficit. The study also showed that the deterioration of trade balance amount and rise in domestic price levels were as a result of domestic borrowing by the government to finance budget deficits.

2.3.2 Official development assistance and public debt

In Tajikistan, Abduvaliev and Bustillo (2020) assessed the influence of government development aid on economic growth and poverty reduction in the country, as well as the role of South-South Cooperation. The study used a panel data set on Tajikistan's public debt, official development assistance and economic growth and discovered that a 1% increase in government development aid resulted in a 0.48 percent reduction in public debt levels and a 1.6 percent increase in per capita GDP. Despite the rising importance of South-South collaboration in Tajikistan, the panel data model did not provide any evidence that the existing bilateral cooperation had any effect on public debt.

Karras (2017) investigated the correlational relationship between ODA and public debt in a multicountry study. The study utilized annual data collected between 1960 and 2007 and utilized a sample of 71 grant countries that received ODA. The study established that there was a positive and significant relationship between ODA and growth in GDP, but found no significant influence

of ODA on the level of public debt. The findings from this study implied that the level of ODA received by the countries did not significantly affect their borrowing patterns and levels.

A study in Nigeria by Ugochukwu et al. (2016) examined the influence of foreign financial aid (foreign grant) in the form of official development assistance (ODA) on Nigerian economic growth during a 34-year period from 1980 to 2013. Annual time series data was gathered from the website of the Organisation for Economic Cooperation and Development (OECD) and the Central Bank of Nigeria (CBN) statistics bulletin. In order to determine the causal-effect between the variables under investigation, the researchers used a multiple regression model based on the Ordinary Least Square approach (OLS). The Johansen Co-integration test was used to assess the long-run connection between the variables, the Augmented Dickey-Fuller (ADF) test was used to identify the Unit Root, and the Error Correction Method (ECM) was used to estimate the speed of adjustment. The findings reveal that, although external debt has a positive and substantial relationship with foreign assistance, the association is not significant. This suggests that foreign assistance is helpful to Nigeria, but that its impact on public debt has been little.

Elbadawi, Ibrahim and Mwega (2016) used cross-sectional data to analyse borrowing behaviour among countries in Sub-Saharan region. They determined that ODA had a negative effect on both domestic and external public debt. Interestingly, the study established an increase in investments would attract more ODA so as to encourage more African countries to prioritize investment and become more self-sustainable. The study also showed that ODA significantly reduced the rate of borrowing from external sources.

Quartey's (2015) study focused on best ways of making ODA effective in developing countries, and used Ghana as a case study. He established that ODA could be useful if the government of Ghana and development partners come up with a better plan and coordination

strategies. He also established that the government must work on cutting its debt burden so that it instead used the ODA to engage in robust development spending. The study however, did not find any significant effect of ODA on the level of public debt.

Ram (2014) conducted a study on economic development and poverty from the view of country's policies governing the reception and utilization of ODA. He determined that channelling more ODA into a country with better utilization policies led to reduced borrowing and enhanced economic growth. The study hence indicated that ODA had a double impact on the growth of the economy and also enabling the government to reduce its dependence on public debt to finance development and recurrent expenditure.

A study was done by Outtara (2010) on the effects of ODA on domestic debt in Senegal. This study used data collected between 1970 and 2000, and mainly focused on the relationship between ODA and debt. The researcher determined that a large portion of ODA was used to finance development expenditure (41%) which reduced the financing required from government to finance this type of expenditure. Further, the results indicated that there was a statistically insignificant relationship between foreign grants and domestic expenditures. Also, the findings revealed there was a negative significant effect between ODA and domestic public debt in the country. This is because ODA provides an added revenue stream for the government which could reduce its domestic borrowing.

2.3.3 Balance of trade and public debt

Econometric research was conducted by Dhliwayo (2018) in Zimbabwe between 1980 and 2001. The study focused on the relationship between balance of trade, real income, domestic debt, price level and interest rates. The study found out that there was a strong negative relationship between

balance of trade and domestic debt in the country. The conclusions made from the study were that disequilibrium in balance of trade can only be removed through appropriate monetary targeting and financial programs that encourage exports. This in turn builds foreign reserves which are critical for the international competitiveness of the country.

Akpanung (2013) conducted an empirical review on the influence of balance of trade on the public debt level in Nigeria. The study applied annual time series data for the country for 50 years. The study determined that there was a causal relationship between balance of trade and the level of domestic debt. When a country has a wide negative balance, its domestic debt went higher in the next two years. The country had recently had a trade surplus which coincided with reduction in the level of domestic debt. A trade surplus in the country led to build up of foreign currency reserves which enabled the country to reduce its reliance on public debt to finance the deficit.

Another study was carried out by Oladipupo and Onotaniyahuro (2011) on the relationship between public debt and balance of trade in Nigeria and it established that balance of trade significantly and negatively affected the level of both foreign and domestic debt in the country. These findings were supported by another study by Onyemauma and Odii (2016) which was conducted to determine how agricultural balance of trade affected domestic debt in Nigeria. The study established that there was a strong relationship between domestic debt and balance of trade. The balance of trade increases as the foreign reserve increases, which then causes domestic debt to reduce.

A study done by Ali (2011) in Pakistan on the balance of trade using econometric data and variables such as public debt, net foreign assets, money supply, domestic credit, exchange rate, interest rate and inflation. The study revealed that there was a strong negative relationship between balance of trade and government debt. The study determined that when balance of trade in Pakistan

was persistently negative, it was forced to increase its borrowing in the subsequent years which led to growth in public debt.

Tijan (2010) empirically examined the balance of trade adjustment mechanisms between 1970 and 2010 in Nigeria and how this influenced the level of public debt in the country. The study findings show that a positive relationship exists between exchange rate, domestic debt and balance of trade. However, a negative relationship was established between gross domestic product, inflation rate and balance of trade. The study concluded that a reduction in government borrowing is expected when a country has a positive balance of trade but government debt can increase when the country has a negative balance of trade.

2.3.4 Economic growth and public debt

A study in Ghana by Hilton (2021) examined the causal relationships between economic growth over time and public debt, taking into account the continuous rise in the public debt stock of developing countries (particularly Ghana) with the unstable economic growth rate over the past decades and the recent borrowing due to the impact of COVID 19. To evaluate the causal links between economic growth (GDP) and public debt, the study employed a dynamic multivariate autoregressive-distributed lag (ARDL)-based Granger-causality model. The IMF fiscal Affairs Department Database and World Bank Development Indicator database were used to compile annual time-series data from 1978 to 2018. The findings showed that, in the short term, public debt has no causal link with GDP, but that in the long run, there is unidirectional Granger causation from public debt to GDP. Again, in the short term, investment expenditure has a negative bi-directional causal connection with GDP, but in the long run, it has a positive bi-directional causal relationship. On the other hand, although there is no short-run causal link between government consumption spending and GDP, long-run Granger causation exists between government consumption expenditure and GDP.

In Italy, a study by the Ministry of Economy and Finance (2018) investigated the relevant factors that influence changes in public debt. The study used quarterly time series data from 2007 – 2017. Time series regression analysis techniques were used to analyse the collected data. The study established that the public debt to GDP ratios for Italy has declined in the years 2012 – 2017 which is largely due to its fiscal discipline and its robust economic growth. The study determined that consistent increase in output had coincided with reduction in public debt. The study revealed that GDP growth rate was negatively associated with the percentage of debt to GDP. The study

noted that increase in GDP increased tax revenues to the government which reduced the amount of debt required to finance government spending.

Djiogap (2017) conducted a multi-country study to investigate the relationship between economic growth and public debt. The study applied the PSTR model to a dynamic panel data set that included 126 developing and industrialized countries for 50 years (1965-2014). To cater for country differences, the countries were divided into various categories; high income countries, low-income countries, lower middle-income and upper-middle-income countries. The study findings confirmed that economic growth and public debt have a non-linear relationship. These findings were supported by Casares (2015) who determined that GDP growth rate and public debt have an inverted U-shaped nonlinear association.

A study by Casares (2015) in Mexico assessed the relationship between economic growth and public debt levels of the country from 1980 to 2014. The study applied a time series regression analysis and corrected the data for stationarity through first differencing. The study determined that economic growth of the country was inversely associated with public debt levels of the country. The study determined that to fund a portion of its expenditure on marketable products, the government issues foreign debt. The international interest rate plus the country risk premium equals the domestic interest rate. The degree of foreign public debt has a positive impact on nation risk and negative link with economic growth.

A multi-country study by Swamy (2015) assessed the various factors that influenced the level of public debt in a country. The data used in the study included data from 252 countries for the period 1980 – 2009. Data was collected from World Economic Outlook 2014 database, Reinhart and Rogoff dataset, International Monetary Fund, World Bank and International Financial Statistics data sets. The 252 countries were segregated into income groupings, political

governance groupings and economy groupings. The analysis of the data was done using panel Granger causality testing. The study findings revealed that real GDP growth, population growth, foreign direct investment, inflation and government expenditure had a negative influence on public debt.

A study conducted in Kenya by Matiti (2013) assessed the relationship between economic growth and public debt. Economic growth in the study was measured by real GDP growth rate while public debt was measured by the percentage of public debt to GDP. Secondary data collected from Central bank of Kenya and Kenya National Bureau of Statistics (KNBS) was used in the study. The study applied time series data collected from the years 1992 to 2012. A time series regression analysis was used to analyse the data. The study determined that real GDP growth rate was negatively related to government debt.

2.4 Summary of Literature Review and Research Gaps

The review of literature on factors influencing public debt demonstrates that each empirical study was done in a particular setting and displays a certain economic significance in relation to budget deficit, ODA, balance of trade and GDP Growth rate. The reviewed studies have methodological, conceptual and contextual gaps that this study seeks to fill. First, studies such as Djiogap (2017) and Swamy (2015) have methodological differences to the current study. These studies were multi-country studies that collected dynamic panel data while the current study is a time series study that focusses on Kenya. Though multi-country studies can be used to generalize amongst various countries that are included, the findings may not provide information about the unique nature of public debt and its determinants in a specific country.

Secondly, the studies have left contextual gaps. For instance, the study by Ministry of Economy and Finance (2018) was conducted in Italy and its findings may not be generalizable to

a developing country like Kenya. Besides, the study by Ali (2011) was conducted in Pakistan which has different political, economic, social and geographical environment to that of Kenya and hence the findings may not reflect Kenyan position and context. Moreover, the study by Desmond (2014) was conducted in Sweden, a developed country and hence the findings may not reflect the Kenyan context.

The studies also left conceptual gaps. For example, the studies by Koori (2013), Mahiva (2016) and Juma (2017), though conducted in Kenya only focussed on budget deficit as the key determinant of public debt and left out key factors such as ODA, GDP growth rate and balance of trade which will be included in the current study. Additionally, studies such as Akpansung (2013), Oladipupo and Onotaniyahuro (2011), and Onyemauma and Odii (2016) were conducted in Nigeria and only focussed on balance of trade. The current study was therefore justified to bridge these gaps and determine the influence of budget deficit, ODA, balance of trade and GDP growth rate on public debt in Kenya.

2.5 Conceptual Framework

FIGURE 2

Conceptual Framework

Independent Variables

Dependent Variable

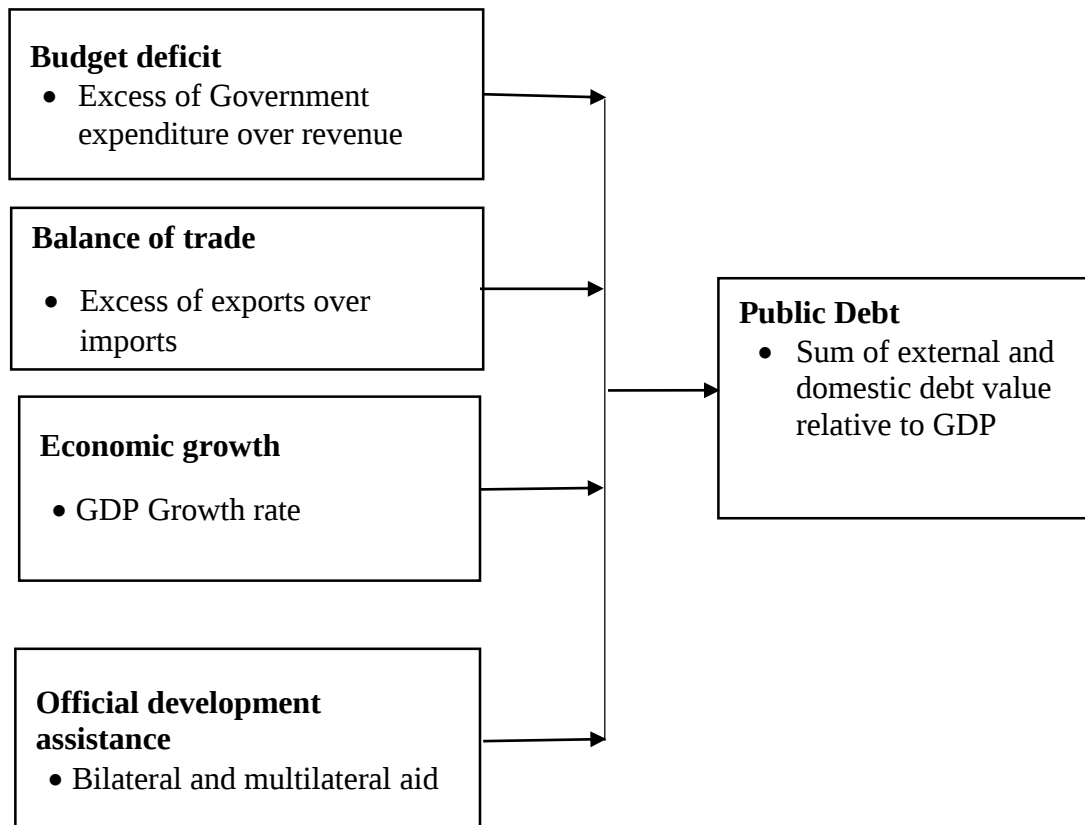


Figure 2 shows the conceptual framework of the study. It is conceptualized that public debt (dependent variable) is influenced by budget deficit, ODA, balance of trade and GDP growth rate (independent variables). Therefore, this study sought to determine the influence of independent variables on the dependent variable. This conceptual framework is effective in meeting the study objectives as it includes all the study variables including budget deficit, balance of trade, economic growth and ODA. The conceptual framework used in this study is different from the one used by Koori (2013) which included budget deficit and exchanged rate. Besides, it is different from the frameworks used by Mahiva (2016) and Juma (2017) which included economic growth, interest

rate, public spending, inflation and budget deficit as the independent variables and public debt as the dependent variable.

2.6 Measurement of Study Variables

This section provides the summary of the indicators, measurement and scale of independent variables, namely budget deficit, ODA, balance of trade and GDP growth rate; and dependent variable (public debt). Table 1 summarizes the measurement of the study variables.

TABLE 1
Measurement of Variables

Orientation	Variable	Proxy measurement of	Model	Direction or hypothesis
Independent Variables	Budget Deficit -Excess of Government expenditure over revenue	As a percent of GDP	Time series Regression model	Positive/negative
	ODA	As a % of GDP	Time series Regression model	Positive/negative
	Balance of trade -Excess of imports over exports	As a % of GDP	Time series Regression model	Positive/negative
	Economic growth -Real GDP growth rate	Real GDP growth rate	Time series Regression model	Positive/negative
Dependent Variable	Public Debt	As a % of GDP	Time series Regression model	-

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the procedure that were followed in carrying out the study. It presents the research design, study population, instrumentation, data collection procedure, data analysis and presentation, and ethics in research.

3.2 Research Design

As defined by Cresswell (2003), a research design is an outline, scheme or plan that is employed to obtain answers to address a research problem. This study adopted a historical time series design which involves observation of study units over a defined period of time and relating the variables therein. This research design is applied to identify relationships among study variables observed over a certain past time period; and these relationships are then used to make decisions or draw conclusions. According to Cooper and Schindler (2006), time series design involves observing single units over a period of time and collecting information about them which is then related to establish associations. This design was appropriate in this study as it enabled the study to collect historical time series data on Kenya's public debt and relate to the budget deficit, ODA, balance of trade and GDP growth rate.

3.3 Population of the Study

Cooper and Schindler (2006) define research population as the entire group of objects or people with the same features. The population of interest in this study was Kenya. The study focused on time series data for five factors namely, economic growth rate, public debt, budget deficit, ODA

and balance of trade. There was no sampling because the focus was on one country, and the study was using secondary data.

3.4 Data Collection

The study utilized secondary data which was collected from the National Treasury, World Bank, Central Bank of Kenya (CBK), IMF and KNBS. The researcher obtained this data from respective institutions in Nairobi, Kenya. The data was collected quarterly for 20 years starting year 2000 to 2019.

3.5 Data Analysis and Presentation

Analysis of collected data was conducted using Stata statistical software. Descriptive statistics such as percentages, frequency distribution, mean and standard deviation were used. An exploratory analysis was conducted to show a general view and trend of the study variables.

Time series regression analysis was also used to determine the effect of the predictor variables on the dependent variable. The significance of the relationship between variables was tested using F-test and Analysis of variance (ANOVA). The study findings were presented using tables, graphs and charts.

The study adopted the following regression model:

$$Y = \alpha + \beta_1 K_{1t} + \beta_2 K_{2t} + \beta_3 K_{3t} + \beta_4 K_{4t} + e$$

Where;

Y= Public Debt

α = Constant Term or the Intercept

$\beta_1 \beta_2 \beta_3 \beta_4$ = Beta Coefficients for budget deficit, official development assistance, balance of trade and economic growth.

K_1 = Budget Deficit

K_2 = ODA

K_3 = Balance of Trade

K_4 = Economic growth

t = time period (quarterly)

e = Error term.

3.6 Diagnostic Tests

Prior to fitting the time series regression model, diagnostic tests were conducted to determine appropriateness of data set for regressing. They included test of Stationarity, Lag Order Selection, testing for Cointegration, Granger Causality and Impulse Response Functions to Multicollinearity and normality tests.

3.6.1 Stationarity test

This study used time series data, and this data assumed to be stationary thus, stationarity test was necessary. Stationarity is required for analysis of time series data. Lack of stationarity may lead to spurious results. A stationary time series is one whose statistical properties such as mean, variance, and autocorrelation, are all constant over time. Data that is not stationary is assumed to lead to false findings where regression analysis show a significant relationship between variables even when no such relationship exists. The study used Augmented Dickey Fuller (ADF) test to test for stationarity (Kothari, 2003).

3.6.2 Lag order selection

Optimal lag order selection was undertaken to gauge whether the study had included sufficient lags. Introducing too many lags wastes degrees of freedom; while too few lags leave the equations potentially mis-specified and are likely to cause autocorrelation in the residuals (Linton, 2017). The study used the Schwarz information criterion (SIC), Akaike information criterion (AIC), Hannan-Quinn information criterion (HIQC) and Bayesian information criterion (BIC).

3.6.3 Testing for cointegration

Testing for Cointegration is a critical juncture in time series analysis since the output of the Cointegration test provides guidance on whether to analyze the data using a VAR model or a VEC model. If there are no cointegrating relations, vector autoregression is carried out. Conversely, vector error correction models are used for time series with at least one cointegrating equation (Wooldridge, 2015).

3.6.4 Granger causality

The study conducted post estimation procedures to assess how robust the fitted model is in explaining the relationship between the study variables. The test conducted was testing for Granger Causality. The Granger causality test is used to infer the direction of influence between two-time series. A time series X is said to Granger-cause Y if it can be shown that lagged values of X provide statistically significant information about future values of Y (Linton, 2019).

3.6.5 Impulse response functions

Lastly, the study developed the impulse response functions (IRFs) which were developed to measure the effects of a shock to an endogenous variable on itself or on another endogenous variable (Angrist & Pischke, 2014). IRF analysis is an essential phase in econometric time series analysis, that employ vector autoregressive models. The main objective is to describe the model variable's evolution after a shock in one or more of the model variables. This feature permits tracing of the transmission of a single shock within a noisy system of models and, therefore, makes the IRFs very critical tools in the assessment of the stability of the model.

CHAPTER FOUR

DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1 Introduction

This chapter provides the data analysis process and techniques applied to the collected data. This includes the descriptive analysis, exploratory analysis through time plots and testing for model specifications tests. The chapter also provides the fitted model and the findings from the model and all the analysis tests conducted. Lastly, the chapter presents a discussion of the findings based on the study's theoretical and empirical literature.

4.2 Descriptive Statistics

The study conducted descriptive analysis of the study variables which included budget deficit (BD), ODA, balance of trade (BOT), economic growth (GDPGRT) and public debt (PD). The study utilized secondary data which was collected from the National Treasury, World Bank, Central Bank of Kenya (CBK), IMF and KNBS. The researcher obtained this data from respective organizations in Nairobi, Kenya. The data was collected quarterly for 20 years starting from year 2000 to 2019. This resulted to 80 quarterly observations. The findings regarding the mean, standard deviation, minima and maxima are provided in Table 2.

The findings provided in Table 2 show that budget deficit (BD) had a quarterly mean of 1.093% over the 20 years with a standard deviation of 0.69%. the minimum over the 80 quarters was 0.01% of GDP while the maximum was 2.23. Regarding ODA, the findings indicate that the mean was 1.18% of GDP with a standard deviation of 0.57. The minimum over the 80 quarters was 0.02 while the maximum was 2.36% of GDP. Concerning balance of trade, the findings depict that the mean quarterly balance of trade (BOT) as a percentage of GDP was -2.60% with a standard

deviation of 0.79. Economic growth measured through GDP growth rate (GDPGRT) averaged 4.63% with a standard deviation of 2.26. Lastly, the findings summarized in Table 2 show that public debt (PD) as a percentage of GDP averaged 50.10% with a standard deviation of 7.77.

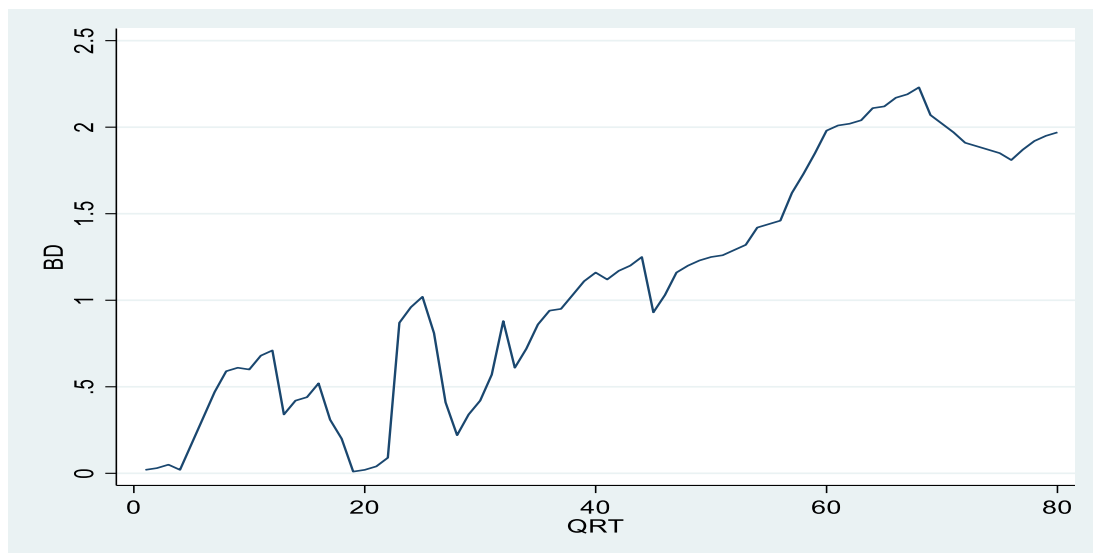
TABLE 2
Descriptive Statistics for the Study Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
BD	80	1.093	.689842	.01	2.23
ODA	80	1.176875	.5685126	.02	2.36
BOT	80	-2.604625	.7922216	-4.67	-1.11
GDPGRT	80	4.62625	2.258079	-2.5	8.3
PD	80	50.01325	7.768713	37.6	62.9

4.3 Line Plots for Study Variables

The study explored the study variables through line plots. The findings are provided in this section. Figure 3 displays the time plots for budget deficit as a percentage of GDP.

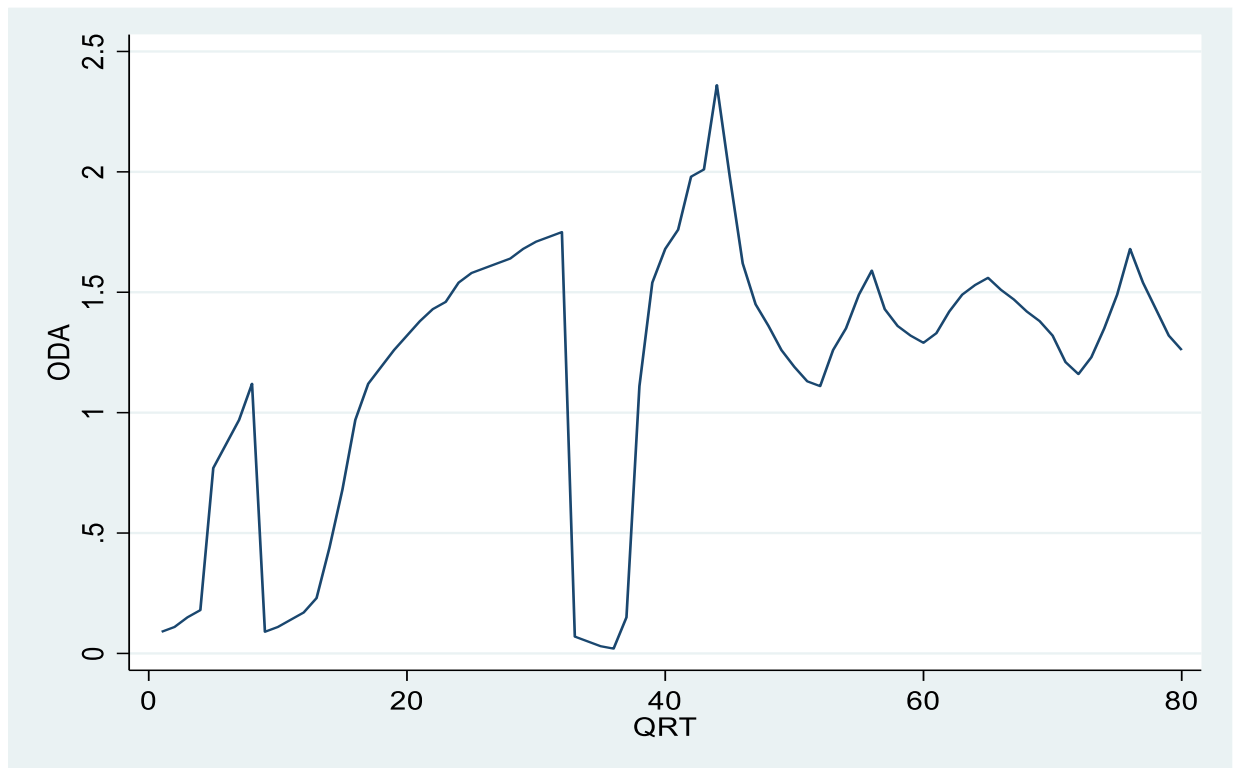
FIGURE 3
Time Plot for Budget Deficit



The study findings displayed in Figure 3 show that budget deficit as a percentage of GDP had a rising trend over the study period. This indicates lack of stationarity on the budget deficit time series. Similarly, a time plot for ODA as a percentage of GDP was developed and the findings are displayed in Figure 4.

FIGURE 4

Time Plot for Official Development Assistance



The study findings displayed in Figure 4 also indicate that ODA as a percentage of GDP had a rising trend over the study period. This indicates lack of stationarity on the ODA time series over the 20-year study period. Similarly, a time plot for balance of trade (BOT) as a percentage of GDP was developed and the findings are displayed in Figure 5.

FIGURE 5

Time Plot for Balance of Trade

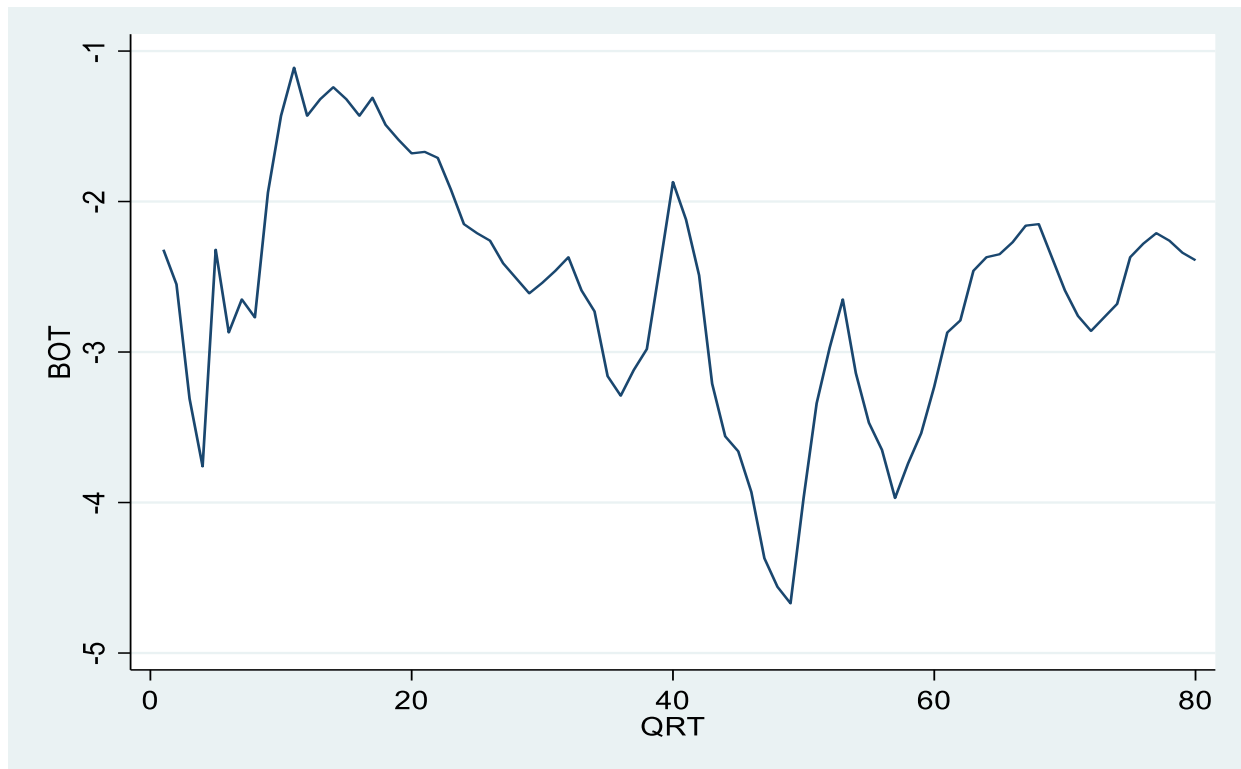
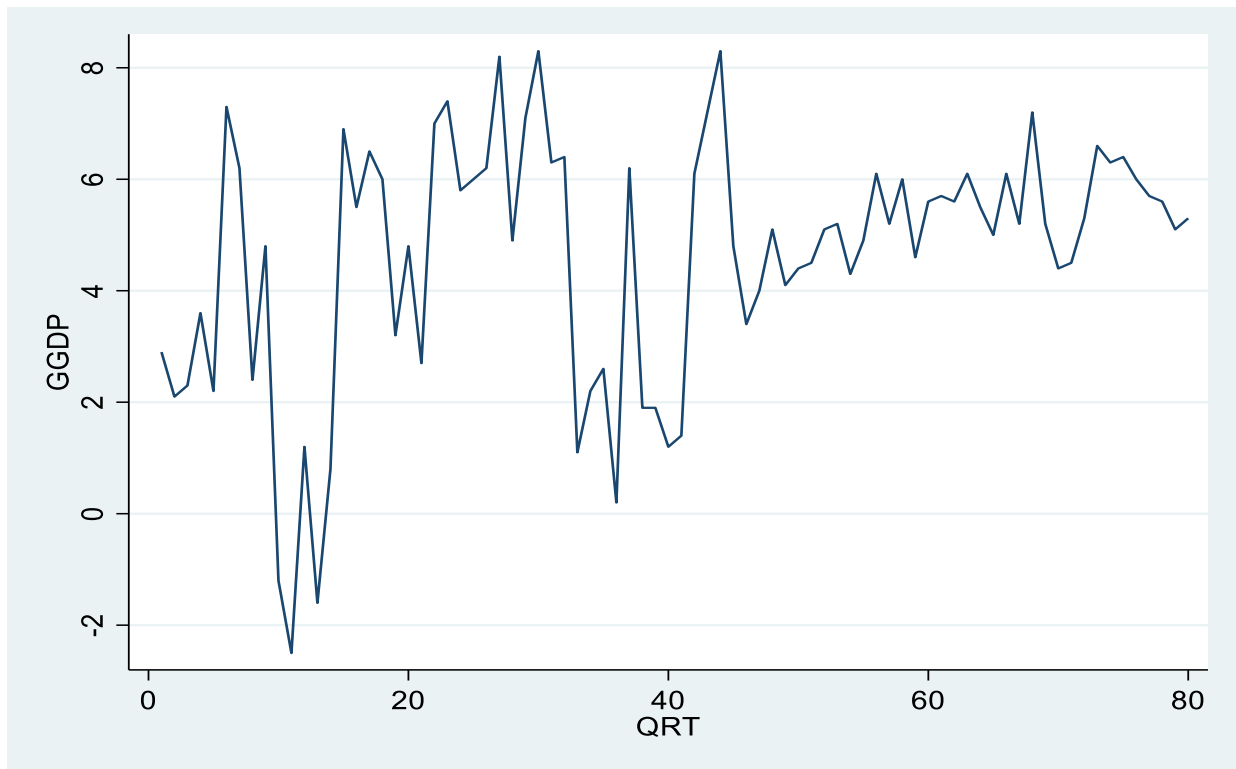


Figure 5 display study findings which indicate that balance of trade as a percentage of GDP had a marginal rising trend over the study period. This indicates slight lack of stationarity on the balance of trade time series. Moreover, a time plot for economic growth (GDPGRT) was developed and the findings are displayed in Figure 6.

The study findings displayed in Figure 6 show that economic growth measured using GDP growth rate had a stationary time series. This indicates presence of unit root in regard to the time series.

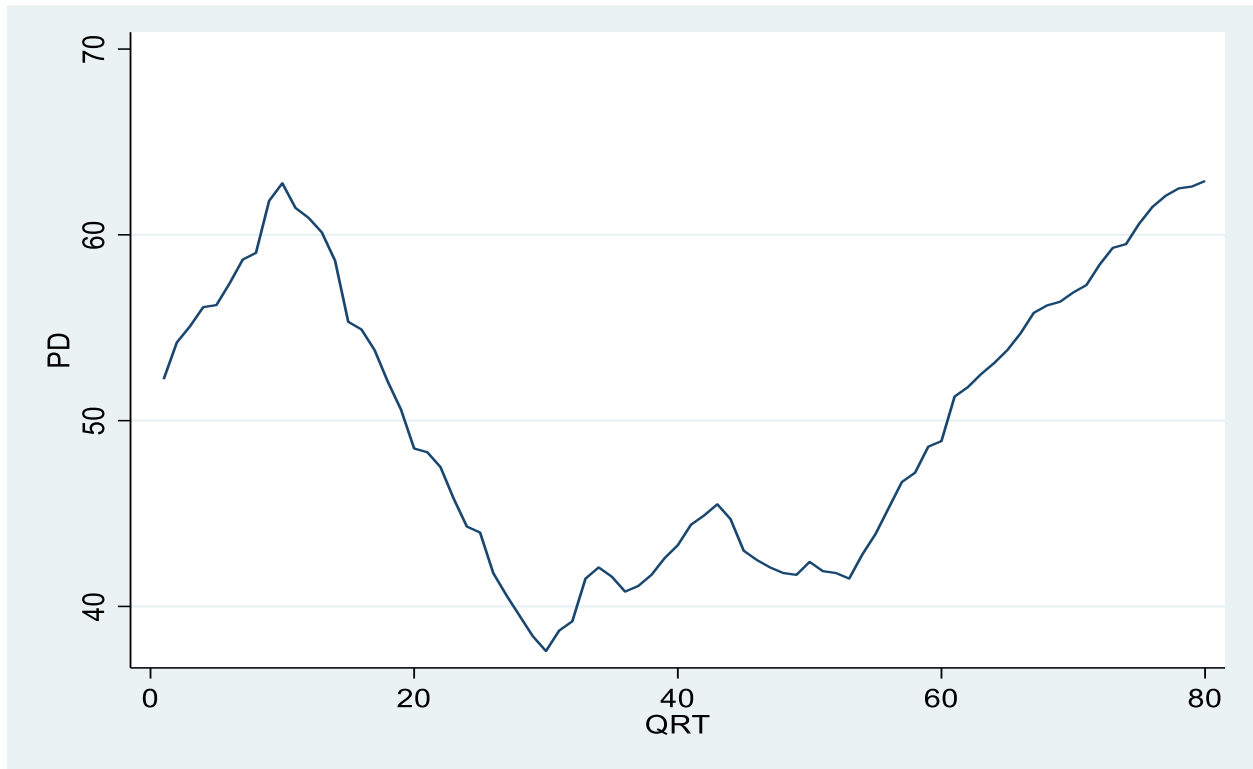
FIGURE 6

Time Plot for Economic Growth



The study developed a time series of public debt (PD) to assess its properties and stationarity. The findings are displayed in Figure 7. The study findings displayed in Figure 7 show that public debt as a percentage of GDP had a rising trend over the study period, though it dipped around 2000s. This indicates lack of stationarity on the public debt time series.

FIGURE 7
Time Plot for Public Debt



4.4 Time Series Diagnostic Tests

In time series modelling, running different diagnostic tests is a crucial step. There are many diagnostic tests applied for examining the stationarity of the different time series, the most appropriate number of lags to use in the model, and whether there is Cointegration amongst the predictor and dependent variables. No function, linear or nonlinear, of the lagged variables can describe the behaviour of the dependent variable in the future period if the time series has unit root amongst any of the endogenous variables. Besides, selecting suboptimal number of lags may lead to model misspecification. This section provides the findings of the stationarity test, appropriate lag length and test of Cointegration.

4.4.1 Test for stationarity

This study used time series data, and this data assumed to be stationary thus, stationarity test was necessary. Stationarity is required for analysis of time series data. Lack of stationarity may lead to spurious results. A stationary time series is one whose statistical properties such as mean, variance, and autocorrelation, are all constant over time. Data that is not stationary is assumed to lead to spurious findings where regression analysis show a significant relationship between variables even when no such relationship exists. The study used Augmented Dickey Fuller (ADF) test to test for stationarity (Kothari, 2003). The findings are summarized in this section. Table 1 provides the ADF test results for budget deficit.

TABLE 3

Unit Root Test for Budget Deficit

Dickey-Fuller test for unit root		Number of obs = 79	
		Interpolated Dickey-Fuller	
Test Statistic		1% Critical Value	5% Critical Value
			10% Critical Value
Z(t)	-1.166	-3.539	-2.907
			-2.588
MacKinnon approximate p-value for Z(t) = 0.6882			

The findings summarized in Table 3 indicate that the absolute value of the test statistic is less than the absolute 5% critical value. Besides, the findings indicate that the Mackinnon approximate p value is above the 5% significance level ($p = 0.6882$). This indicates that the time series for budget deficit was not stationary. The implication is that differencing was required. Regarding ODA, the ADF test results are provided in Table 4.

TABLE 4**Unit Root Test for Official Development Assistance**

Dickey-Fuller test for unit root		Number of obs = 79		
		Interpolated Dickey-Fuller		
Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value	
Z(t)	-2.731	-3.539	-2.907	-2.588
MacKinnon approximate p-value for Z(t) = 0.0688				

The findings summarized in Table 4 show that the absolute value of the test statistic is below the absolute 5% critical value. Moreover, the study findings indicate that the Mackinnon approximate p value is above the 5% significance level ($p = 0.0688$). This indicates that the time series for ODA was not stationary. The implication is that differencing was required. Concerning balance of trade, the ADF test results are provided in Table 5.

TABLE 5**Unit Root Test for Balance of Trade**

Dickey-Fuller test for unit root		Number of obs = 79		
		Interpolated Dickey-Fuller		
Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value	
Z(t)	-1.937	-3.539	-2.907	-2.588
MacKinnon approximate p-value for Z(t) = 0.3148				

The study findings summarized in Table 5 show that the absolute value of the test statistic is less than the absolute 5% critical value. Additionally, the study findings show that the Mackinnon approximate p value is above the 5% significance level ($p = 0.3148$). This implies that

the time series for balance of trade had a unit root. The implication is that differencing was required to make the series stationary. Moreover, the ADF test results for the economic growth time series are presented in Table 6.

TABLE 6
Unit Root Test for Economic Growth

Dickey-Fuller test for unit root		Number of obs = 79	
		Interpolated Dickey-Fuller	
Test Statistic		1% Critical Value	5% Critical Value
			10% Critical Value
Z(t)	-4.854	-3.539	-2.907
			-2.588
MacKinnon approximate p-value for Z(t) = 0.0000			

The findings summarized in Table 6 show that the absolute value of the test statistic is greater than the absolute 5% critical value. Besides, the findings indicate that the Mackinnon approximate p value is below the 5% significance level ($p = 0.0000$). This indicates that the time series for economic growth was stationary. Regarding public debt, the ADF test results are provided in Table 7.

TABLE 7
Unit Root Test for Public Debt

Augmented Dickey-Fuller test for unit root		Number of obs = 78	
		Interpolated Dickey-Fuller	
Test Statistic		1% Critical Value	5% Critical Value
			10% Critical Value
Z(t)	-0.769	-3.541	-2.908
			-2.589
MacKinnon approximate p-value for Z(t) = 0.8281			

The findings summarized in Table 7 indicate that the absolute value of the test statistic is below the absolute 5% critical value. Besides, the findings indicate that the Mackinnon approximate p value is above the 5% significance level ($p = 0.8281$). This indicates that the time series for public debt was not stationary. The implication is that differencing was required.

4.4.2 Test for Stationarity After First Differencing

Since four of the five-time series were not stationary, first differencing of the variables was required to make the time series stationary and hence appropriate for time series regression modelling. The first differencing was conducted and the ADF tests were conducted for all the study variables. The findings are provided in this section. Regarding budget deficit, the ADF test results after first differencing are provided in Table 8.

TABLE 8
Unit Root Test for Budget Deficit After First Differencing

Augmented Dickey-Fuller test for unit root		Number of obs = 77	
		Interpolated Dickey-Fuller	
Test Statistic		1% Critical Value	5% Critical Value
			10% Critical Value
Z(t)	-5.578	-3.542	-2.908
			-2.589
MacKinnon approximate p-value for Z(t) = 0.0000			

The findings summarized in Table 8 show that the absolute value of the test statistic (5.578) is above the absolute 5% critical value (2.908). Besides, the findings indicate that the Mackinnon approximate p value is below the 5% significance level ($p = 0.0000$). This indicates that the time

series for budget deficit became stationary after first differencing. Regarding ODA, the ADF test results are provided in Table 9.

TABLE 9

Unit Root Test for Official Development Assistance After First Differencing

Augmented Dickey-Fuller test for unit root		Number of obs = 77	
		Interpolated Dickey-Fuller	
Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-5.319	-3.542	-2.908
MacKinnon approximate p-value for Z(t) = 0.0000			

Table 9 presents the findings which show that the absolute value of the test statistic (5.319) is above the absolute 5% critical value (2.908). Besides, the findings indicate that the Mackinnon approximate p value is below the 5% significance level ($p = 0.0000$). This indicates that the time series for budget deficit became stationary after first differencing. Regarding ODA, the ADF test results are provided in Table 10.

TABLE 10

Unit Root Test for Balance of Trade After First Differencing

Augmented Dickey-Fuller test for unit root		Number of obs = 77	
		Interpolated Dickey-Fuller	
Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-5.450	-3.542	-2.908
MacKinnon approximate p-value for Z(t) = 0.0000			

Table 10 presents the findings which show that the absolute value of the test statistic (5.450) is above the absolute 5% critical value (2.908). Besides, the findings indicate that the

Mackinnon approximate p value is below the 5% significance level ($p = 0.0000$). This indicates that the time series for balance of trade became stationary after first differencing. Concerning economic growth, the ADF test results are provided in Table 11.

TABLE 11
Unit Root Test for Economic Growth After First Differencing

Augmented Dickey-Fuller test for unit root		Number of obs = 77		
Test Statistic	Interpolated Dickey-Fuller			
	1% Critical Value	5% Critical Value	10% Critical Value	
Z(t)	-8.026	-3.542	-2.908	-2.589
MacKinnon approximate p-value for Z(t) = 0.0000				

Table 11 presents the findings which show that the absolute value of the test statistic (8.026) is above the absolute 5% critical value (2.908). Besides, the findings indicate that the Mackinnon approximate p value is below the 5% significance level ($p = 0.0000$). This indicates that the time series for economic growth still remained stationary after first differencing. Regarding public debt, the ADF test results are provided in Table 12.

TABLE 12
Unit Root Test for Public Debt After First Differencing

Augmented Dickey-Fuller test for unit root		Number of obs = 77		
Test Statistic	Interpolated Dickey-Fuller			
	1% Critical Value	5% Critical Value	10% Critical Value	
Z(t)	-3.172	-3.542	-2.908	-2.589
MacKinnon approximate p-value for Z(t) = 0.0216				

The findings provided in Table 12 show that the absolute value of the test statistic (3.172) is above the absolute 5% critical value (2.908). Besides, the findings indicate that the Mackinnon

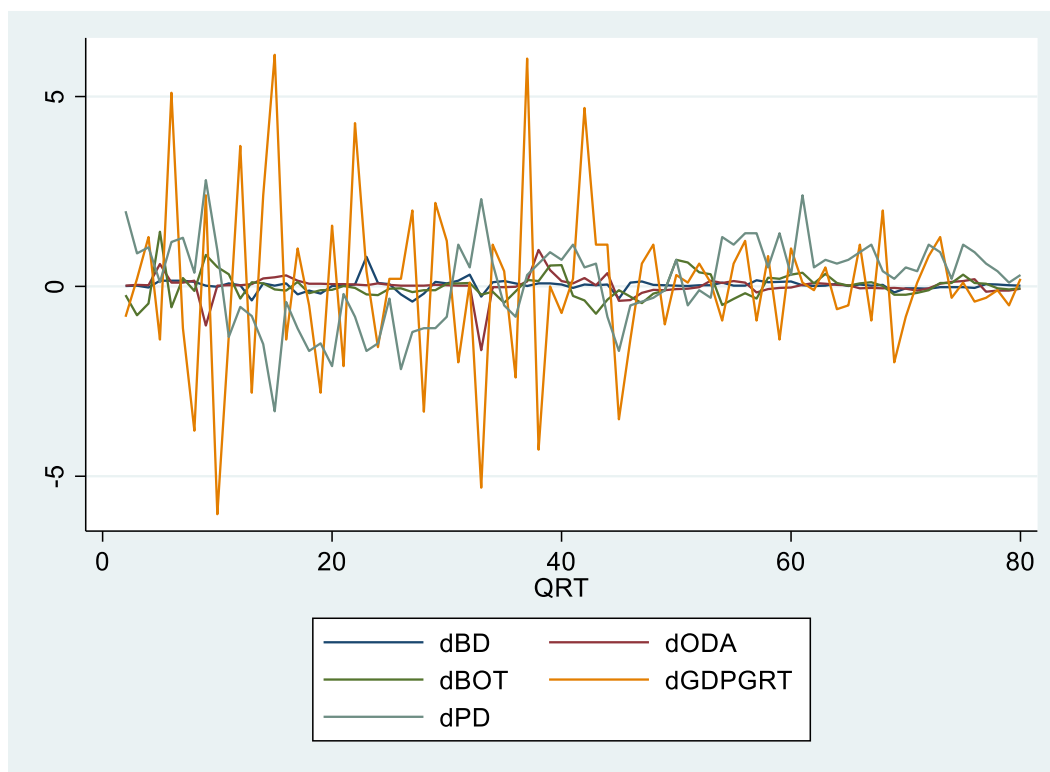
approximate p value is below the 5% significance level ($p = 0.0216$). This indicates that the time series for public debt became stationary after first differencing.

4.4.3 Time plot after first differencing

The study developed the combined line plots for the first differenced variables. The findings provided in Figure 8 indicate that all the variables do not show any downward or upward trend indicating stationarity.

FIGURE 8

Time Plots after First Differencing



4.4.4 Lag order selection

Optimal lag order selection was undertaken to gauge whether the study had included sufficient lags. Introducing too many lags wastes degrees of freedom; while too few lags leave the model

potentially mis-specified and are likely to cause autocorrelation in the residuals (Linton, 2017). The study used the final prediction error (FPE), Schwarz Bayesian information criterion (SBIC), Akaike information criterion (AIC), Hannan-Quinn information criterion (HQIC) and Bayesian information criterion (BIC).

TABLE 13
Lag Order Selection

Selection-order criteria								
Sample: 6 - 80					Number of obs = 75			
lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-259.516				.000796	7.05375	7.11544	7.20825*
1	-220.815	77.4	25	0.000	.000553*	6.68841*	7.05855*	7.6154
2	-202.388	36.855	25	0.060	.000665	6.86367	7.54226	8.56317
3	-183.684	37.408	25	0.053	.000805	7.03157	8.0186	9.50355
4	-153.004	61.36*	25	0.000	.000723	6.8801	8.17559	10.1246

The study findings provided in Table 13 indicate that the one lag was selected (asterisked) by the final prediction error (FPE), Akaike information criterion (AIC), and Hannan-Quinn information criterion (HQIC). However, the SBIC selected no lag while the likelihood ratio (LR) selected 4 lags. However, since most of the criteria selected one lag, this was deemed appropriate in the study.

4.4.5 Cointegration test

Testing for Cointegration is a critical juncture in time series analysis since the output of the Cointegration test provides guidance on whether to analyze the data using a VAR model or a VEC model. According to Wooldridge, (2015), if there are no cointegrating relations, vector autoregression is carried out. Conversely, vector error correction models are used for time series

with at least one cointegrating equation. The study conducted the Cointegration test using the Johanssen test. The findings are summarized in Table 14.

TABLE 14
Johanssen Test for Cointegration

Trend: constant					Number of obs =	77
Sample: 4 - 80					Lags =	2
maximum				trace	5%	
rank	parms	LL	eigenvalue	statistic	critical	
0	30	-307.21848	.	171.2846	68.52	
1	39	-270.06358	0.61904	96.9749	47.21	
2	46	-250.24963	0.40229	57.3470	29.68	
3	51	-235.71688	0.31441	28.2815	15.41	
4	54	-225.90873	0.22490	8.6652	3.76	
5	55	-221.57615	0.10643			

The findings summarized in Table 14 indicate that there was no Cointegration. This is because all the trace statistics are above the 5% critical values. The implication of these findings is that the basic VAR model was the one appropriate for the study. Therefore, the study fitted the VAR model whose results are presented in the succeeding sections.

4.5 Vector Auto Regression Model Fitting

When two or more-time series interact, Vector Autoregression (VAR) is a forecasting algorithm that can be employed. That is, when the time series in question are hypothesized to have a bidirectional link. When it comes to forecasting numerous time series variables using a single model, the VAR model is appropriate. In the model, the predictor variables were budget deficit (BD), ODA, balance of trade (BOT) and economic growth (GDPGRT). The dependent variable in the model was public debt (PD). The findings of the VAR model are provided in Table 15.

TABLE 15

Vector Auto Regression Model

Sample: 3 - 80				Number of obs = 78	
Log likelihood = -238.9504				AIC = 6.896163	
FPE = .0006812				HQIC = 7.259022	
Det(Sigma_ml) = .0003152				SBIC = 7.802589	
Equation	Parms	RMSE	R-sq	chi2	P>chi2
dPD	6	.992722	0.9850	5137.876	0.0000
dBD	6	.149472	0.9544	1631.478	0.0000
dODA	6	.279143	0.7577	243.9151	0.0000
dBOT	6	.333605	0.8381	403.8025	0.0000
dGDPGRT	6	1.84764	0.3749	46.78514	0.0000
	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
dPD					
dPD L1.	1.014425	.0187832	4.01	0.000	.9776102 1.051239
dBD L1.	.5418727	.2060018	2.63	0.009	.1381167 .9456288
dODA L1.	-.1516428	.2822151	-0.54	0.591	-.7047742 .4014886
dBOT L1.	-.4529653	.1696308	-2.67	0.008	-.7854355 -.1204951
dGDPGRT L1.	-.0022376	.0612085	-0.04	0.971	-.1222041 .1177289
_cons	-2.192748	1.249195	-1.76	0.079	-4.641126 .2556293

The findings provided in Table 15 show that the first lag of public debt (PD) had a significant positive effect on public debt ($\beta = 1.01$, $p < 0.05$). The findings imply that a change in public debt in one quarter is expected to have a significant direct effect on the public debt levels of the next quarter. Moreover, the study findings indicate that 1% change in public debt during the quarter will lead to 1.01% direct change in public debt the following quarter, when other factors are held constant.

The study findings summarized in Table 15 indicate that the first lag of budget deficit (BD) had a significant positive effect on public debt ($\beta = 0.54$, $p = 0.009$). These findings imply that a change in budget deficit in one quarter is expected to have a significant direct effect on the public debt levels of the next quarter. Moreover, the study findings indicate that 1% change in budget deficit during the quarter will lead to 0.54% direct change in public debt the following quarter, when other factors are held constant.

Regarding ODA, the study findings presented in Table 15 indicate that the first lag of ODA did not have any significant influence on public debt ($\beta = -0.15$, $p = 0.591$). These findings imply that a change in ODA in one quarter is not expected to have a significant effect on the public debt levels of the next quarter.

Concerning balance of trade (BOT), the findings summarized in Table 15 show that the first lag of balance of trade had a significant negative effect on public debt ($\beta = -0.45$, $p = 0.008$). These study findings imply that a change in balance of trade in one quarter is expected to have a significant inverse effect on the public debt levels of the next quarter. Moreover, the study findings indicate that 1% change in balance of trade during the quarter will lead to 0.45% inverse change in public debt the following quarter, when other factors are held constant.

Lastly, regarding economic growth (GDPGRT), the study findings provided in Table 15 indicate that the first lag of economic growth did not have any significant influence on public debt ($\beta = -0.002$, $p = 0.971$). These findings imply that a change in economic growth in one quarter is not expected to have a significant effect on the public debt levels of the next quarter.

4.6 Granger Causality Test

The study conducted post estimation procedures to assess how robust the fitted model is in explaining the relationship between the study variables. One of the test conducted was testing for Granger Causality. The Granger causality test is used to infer the direction of influence between two-time series. A time series X is said to Granger-cause Y if it can be shown that lagged values of X provide statistically significant information about future values of Y (Linton, 2019). The findings of the granger causality test are provided in Table 16.

TABLE 16
Granger Causality Test

Equation	Excluded	chi2	df	Prob > chi2
dPD	dBOD	6.9191	1	0.009
dPD	dODA	.28872	1	0.591
dPD	dBOT	7.1305	1	0.008
dPD	dGDPGRT	.00134	1	0.971
dPD	ALL	26.156	4	0.000

The findings summarized in Table 16 depict that there was a bi-directional relationship between public debt and budget deficit (chi square = 6.9191, p = 0.009) and between public debt and balance of trade (chi square = 7.1305). These findings indicate that the lagged values of public debt could be used to predict the future values of budget deficit and vice versa. Besides, the findings indicate that the lagged values of public debt could be used to predict the future values of balance of trade. However, there was no granger causality between economic growth and public debt and between ODA and public debt.

4.7 Tests of Model Stability

When the impact of the shocks dissipates with time, the VAR model is covariance-stationary, much like the univariate autoregressive model. If the eigenvalues of the companion-form matrix are all smaller than one in absolute value, this will be the case. This study used the autocorrelation test, the eigenvalues test and the impulse response function to assess the stability of the model. The findings of these stability tests are provided in the next sections.

4.7.1 Test of autocorrelation

The study applied the Lagrange multiplier (LM) test to assess autocorrelation in the VAR model. Even in unstable VAR models, the LM works appropriately regardless of the sample size or autocorrelation order. The impact of autocorrelated residuals or autocorrelation between the variables and their lags is that it will cause bias in the regression coefficients and their confidence intervals. The findings of the LM test are provided in Table 17.

TABLE 17

Lagrange –Multiplier Test for Serial Correlation

lag	chi2	df	Prob > chi2
1	31.0062	25	0.18881
2	25.4188	25	0.43911
H0: no autocorrelation at lag order			

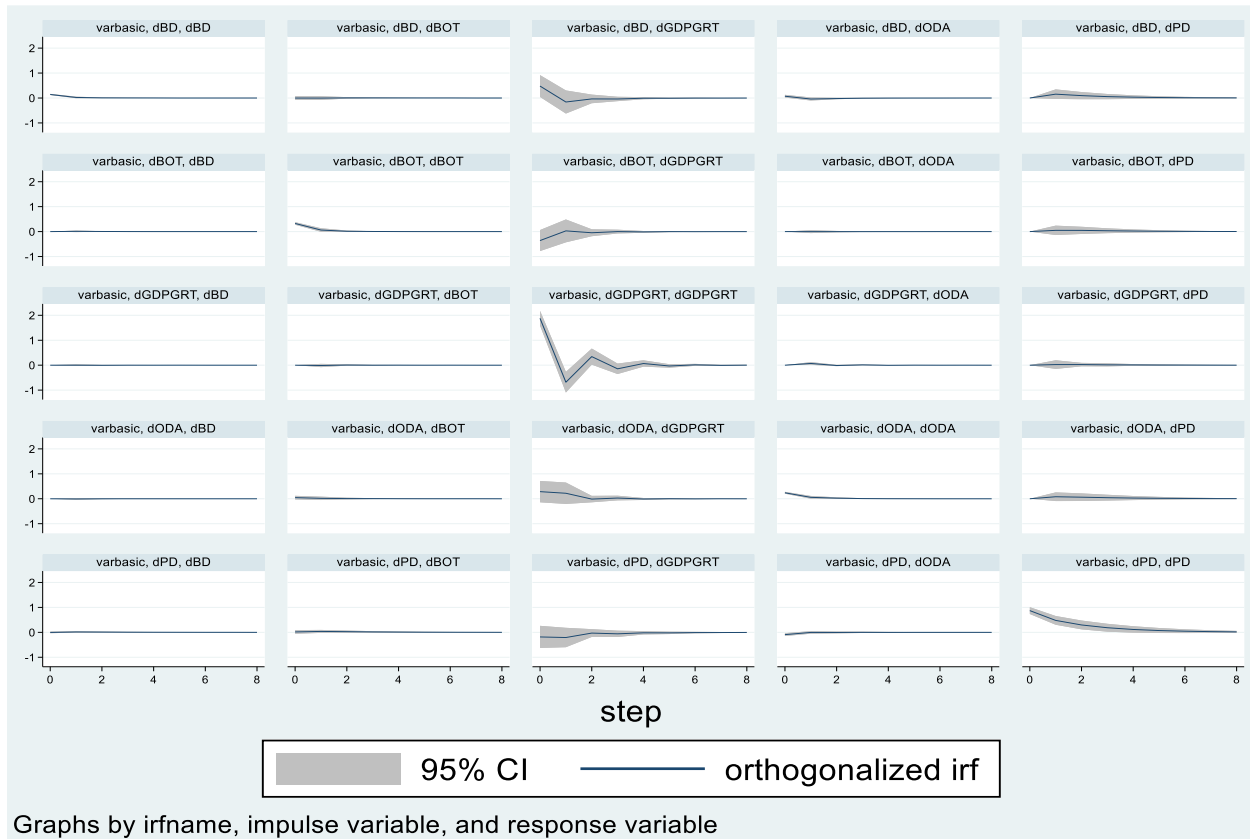
The findings in Table 17 show that there was no autocorrelation either in the lag of order 1 (chi square = 31.0062, p = 0.1888) and lag order 2 (chi square = 25.42, p = 0.4391). these findings indicate that the model coefficients and their confidence intervals were not biased.

4.7.2 Impulse response functions

The researcher developed impulse response functions (IRFs), which are used to quantify the effects of an endogenous variable shock on itself or another endogenous variable (Angrist & Pischke, 2014). In econometric time series analysis using vector autoregressive models, IRF analysis is a critical step. The primary goal is to explain the development of the model variable following a shock in one or more of the model variables. This characteristic allows for the tracking of a single shock's propagation inside a noisy system of models, making IRFs extremely important instruments for determining the model's stability. The IRF's of the VAR model are provided in Figure 9.

FIGURE 9

Impulse Response Functions



The study findings displayed in Figure 9 indicate that shocks to economic growth and public debt would have an effect on all the other variables but the variables would stabilize within around 4 quarters. Shocks to the other endogenous variables would not have an effect on the other model variables. This shows that the model is stable.

4.7.3 Eigenvalue test for model stability

The last stability test that was conducted in the study was the stability test using eigenvalues. To be considered stable, the matrix of the eigenvalues and their modulus must be less than 1. The study findings are provided in Table 18.

TABLE 18
Eigenvalue Model Stability Test

Eigenvalue	Modulus	
.6287641	.628764	
- .4526876	.452688	
.3718769	.371877	
.1493675	.149368	
.06606325	.066063	
All the eigenvalues lie inside the unit circle. VAR satisfies stability condition.		

The study findings summarized in Table 19 indicate that all the eigenvalues of the companion-form matrix were all smaller than one in absolute value. Further, the modulus was also less than unity and this indicates that the stability condition of the VAR model was satisfied.

4.8 Discussion of Findings

The study findings indicated that the first lag of budget deficit (BD) had a significant positive effect on public debt ($\beta = 0.54$, $p = 0.009$). These findings imply that a change in budget deficit in

one quarter is expected to have a significant direct effect on the public debt levels of the next quarter. Moreover, the study findings indicate that 1% change in budget deficit during the quarter will lead to 0.54% direct change in public debt the following quarter, when other factors are held constant. Moreover, the study findings depict that there was a bi-directional granger causality relationship between public debt and budget deficit (chi square = 6.9191, $p = 0.009$). These findings indicate that the lagged values of public debt could be used to predict the future values of budget deficit and vice versa. These findings are supported by the political business cycle theory by Nordhaus (1975) which indicates that public debt accumulation emanates from political decisions that increase the budget deficit because politicians act rationally, giving priorities to their short-term political objectives. The findings also support the public choice theory which indicates that the public debt and fiscal deficit of the government are an aggregate outcome of the political conflict amongst the numerous groups of citizens, future and present politicians that arise from disagreements regarding the structure of the government expenses (Ghosh et al., 2013). In an effort to please all factions, the government ends up increasing its budget deficits which in turn necessitates it to borrow to finance the deficit. The study determined that budget deficit has a significant positive effect on public debt which concurs with various previous studies such as Desmond (2014), Shekar (2014), Kiptui (2019) and Mwega (2017).

Regarding ODA, the study findings determined that the first lag of ODA did not have any significant influence on public debt ($\beta = -0.15$, $p = 0.591$). These findings imply that a change in ODA in one quarter is not expected to have a significant effect on the public debt levels of the next quarter. The findings further indicated that there was no granger causality between ODA and public debt. These findings contradict the tenets of the public choice theory by Rolf and Siebke (1996) that when the government is elected it engages in beneficial bilateral or multilateral

agreements that increase or decrease the level of ODA accruing to the country, its public borrowing would be affected. The study findings on the effect of ODA on public debt agrees with a study by Uttara (2010) which was conducted in Senegal. This study used data collected between 1970 and 2000, and mainly focused on the relationship between ODA and debt. The study determined that a large portion of ODA was used to finance development expenditure (41%) which reduced the financing required from government to finance this type of expenditure. The results of the study indicated that there was a statistically insignificant relationship between foreign grants and public debt levels. Similarly, Karras (2017) investigated the correlational relationship between ODA and public debt in a multicountry study. The findings from this study implied that the level of ODA received by the countries did not significantly affect their borrowing patterns and levels. This was a similar finding of the current study. Other studies with findings that are similar to the current study include Quartey (2015) which did not find any significant effect of ODA on the level of public debt. However, the findings from this study contradict the findings by Elbadawi, Ibrahim and Mwege (2016) who used cross-sectional data to analyse borrowing behaviour among countries in Sub-Saharan region. The study showed that ODA significantly reduced the rate of borrowing from external sources.

Concerning balance of trade, the findings showed that the first lag of balance of trade had a significant negative effect on public debt ($\beta = -0.45$, $p = 0.008$). These study findings imply that a change in balance of trade in one quarter is expected to have a significant inverse effect on the public debt levels of the next quarter. Moreover, the study findings indicate that 1% change in public debt during the quarter will lead to 0.45% inverse change in public debt the following quarter, when other factors are held constant. Additionally, the findings depicted that there was a bi-directional granger causality relationship between public debt and balance of trade (chi square

= 7.1305, $p = 0.008$). These findings indicate that the lagged values of public debt could be used to predict the future values of balance of trade and vice versa. These findings support the public choice theory which indicates that when the government has strategic focus, it engages in beneficial trade agreements that boost its balance of trade, thus reducing the level of public debt. However, when balance of trade is not improved, the government increases its public borrowing according to United Nations (2019). This would have an effect on the revenues available to the government for spending, thus affecting the government's decision to borrow.

The findings from this study on balance of trade concur with the findings in Pakistan by Ali (2011) that there was a strong negative relationship between balance of trade and government debt. The study determined that when balance of trade in Pakistan was persistently negative, it was forced to increase its borrowing in the subsequent years which led to growth in public debt. The findings also agreed with the findings by Akpansung (2013) that when a country has a wide negative balance, its domestic debt went higher in the next two years. Similarly, the study findings concur with the findings from another study by Oladipupo and Onotaniyahuro (2011) on the relationship between public debt and balance of trade in Nigeria which established that balance of trade significantly and negatively affected the level of both foreign and domestic debt in the country. These findings were supported by another study by Onyemauma and Odii (2016) which was conducted to determine how agricultural balance of trade affected domestic debt in Nigeria. The study established that there was a strong relationship between domestic debt and balance of trade. The balance of trade increases as the foreign reserve increases, which then causes domestic debt to reduce.

Lastly, regarding economic growth, the study findings indicate that the first lag of economic growth did not have any significant influence on public debt ($\beta = -0.002$, $p = 0.971$).

These findings imply that a change in economic growth in one quarter is not expected to have a significant effect on the public debt levels of the next quarter. The findings, further, showed that there was no granger causality between economic growth and public debt. These findings contradict the tenets of the Ricardo's theory of public debt whose premise is that increase in public debt could be due to the investments in a high growth economy and thus it is preceded by economic growth (Roberts, 1937). The findings from this study contradict the findings by Matiti (2013) that determined that real GDP growth rate was negatively related to government debt. Additionally, the findings from this study disagree with the findings by Ministry of Economy and Finance of Italy (2018) which investigated the relevant factors that influence changes in public debt.

The findings from this study about the effect of economic growth on public debt contradict the findings by Swamy (2015) which revealed that real GDP growth, population growth, foreign direct investment, inflation and government expenditure had a negative influence on public debt. Other findings that contradict the findings from this study were from Djiogap (2017) which confirmed that economic growth and public debt have a non-linear relationship. The findings from this study further contradicted the findings by Casares (2015) that GDP growth rate and public debt have an inverted U-shaped nonlinear association.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides the summary of the study's findings, the conclusion made from the study and the study's recommendations. The summary of the study's findings is provided in accordance with the objectives of the study. Besides, the answers to the research questions are provided. Further, the recommendations made in the study considering the study findings are provided. Lastly, the chapter discusses the suggestions for further research.

5.2 Summary

This section provides the summary of the study findings. The summary is provided in relation to the research objectives. Regarding budget deficit, the study findings indicated that the first lag of budget deficit (BD) had a significant positive effect on public debt ($\beta = 0.54$, $p = 0.009$). These findings imply that a change in budget deficit in one quarter is expected to have a significant direct effect on the public debt levels of the next quarter. Moreover, the study findings indicate that 1% change in budget deficit during the quarter will lead to 0.54% direct change in public debt the following quarter, when other factors are held constant.

Moreover, the study findings depict that there was a bi-directional granger causality relationship between public debt and budget deficit (chi square = 6.9191, $p = 0.009$). These findings indicate that the lagged values of public debt could be used to predict the future values of budget deficit and vice versa. These findings enabled the study to answer the first research question; What is the influence of budget deficit on public debt in Kenya? The study determined that the first lag of budget deficit had a significant positive effect on public debt in Kenya.

Regarding ODA, the study findings determined that the first lag of ODA did not have any significant influence on public debt ($\beta = -0.15$, $p = 0.591$). These findings imply that a change in ODA in one quarter is not expected to have a significant effect on the public debt levels of the next quarter. The findings further indicated that there was no granger causality between ODA and public debt. These findings enabled the study to answer the second research question; What is the influence of official development assistance on public debt in Kenya? The study determined that the first lag of ODA did not have any significant influence on public debt in Kenya.

Concerning balance of trade, the findings showed that the first lag of balance of trade had a significant negative effect on public debt ($\beta = -0.45$, $p = 0.008$). These study findings imply that a change in balance of trade in one quarter is expected to have a significant inverse effect on the public debt levels of the next quarter. Moreover, the study findings indicate that 1% change in balance of trade during one quarter will lead to 0.45% inverse change in public debt the following quarter, when other factors are held constant. Additionally, the findings depicted that there was a bi-directional granger causality relationship between public debt and balance of trade (chi square = 7.1305, $p = 0.008$). These findings indicate that the lagged values of public debt could be used to predict the future values of balance of trade and vice versa. The findings thus assisted the study in answering the third research question; How does balance of trade influence public debt in Kenya? The study determined that the first lag of balance of trade had a significant negative effect on public debt in Kenya.

Lastly, regarding economic growth, the study findings indicate that the first lag of economic growth did not have any significant influence on public debt ($\beta = -0.002$, $p = 0.971$). These findings imply that a change in economic growth in one quarter is not expected to have a significant effect on the public debt levels of the next quarter. The findings, further, showed that

there was no granger causality between economic growth and public debt. These findings enabled the study to answer the fourth research question of the study; What is the influence of economic growth on public debt in Kenya? The study determined that economic growth has no significant influence on public debt in Kenya?

5.3 Conclusions

This section provides the conclusion made in the study considering the key study findings. First, the study concludes that budget deficit is detrimental for the country as it is instrumental in fuelling increase of the debt stock of the country. The study also concludes that reducing the level of budget deficit is critical in efforts to reduce the public debt stock.

Concerning ODA, the study concludes that ODA is not instrumental in relation to influencing the level of public debt stock. This study also concludes that though ODA can be applied to cater for some government spending and to plug some budget deficits, it does not materially affect the level of public debt stock for the country.

Regarding balance of trade, the study concludes that it is vital in efforts to regulate the level of public debt in the country. The study also concludes that increase in balance of trade can be instrumental in lowering the level of public debt for the country.

Lastly, the study concludes that economic growth is not instrumental in influencing public debt levels in the country. This is despite the fact that economic growth can increase the income and productivity of the country and thereby lower the need for public debt.

5.4 Recommendations

Considering the findings made in the study, the study makes some critical recommendations. Since the study determined that the first lag of budget deficit had a significant positive effect on public debt in Kenya, it is recommended that budget deficit level should be returned to sustainable levels and fiscal discipline observed. This study observes that stabilizing public debt as a percentage of GDP to sustainable levels would require high fiscal discipline and austerity measures by the government to maintain minimal budget deficits as a percent of GDP over the following ten years, as one example of policy adjustments that would restore the budget deficit level to a sustainable course.

Regarding ODA, since the study determined that the first lag of ODA did not have any significant influence on public debt, this could be due to ODA being small relative to other sources of finance for the government, or the inefficiency in applying ODA. The government of Kenya should seek more multilateral and bilateral cooperation with development partners so that to enhance ODA as a large proportion of financing government recurrent and development expenditure. Achieving the level of spending required to stimulate growth and to ensure that public debt is not taken to unsustainable levels would require a significant increase in ODA. Government of Kenya should hence seek bilateral and multilateral accords to assist in re-establishing political impetus for ODA.

Since the study determined that balance of trade had a significant negative effect on public debt, the study recommends to the government to stimulate exports while discouraging unnecessary imports. The government of Kenya can enhance its balance of trade through expenditure-reduction measures that are intended to limit expenditure on imports and regulate demand, by putting downward pressure on demand, and thereby promoting private sector and

household saving. Besides, the government can use targeted expenditure-switching strategies, that are targeted at altering the relative pricing of imports and exports, which would as a result lead to a shift in expenditure away from imports and toward local and export production. Moreover, the study recommends that the government to consider economic reform as a long-term plan for improving the economy's supply-side performance and boosting competitiveness for export. Besides, improving macroeconomic stability could improve Kenya's attractiveness to inbound investment which would expand the country's export potential while boosting local productivity and thus reducing the need for public borrowing.

Lastly, since the study determined that economic growth did not have a significant influence on public debt. This shows that economic growth does not have the expected influence on public debt which may be due to suboptimal investments in the key sectors that can have the greatest contributions towards the country's economic growth such as agriculture, technology and manufacturing. The study recommends stimulation of key sectors that contribute significantly to the economic growth and the government therefore should enhance its investments in these key sectors.

5.5 Recommendations for Future Research

This study provides valuable evidence regarding the factors influencing public debt in Kenya. Amongst the factors determined to be critical were budget deficit and balance of trade. The study however, established that economic growth and ODA had no significant influence on public debt. The study left other key factors that could influence public debt such as macroeconomic factors (interest rates, inflation rates, exchange rates) and political factors. Besides, public expenditure, and monetary policy credibility are other variables that may affect the trajectory of public debt.

The study hence recommends a further study to be conducted to establish how these other factors could influence public debt. Moreover, the study was only conducted for Kenya. Another study could include other eastern African countries such as Uganda, Rwanda, Burundi, Tanzania and South Sudan and conduct a dynamic panel data model of the different factors and how they influence public debt in the countries of the region.

REFERENCES

- Adrian, T. (2019). Keynote Address at 17th IMF Public Debt Management Forum. Accessed on March, 8, 2020. <https://www.imf.org/en/News/Articles/2019/06/19/sp061919-seventeenth-imf-public-debt-management-forum>
- Akpansung, O. (2013). A Review of Empirical Literature on Balance of Payment as a monetary phenomenon. *Journal of Emerging Trends in Economics and management Sciences*, vol 4, No 2.
- Alesina, A. (1987). Macroeconomic Policy in a Two-Party System as a Repeated Game. *The Quarterly Journal of Economics*, 102 (3): 651-678.
- Ali, G. (2011). Pakistan's Balance of Payment as Monetary Phenomenon: Econometric Evidence, *Journal of Managerial Sciences*, vol V, No 2.
- Arellano, C. & Ramanarayanan, A. (2010). Default and the Maturity Structure in Sovereign Bonds. *Work Paper 19, Federal Reserve Bank of Dallas, USA*.
- Bellows, S. (2019). Kenya's economic history and increasing public debt. *Business daily publications*. Accessed on March, 8, 2020. <https://www.businessdailyafrica.com/lifestyle/pfinance/economic-history-and-increasing-public-debt/4258410-5065532-uyi94t/index.html>
- Bristy, H. J. (2013). Exchange Rate Volatility and Export of Bangladesh: Impact Analysis through Cointegration Approach. *International Review of Business Research Papers*,9(4).
- Cooper, D. R., & Schindler, P. S. (2003). *Business Research Methods* (8th edition) McGraw-hill New York.[11].
- Creswell, & John, W. (2003). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Thousand Oaks: Sage Publication, Inc.
- Desmond, L. (2014). *Budget deficits and public debt in Sweden; a case for fiscal consolidation*. International Monetary Fund U.S.
- Dhliwayo, R. (2016). The Balance of Payment As A Monetary Phenomenon: An Econometric Study of Zimbabwe's Experience. Africa Economic Research Consortium (AERC), Research Paper 46.
- Elbadawi, Ibrahim, & Mwega, F. (2016). Can Africa's Saving Collapse Be Reverted? *The World Bank Economic Review*.
- Farah, A. (2010). Political Determinants of Budget Deficits: A Survey of Literature. *JEJAK*. 3(2), pp. 156-164.

- Forslund, K., Lima, L. & Panizza, U. (2018). The determinants of the composition of public debt in developing and emerging market countries, *Review of Development Finance*, Vol. 1, No. 3-4, pp. 207-222.
- Frank, M.W. (2014). A New State-Level Panel of Annual Inequality Measures over the Period 1916-2005, *Journal of Business Strategies*, 31(1), 241-262.
- Gargouri, I. & Ksantini, M. (2016). The Determinants of Public Debt. *The Romanian Economic Journal*.
- Gramlich, E.M. (2015). Budget Deficits and National Saving: Are Politicians Exogenous? *Journal of Economic Perspectives*. Volume 12(3), 23-35.
- Hansen, H & Tarp, F. (2016). Aid effectiveness disputed. *Journal of International Development*, vol.12, p.375–398.
- IMF, (2014). *Tunisia: Fourth review under the stand-by arrangement and request for modification of performance criteria*. Staff Report; Press Release; and Statement by the Executive Director for Tunisia, IMF Country Report No. 14/277.
- Irungu, G. (2019). Kenya debt passes Sh5.9 trillion mark. *Business daily publications*. Accessed on March, 8, 2020. <https://www.businessdailyafrica.com/markets/capital/Kenya-debt-passes-Sh5-9-trillion-mark/4259442-5311388-12bs7d7z/index.html>
- Juma, B. (2017). *Domestic debt and private investment in Kenya 1963-2009*. Unpublished Masters of Arts Economics Research project University of Nairobi.
- Karras, G. (2017). Foreign aid and long-run economic growth: empirical evidence for a panel of developing countries. *Journal of International Development*, 18(7), 15–28.
- Kiptui, M. (2019). *Fiscal lags, deficit financing and inflation in Kenya 1996-2011*. Unpublished Masters in Arts Economics, Research project University of Nairobi.
- Koori, A. (2013). *Macroeconomic effects of budget deficits in Kenya*. Unpublished Masters of Arts Economics Research project University of Nairobi.
- Lemma, T.T. (2016). Capital and debt maturity structures of a firm: Evidence from selected African Countries. PhD Thesis, University of the Witwatersrand, Johannesburg, South Africa.
- Mahiva, M. (2016). *The determinants of fiscal deficits and fiscal adjustments in Kenya 1972-2009*. Unpublished Master of Arts Economics, Research Project University of Nairobi.
- Mandi, A. M. (2014). *An Assessment of Kenya's Sovereign Risk*. University of Nairobi: Unpublished MA. Economics Thesis.
- Mannur, G. (2012). International Economics, Second Revised Edition. *Vikas Publishing House Pvt Ltd*.

- Morrissey, O. (2014). Does aid increase growth? *Progress in Development Studies*, vol.1, no.1, p.37-50.
- Muchira, N. (2019). World Bank warns Kenya over \$85.7b debt ceiling. *East Africa Publications*. <https://www.theeastafrican.co.ke/business/World-Bank-warns-Kenya-over-debt-ceiling/2560-5308712-1jivolz/index.html>
- Musalia, P. (2014). *The Effect of Foreign Exchange Rate Fluctuation on Public in Kenya*. Unpublished Research Project for Master of Science in Finance (MSC) University of Nairobi.
- Muthui, J.N., Kosimbei, G., Maingi, J., & Thuku, G.K.(2015). The impact of public expenditure components on economic growth in Kenya, 1964-2011. *International Journal of Business and Social Science*, 4(4), 223-253.
- Mwega, F. (2017). *Economic study of selected monetary policy issues*. ODI Working paper No.42 London Overseas Development Institute.
- Nandelenga, M.W (2010). *Debt Sustainability and the Optimal Debt in Kenya*. Unpublished Master's thesis submitted to the School of Economics, Kenyatta University.
- Nduri, M. O. (2013). *The effect of public debt and inflation rate on exchange rates in Kenya*. Unpublished Research Project for Master of Science in Finance (MSC) University of Nairobi.
- Ngugi, R., & Wagacha, M. (2017). Macroeconomic structure and outlook. In Peter Kimuyu, Mbui Wagacha and Okwach Abagi, eds., *Kenya's Strategic Policies for the 21st Century*. Nairobi: Institute of Policy Analysis and Research.
- Nordhaus, W. D. (1975). The Political Business Cycle. *Review of Economic Studies*, Vol.42: 169-189.
- Oladipupo, O & Onotaniyohuwo, O. (2011). Impact of Exchange Rate on Balance of Payment in Nigeria: African Research Review. *An international Multidisciplinary Journal*, 5(4): 73-88.
- Omrane, S.B & Gabsi, F.B. (2017). Public Debt Sustainability in Tunisia: Empirical Evidence Estimating Time-Varying Parameters, *Journal of the Knowledge Economy*.
- Organization for Economic Corporation and Development (OECD). (2019). *DAC News: Development Aid 2018*, OECD: Paris.
- Osoro, K. (2013). Determinants of balance of Payments in Kenya. *European Scientific Journal*, Vol 9, No 16.
- Ouattara, B. (2010). Foreign aid and government fiscal behavior in developing countries: Panel data evidence. *Economic Modeling*, 23, 506-514.

- Quartey, P. (2015). Quartey, Innovative ways of making aid effective in Ghana: tied aid versus direct budgetary support. *Journal of International Development*, 17, 1077-1092.
- Ram, R. (2014). Recipient country's 'policies' and the effect of foreign aid on economic growth in developing countries: additional evidence. *Journal of International Development*, 16(2), 201–211.
- Salsman, R.M. (2017). *The Political Economy of Public Debt Three Centuries of Theory and Evidence, New Thinking in Political Economy Series*. UK: Edward Elgar Publishing Limited. p. 336. ISBN-10: 1785363379
- Shekar, G. (2014). *Effective debt management in developing countries; debt management series 1*, Economic and legal advisory services division of the commonwealth secretariat. United Kingdom: commonwealth secretariat.
- Slowe, T. (2013). Exchange Rate Fluctuation and Export Performance in Sub-Saharan countries (1961-2011). Unpublished Project Caritas Univeristy Emene, Enugu State.
- Swamy, V. (2015). Government Debt and its Macroeconomic Determinants. An Empirical Investigation, Munich Personal Repec Archive (*MPRA Paper*, No. 64106).
- The Conversation (2018). Kenya's public debt is rising to dangerous levels. <https://theconversation.com/kenyas-public-debt-is-rising-to-dangerous-levels-100790>
- The Standard. (2019). New debt office must stem irresponsible borrowing. *Standard newspaper publication* of 08th Feb 2019. <https://www.standardmedia.co.ke/article/2001312383/new-debt-office-must-stem-irresponsible-borrowing>
- Tijani, O. (2014). Empirical Analysis of Balance of Payment Adjustment Mechanism: Monetary Channel in Nigeria. *Mediterranean Journal of Social Sciences*, vol. 5 No 14.
- Abduvaliev, M., & Bustillo, R. (2020). Patterns of Official Development Assistance in Tajikistan: effects on growth and poverty reduction. *Revista Brasileira de Política Internacional*, 63(2), 1–25. <https://doi.org/10.1590/0034-7329202000206>
- Alesina, A., & Tabellini, G. (1992). Positive and normative theories of public debt and inflation in historical perspective. *European Economic Review*, 36(2–3), 337–344. [https://doi.org/10.1016/0014-2921\(92\)90089-F](https://doi.org/10.1016/0014-2921(92)90089-F)
- Angrist, J., & Pischke, J.-S. (2014). *Mastering 'Metrics: The Path from Cause to Effect*. Princeton University Press.
- Azzimonti, M., De Francisco, E., & Quadrini, V. (2014). Financial globalization, inequality, and the rising public debt. *American Economic Review*, 104(8), 2267–2302. <https://doi.org/10.1257/aer.104.8.2267>
- Bradford Delong, J., & Summers, L. H. (2012). Fiscal policy in a depressed economy. *Brookings Papers on Economic Activity*, 43(1), 233–272. <https://doi.org/10.1353/eca.2012.0000>

- Cafiso, G., & Cellini, R. (2014). Fiscal consolidations and public debt in Europe. *International Tax and Public Finance*, 21(4), 614–644. <https://doi.org/10.1007/s10797-014-9319-y>
- Canofari, P., & Piergallini, A. (2020). Testing Fiscal Solvency in Macroeconomics. *Advances in Intelligent Systems and Computing*, 1009 AISC, 70–76. https://doi.org/10.1007/978-3-030-38227-8_9
- Canofari, P., Piergallini, A., & Piersanti, G. (2018). THE FALLACY OF FISCAL DISCIPLINE. *Macroeconomic Dynamics*, 24(1), 1–14. <https://doi.org/10.1017/S1365100518000317>
- Casares, E. R. (2015a). A relationship between external public debt and economic growth. *Estudios Económicos*, 30(2). http://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S0186-72022015000200219
- Casares, E. R. (2015b). A RELATIONSHIP BETWEEN EXTERNAL PUBLIC DEBT AND ECONOMIC GROWTH on JSTOR. *Estudios Económicos*, 30(2), 219–243. <https://www.jstor.org/stable/24725752?seq=1>
- Chudik, A., Mohaddes, K., Pesaran, M. H., & Raissi, M. (2017). Is there a debt-threshold effect on output growth? *Review of Economics and Statistics*, 99(1), 135–150. https://doi.org/10.1162/REST_a_00593
- De-Córdoba, G. F., Pujolas, P. S., & Torres, J. L. (2017). Fiscal discipline and defaults. *Review of Economic Dynamics*, 24, 1–13. <https://doi.org/10.1016/j.red.2016.12.001>
- De Grauwe, P., & Ji, Y. (2013). Self-fulfilling crises in the Eurozone: An empirical test. *Journal of International Money and Finance*, 34, 15–36. <https://doi.org/10.1016/j.jimonfin.2012.11.003>
- Djiogap, C. F. (2017). Public Debt and Economic Growth: New Evidence of the Non-Linearity. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2865936>
- Égert, B. (2015). Public debt, economic growth and nonlinear effects: Myth or reality? *Journal of Macroeconomics*, 43, 226–238. <https://doi.org/10.1016/j.jmacro.2014.11.006>
- Folorunso, B. A. (2013). Relationship between Fiscal Deficit and Public Debt in Nigeria: an Error Correction Approach. *Journal of Economics and Behavioral Studies*, 5(6), 346–355. <https://doi.org/10.22610/jeb.v5i6.410>
- Ghosh, A. R., Kim, J. I., Mendoza, E. G., Ostry, J. D., & Qureshi, M. S. (2013). Fiscal Fatigue, Fiscal Space and Debt Sustainability in Advanced Economies. *Economic Journal*, 123(566), F4–F30. <https://doi.org/10.1111/eoj.12010>
- Hilton, S. K. (2021). Public debt and economic growth: contemporary evidence from a developing economy. *Asian Journal of Economics and Banking*, 5(2), 173–193. <https://doi.org/10.1108/AJEB-11-2020-0096>
- Karazijene, Ž. (2015). Critical analysis of public debt and tendencies of its management. *Public*

- Policy and Administration*, 14(2), 194–208. <https://doi.org/10.13165/VPA-15-14-2-03>
- Kholjigitov, G. A. (2013). The Role of the Fiscal Discipline in Public Finance Management in Developing Countries. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2368123>
- Kinuthia, J., & Rugo, A. (2020). *The state of Kenya ' s public debt : the thin line between a rock and a hard place*. October.
- Konopczyński, M. (2021). The impact of budget deficit, public debt and education expenditures on economic growth in Poland. *Acta Oeconomica*, 71(1), 59–84. <https://doi.org/10.1556/032.2021.00003>
- Linton, O. (2017). *Probability, Statistics and Econometrics*. Elsevier Science.
- Linton, O. (2019). *Financial Econometrics: Models and Methods*. Cambridge University Press.
- Matiti, C. (2013). The relationship between public debt and economic growth in Kenya. *International Academic Journal of Information Sciences and Project Management*, 1(1), 65–86.
- Ministry of Economy and Finance. (2018). *Relevant Factors Influencing Public Debt Developments in Italy* (Issue May). Ministry of Economy and Finance.
- Mohamed, I. A., Evans, K., & Tirimba, O. I. (2015). Analysis of the Effectiveness of Budgetary Control Techniques on Organizational Performance at Dara- Salaam Bank Headquarters in Hargeisa Somaliland. *International Journal of Business Management and Economic Research (IJBMER)*, 6(6), 327–340. www.ijbmer.com
- Njoroge, L. W. N. (2020). *Impact of Kenya ' s Public Debt on Economic Stability*. 1–134.
- Ostry, J., Ghosh, A., & Espinoza, R. (2015). When Should Public Debt Be Reduced? *Staff Discussion Notes*, 15(10), 1. <https://doi.org/10.5089/9781498379205.006>
- Public Debt Management Office. (2020). *Key Highlights of Kenya ' s Public Debt & Borrowing Policy* (Issue July, pp. 1–12). Public Debt Management Office.
- Roberts, R. O. (1937). Ricardo's Theory of public debts. *Economica, New Series*, 4(16), 386–405. <https://doi.org/10.1111/j.1468-0335.2008.00718.x>
- Rolf, U., & Siebke, J. (1996). Geld- and Fiskalpolitik in der Europaeischen Waehrungsunion. *Hiedelberger Jahrbueche*, 40, 147-168.
- Saungweme, T., & Odhiambo, N. M. (2018). The Impact of Public Debt on Economic Growth: A Review of Contemporary Literature. *The Review of Black Political Economy*, 45(4), 339–357. <https://doi.org/10.1177/0034644619833655>
- Swamy, V. (2015). *Government Debt and its Macroeconomic Determinants – An Empirical Investigation* (Issue 64106). Institute of Economic Growth, Delhi.

- Ugochukwu, U. S., Okafor, I. ., & Azino, A. C. (2016). Effect of External Borrowing and Foreign Aid on Economic Growth in Nigeria. *International Journal of Academic Research in Business and Social Sciences*, 6(4), 155–175. <https://doi.org/10.6007/ijarbss/v6-i4/2087>
- United Nations. (2019). *Declining Aid, Rising Debt Thwarting World's Ability to Fund Sustainable Development, Speakers Warn at General Assembly High-Level Dialogue*. United Nations. <https://www.un.org/press/en/2019/ga12191.doc.htm>
- Wooldridge, J. (2015). *Introductory Econometrics: A Modern Approach*. Cengage Learning.
- Yared, P. (2019). Rising government debt: Causes and solutions for a decades-old trend. *Journal of Economic Perspectives*, 33(2), 115–140. <https://doi.org/10.1257/jep.33.2.115>

APPENDIX: Data Collection Sheet

Data on Economic growth rate, public debt, budget deficit, foreign grants, balance of payment, exchange rates (2007-2018)

Year	Quarter	Economic Growth Rate	Public Debt	Budget Deficit	Foreign Grants	Balance Of Payment	Exchange Rates
2000	Q1						
	Q2						
	Q3						
	Q4						
2001	Q1						
	Q2						
	Q3						
	Q4						
.....							
2009	Q1						
	Q2						
	Q3						
	Q4						
2010	Q1						
	Q2						
	Q3						
	Q4						
2011	Q1						
	Q2						
	Q3						
	Q4						
2012	Q1						
	Q2						

	Q3						
	Q4						
2013	Q1						
	Q2						
	Q3						
	Q4						
2014	Q1						
	Q2						
	Q3						
	Q4						
2015	Q1						
	Q2						
	Q3						
	Q4						
2016	Q1						
	Q2						
	Q3						
	Q4						
2017	Q1						
	Q2						
	Q3						
	Q4						
2018	Q1						
	Q2						
	Q3						
	Q4						