KiPPRA

The KENYA INSTITUTE for PUBLIC POLICY RESEARCH and ANALYSIS

Assessing the Sustainability of Fiscal Policy in Kenya

Hellen Chemnyongoi and Benson Kiriga

DP/240/2020

Assessing the Sustainability of Fiscal Policy in Kenya

Hellen Chemnyongoi and Benson Kiriga

Kenya Institute for Public Policy
Research and Analysis

KIPPRA in Brief

The Kenya Institute for Public Policy Research and Analysis (KIPPRA) is an autonomous institute whose primary mission is to conduct public policy research leading to policy advice. KIPPRA's mission is to produce consistently high-quality analysis of key issues of public policy and to contribute to the achievement of national long-term development objectives by positively influencing the decision-making process. These goals are met through effective dissemination of recommendations resulting from analysis and by training policy analysts in the public sector. KIPPRA therefore produces a body of well-researched and documented information on public policy, and in the process assists in formulating long-term strategic perspectives. KIPPRA serves as a centralized source from which the Government and the private sector may obtain information and advice on public policy issues.

Abstract

Fiscal policy sustainability is key for medium to long-term growth of any economy. Maintaining fiscal sustainability helps create enough fiscal space to mitigate economic shocks. Over the years, fiscal space in Kenya has been constrained by rising Government expenditures with persistent development needs. This has led to the widening of the fiscal deficit despite instituted austerity measures and tax reforms introduced to enhance revenue collection. In addition, the country has not been able to meet its fiscal deficit targets over the years. As a result, concerns arise on the status of fiscal policy sustainability in Kenya, which has motivated this study. The study employed the Johansen cointegration technique followed by the two-step Engle-Granger approach to assess sustainability of fiscal policy in Kenya. Empirical findings indicate that fiscal policy in Kenya is weakly sustainable. That said, the economy adjusts fast in instances of disequilibrium caused by various shocks. To ensure fiscal sustainability is maintained in the long run, the study recommends putting in place a fiscal consolidation plan with a mix of expenditure and revenue measures. Specifically, the Government could focus on reducing the share of salaries and wages, which is the largest component in the recurrent expenditures. Similarly, retiring short-term and expensive commercial debt by increasing the share of concessional loans in financing fiscal deficit will serve to reduce interest rate obligation. To increase tax revenues, the study recommends a review of the multiple exemptions, including those on VAT and other incentive schemes such as deductibles and investment allowances under corporate tax.

Abbreviations and Acronyms

ADF	Augmented Dickey Fuller
CBA	Collective Bargaining Agreement
CIP	Corporate Income Tax
CPIA	County Policy Institutional Assessment
EAC	East African Community
ERS	Economic Recovery Strategy
FRF	Fiscal Reaction Function
GDP	Gross Domestic Product
IMF	International Monetary Fund
KPSS	Kwiatkowski, Phillips, Schmidt and Shin
KRA	Kenya Revenue Authority
O&M	Operations and Maintenance
PAYE	Pay As You Earn
PFM	Public Finance Management
QEBR	Quarterly Economic and Budgetary Review
VAT	Value Added Tax

Table of Contents

List of Figures

List of Tables

1.　　　　Introduction

1.1　　Background of the Study

Sound public finances reflected in prudent fiscal balances and supportable debt position are a prerequisite for sustainable economic development in Kenya. They contribute to credible government policies and a macroeconomic and financial stability. As such, there is need to maintain prudent fiscal policy to manage future pressure on public finances, such as rising public debt. Fiscal policy refers to the range of government actions that involve making changes in the pattern, structure and level of government expenditure, taxation and borrowing to achieve given objectives (Dwivedi, 2005). It plays a vital role in supporting robust, long lasting and equitable growth at the macro and micro levels. At the macro level, fiscal policy helps ensure macroeconomic stability, an essential prerequisite for growth whereas at micro level, it boosts growth by promoting human capital accumulation and enhancing total factor productivity (IMF, 2015). Apart from contributing to growth and equity, fiscal policy is also used by governments to raise levels of employment, reduce poverty levels and improve the external balance.

The instruments of fiscal policy are taxation, government expenditure and public debt. Taxation is the main fiscal instrument used by governments. It is also the main source of revenue to finance government expenditure. Other sources of government revenue apart from taxation include fines, prices, fees and levies. The second important tool of fiscal policy is government expenditure. The importance of government expenditure in the growth of an economy was well articulated by the Keynesian hypothesis. According to Keynes (1936), expansion of government expenditure plays a key role in accelerating economic growth of a country.

Often, due to the need for government to spend on large infrastructure projects and other development programmes, government expenditure exceeds government revenue generated from taxation, grants, social contributions, recurrent Appropriations-In-Aid (A-I-A) and other revenue sources excluding borrowing. The gap emanating from excess government expenditure is known as fiscal deficit. Deficits in revenue can also be attributed to several factors, including tax evasion, tax avoidance, complexities in the tax system that makes tax collection difficult, among others. As such, governments often use public debt (borrowing) as the third tool of fiscal policy to finance fiscal deficit.

The Government expenditure in Kenya has been growing over the years as the Government focuses on bridging the infrastructural gap. Total government expenditure rose from Ksh 694.2 billion in 2008/09 to Ksh 2,944.8 billion in

2018/19. To finance the rising expenditure, the Government has continuously put in place measures to boost revenue. This has seen the country's revenue increase from Ksh 498.9 billion to Ksh 1,746.3 billion over the same period. Despite the increase in Government revenue, the growth in fiscal deficit persists. In 2008/09, fiscal deficit in Kenya amounted to Ksh 107.83, an equivalent of 4.8 per cent of Gross Domestic Product (GDP). As of 2018/19, fiscal deficit had risen to Ksh 734.86 billion, which is 7.9 per cent of GDP. The growth in expenditure has not only had immense effect on the country's fiscal deficit but has also had a great bearing on the country's public debt. Specifically, total stock of public debt rose exponentially from Ksh 889.9 billion in 2008/09 to Ksh 5,301.6 billion in 2018/19. This has led to pertinent questions on the sustainability of fiscal policy in Kenya.

The instruments of fiscal policy have certain implications on the economy. A proactive fiscal policy is an important instrument available to governments to stimulate economic activity and economic growth. However, the effectiveness of fiscal policy in boosting growth depends on whether government spending crowds in or crowds out private spending. An increase in government spending that is not matched with an increase in government revenue leads to a budget deficit that needs to be financed. Financing the deficit through issuance of domestic debt can lead to increase in domestic interest rates, which may lead to crowding out of private spending (Dwivedi, 2005). Similarly, if the deficit is financed by seigniorage or other flexible monetary instruments, it may result to a build-up in inflationary expectations. This in the long run may lead to higher nominal interest rates, thereby hurting private spending (Loizides and Vamvoukas, 2005). Therefore, deficits can result in crowding out the private sector of resources that would have otherwise been available to fund capital accumulation and consumption spending.

Noting the implications of fiscal policy, it ought therefore to be implemented in a sustainable manner to take advantage of the opportunities it offers to promote growth, employment, equity and favourable external balance and minimize exposure to the pitfalls associated with the policy. According to IMF (2015), fiscal policy uncertainty and high levels of public debt can discourage private investment and slow down economic growth. As a result, fiscal sustainability and certainty are key for medium to long-term growth of any economy. This explains the significant attention by policy makers to issues of fiscal policy sustainability.

1.2   Study Motivation

In Kenya, statistics indicate that growth in Government revenue has not been matching the growth in government expenditure over the past years. This has

led to widening of fiscal deficit. Increasing growth in fiscal deficit in Kenya has been a point of concern for policy makers. Despite the austerity measures and tax reforms to enhance revenue collection, always taken by subsequent governments to curb it, growth in fiscal deficit persists. As shown in Figure 1, fiscal deficit grew from 4.8 per cent of GDP in 2008/09 to 9.25 per cent in 2016/17. The persistent growth implies that the Government has to resort to alternative financing, mainly borrowing, to meet its budget requirements. This has not only led to increasing public debt but also resulted to increase in the country's risk of external debt distress from low to moderate in 2018, according to the debt sustainability framework by the International Monetary Fund (IMF).

Growth in public debt poses certain challenges to the country. For instance, the Government, in every financial year, sets aside a percentage of Government revenue to service accumulating debt. As a result, finances are diverted from essential services and development projects that spur economic growth. Further, increased debt repayment has over time constrained the fiscal space for development projects. Similarly, high levels of public debt narrow the window for future borrowing particularly where economic growth is unsteady, increasing the vulnerability to fiscal risks in the event of a need for urgent borrowing. It is therefore imperative for the country to ensure sustainable levels of public debt to reduce the negative effects associated with it.

In addition to the widening fiscal deficit, the country has not met its fiscal deficit targets over the years. The actual fiscal deficit has continuously been higher than the desired target as illustrated in Figure 2. This has raised major concerns on the sustainability of fiscal policy in Kenya. The study, therefore, seeks first to establish whether the current level of fiscal policy is sustainable or not and secondly, determine the rate of adjustment of Government expenditure and revenue in a case of disequilibrium in the economy. The study findings will be instrumental in formulating the possible policies in relation to fiscal policy sustainability. Similarly, it will also inform formulation of policies that aid the Government achieve its fiscal targets.

1.3   Research Objectives

1.   To establish whether the current level of fiscal policy is sustainable.

2.   To determine the rate of adjustment of Government revenue and expenditure in case of a disequilibrium in the economy.

1.4   Organization of the Study

The rest of the paper is structured as follows: the second section discusses the fiscal performance in Kenya whereas the third section reviews literature on sustainability of fiscal policy, both theoretical and empirical. The fourth section discusses the estimation techniques and the data used in the study. Estimation results are presented in the fifth section and section six provides the conclusion and policy recommendations of the study.

2.   Fiscal Performance in Kenya: Stylized Facts

2.1   Fiscal Policy Stance in Kenya

In Kenya, fiscal policy seeks to address various macroeconomic objectives, including fostering higher economic growth, reducing poverty rate, and addressing substantial income, asset, and regional inequalities. These objectives are achieved through implementation of the various Government policy documents, for instance the Poverty Reduction Strategy Paper (PRSP), the Economic Recovery Strategy (ERS) of 2003, Medium-Term Expenditure Framework (MTEF) in 2007, the Kenya Vision 2030, and the various Medium-Term Plans (MTPs).

The country's most elaborate development blueprint, the Kenya Vision 2030, envisioned Kenya to be a middle-income economy by 2030. To realize the Vision, the Government sought to develop a firmly interconnected country through a network of roads, railways, ports, airports, airways, water and sanitation facilities and telecommunications. Furthermore, the Government saw the need for substantial investment in energy, science, technology and innovation, security, among other reforms (Government of Kenya, 2007). Among the flagship projects of the Kenya Vision 2030 were the Nairobi-Thika superhighway, standard gauge railway project, the Northern Corridor Transport Improvement Projects, the Lamu Port South-Sudan-Ethiopia Transport (LAPSSET) Corridor and the expansion and modernization of Jomo Kenyatta International Airport (JKIA). These projects require significant funding and therefore they have had a huge bearing on the country's fiscal policy.

Over the last decade, the Government has invested significantly in infrastructure, education, healthcare, military operations and on other social amenities with a view to achieving the Vision 2030's objectives. In this regard, Government expenditure rose persistently over the years as shown in Figure 1. The total expenditure for 2019/20 is estimated to be Ksh 3,256.1 billion, a slight increase from the provisional actual of Ksh 2,944.8 billion registered in 2018/19. The amount is also Ksh 2,561.9 billion higher than the Ksh 694.2 billion spent in 2008/09. The persistent rise in total Government expenditure is attributable to increase in development expenditure and recurrent expenditure, reflecting the various development projects undertaken by the Government. The development expenditure increased from Ksh 160.7 billion in 2008/09 to Ksh 569.7 billion in 2018/19 whereas recurrent expenditure rose from Ksh 533.5 billion to Ksh 2,375.1 billion over the same period under review.

Government revenue, on the other hand, has similarly increased with the rising Government expenditure as illustrated in Figure 1. However, the rate of growth is lower than that of the Government expenditure, leading to a persistent fiscal deficit. In 2019/20, revenue is expected to be Ksh 1,935.7 billion, an increase from Ksh 1,746.3 billion in 2018/19 and Ksh 498.9 billion in 2008/09. The remarkable improvements in revenue reflects the improved operating economic environment, expansion of the tax base and improved revenue administrative measures put in place by the National Treasury in an attempt to boost revenue.

Figure 1: Kenya's total expenditure and revenue (Ksh billion)
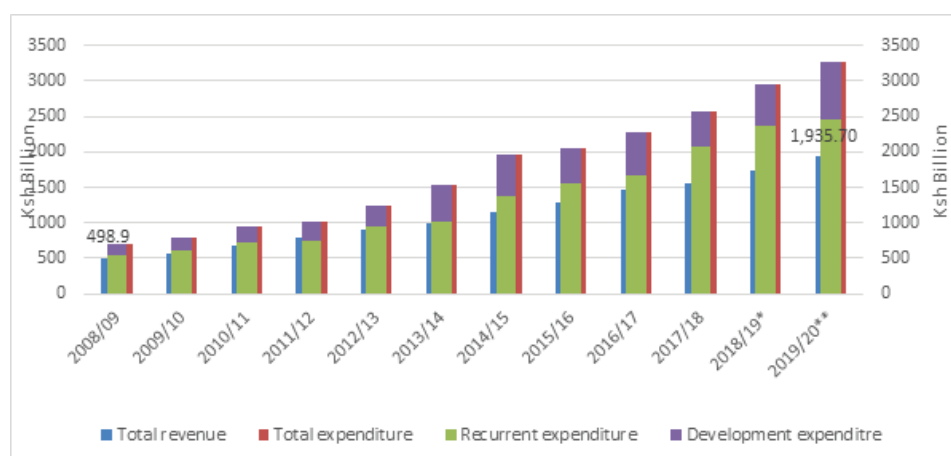
*Source of data: KNBS (2012-2020) Economic Survey * Provisional actual ** Revised budget estimates*

The revenue and expenditure growth rate analysis shows that revenue and expenditure have been growing in tandem (Figure 1.2). Over the period under study, the average revenue growth was 12.6 per cent whereas expenditure growth averaged 14.4 per cent. Further analysis indicates that total expenditure growth has been higher, with an exception of three years (2011/12, 2015/16 and 2016/17) when revenue increased more than the increase in expenditure. In 2011/12, the Government registered the highest revenue growth rate of 18.6 per cent, following a significant increase in tax revenue as the Kenya Revenue Authority (KRA) continued to undertake initiatives purposed to strengthen and expand the tax base, coupled with tax policy reforms. The highest expenditure growth rates were recorded in three consecutive years starting 2012/13. The significant growth in total expenditure over the three years was as a result of increase in development expenditure. Specifically, the 70 per cent growth in development expenditure was informed by the Government policy in 2013/14 to pursue a shift in the composition of expenditure from recurrent to capital expenditure to facilitate investments in

critical infrastructure. As such, the priority programmes under the Medium-Term Expenditure Framework (MTEF) of 2014/15 focused more on capital expenditure. As shown in Figure 2, the growth in recurrent expenditure has been relatively stable compared to development, which has been erratic over the years.

Figure 2: Kenya's expenditure and revenue growth rates (%)
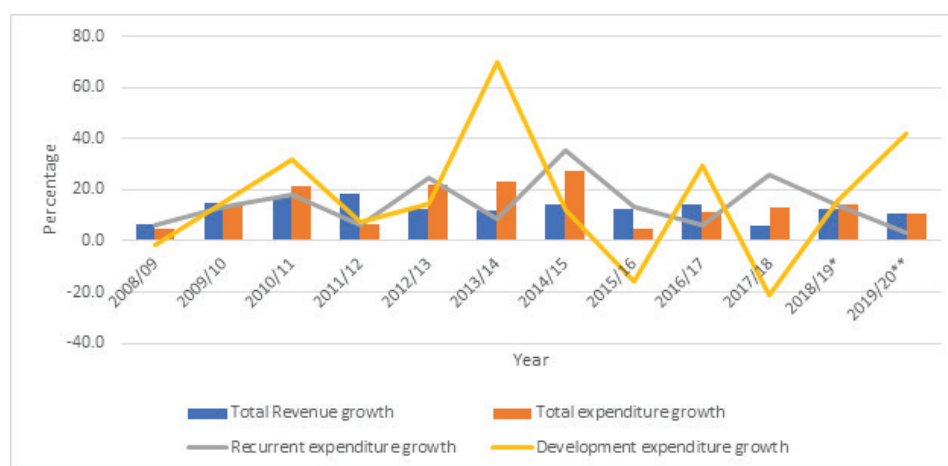
*Source of data: Authors calculation based on KNBS (2012-2020), Economic Survey data * Provisional actual ** Revised budget estimates*

2.2 Analysis of the Components of Expenditure and Revenue in Kenya

Kenya's fiscal policy can be classified into phases during the period under review (Figure 3). The first phase between 2008/09 and 2009/10 reflects fiscal stimulus where the Government increased its expenditures to support the implementation of the Kenya Vision 2030 flagship projects following the launch of the country's long-term development blueprint in 2008. During this period, total expenditure increased from 24.3 per cent of GDP registered in 2006/07 to 28.9 per cent of GDP as of 2009/10. The second phase (2013/14 to 2017/18) was a fiscal expansion period where total expenditure increased to an average of 26.7 per cent of GDP from an average of 23.4 per cent of GDP recorded between 2008/09 to 2011/12. The expansion was attributed to three key factors, among others. These include: the implementation of the new 2010 constitution and devolved system of government, the Government's commitment to improve Kenya's economic and social infrastructure deficit, and the multiple shocks faced by the country in 2016/17 that necessitated importation of food and provision for a

second presidential election. In 2017/18, the Government embarked on a fiscal consolidation plan following the narrowing of fiscal space with an aim to reduce budget deficits and debt accumulation, marking the last phase. The phases explain the variance in the components of expenditures.

Figure 3: Expenditures as a percentage of GDP
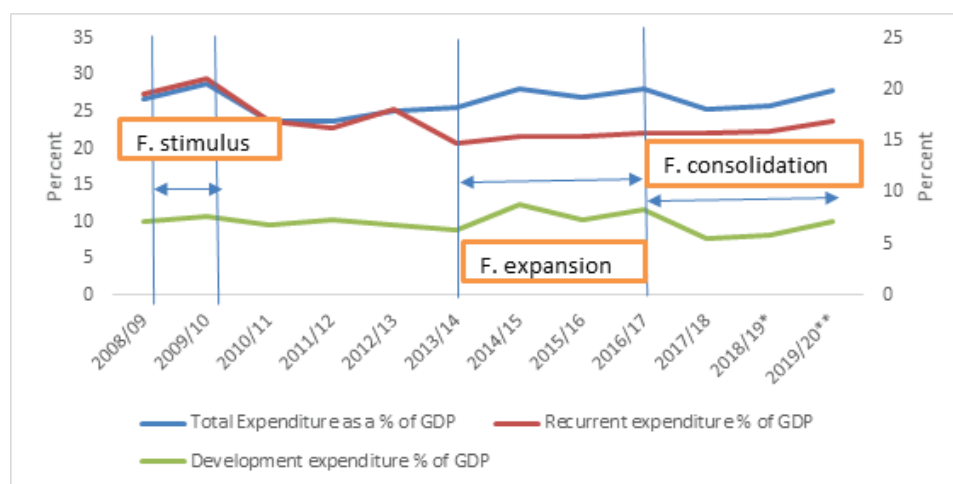
*Source of data: National Treasury; QEBR (various reports) * Preliminary actual **Supplementary estimates*

The gap between development and recurrent expenditures in the country continues to widen. Statistics indicate that recurrent expenditure has been more than double the development expenditure over the years (Figure 4). Specifically, the share of recurrent expenditure averaged 75.1 per cent from 2008/09 to 2019/20 while the share of development expenditure averaged 24.9 per cent over the same period. The share of development expenditure has always been below the 30 per cent threshold provided for in the PFM Act 2012, except in 2013/14 when the share rose to 33.3 per cent. Therefore, there is need to review the expenditure allocation to meet the criteria specified in the PFM Act 2012

Figure 4: Percentage share of recurrent and development expenditure
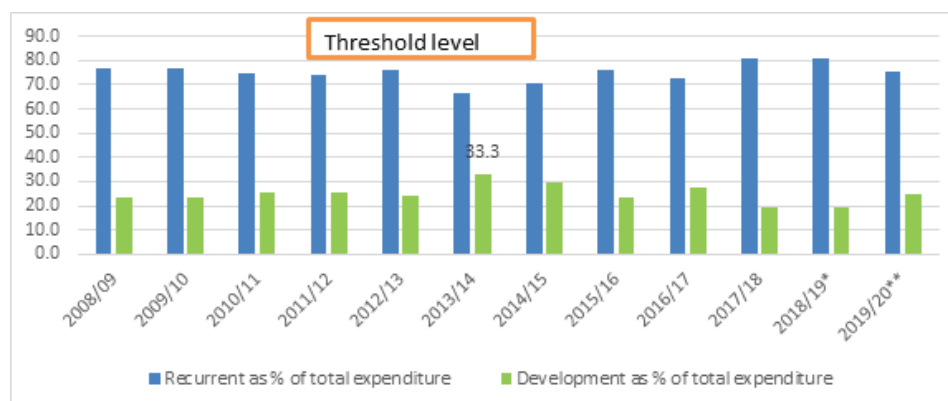
Source: Author's computation using KNBS data, Economic Survey (2012-2020)
* Provisional ** Revised budget estimates

The composition of development expenditure is informed by the country's development objectives stipulated in the Kenya Vision 2030 and the Medium-Term Plans (MTPs I-III). The objectives aim at improving the pace of economic transformation through infrastructure development, and investments in priority social and economic sectors. Development projects accounted for the largest share (67%) of development expenditures between 2008/9 and 2019/20 (Figure 5). This was followed by Appropriations-in-Aid (A-i-A) with a share of 31 per cent and other development expenditures accounted for 2 per cent of total development spending. As a share of GDP, development projects averaged 4.8 per cent with A-i-A averaging 2.3 per cent and other development expenditures 0.1 per cent during the period under study. The significant share of development projects in the total development expenditure reflects the Government's commitment to create a conducive environment for economic and social development while closing the infrastructural gap. The increased development expenditure saw various infrastructure flagship projects in the transport and energy sectors completed. These include: completion of phase I (472 km) of the standard gauge railway (SGR), expansion of Jomo Kenyatta International Airport (JKIA) arrival and departure terminals, tarmacking of 3,300 kms of road network by 2016, increased capacity of electricity generation to 2,336 MW as of 2017 and increased number of households connected to electricity, among others.

Figure 5: Composition of recurrent and development expenditures (2008/9-2019/20)
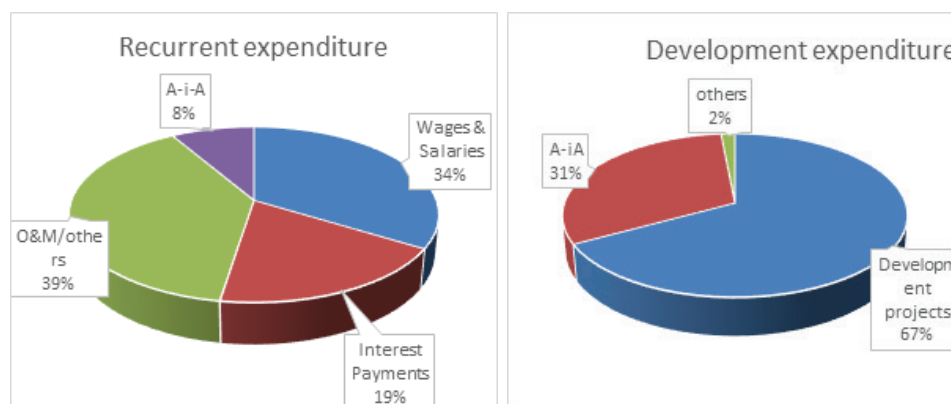
Source: Author's computation using data from National Treasury, QEBS (various issues)

The composition of recurrent expenditure indicates that Operations and Maintenance (O&M) and salaries and wages accounted for the largest shares during the period under study (Figure 5). The share of Operations and Maintenance was 39 per cent of the total recurrent expenditure while salaries and wages accounted for 34 per cent. Interest payments accounted for 19 per cent while A-i-A accounted for 8 per cent of the total recurrent spending. As a share of GDP, O&M averaged 6.2 per cent, wages and salaries 5.4 per cent and interest payments 3 per cent between 2008/09 and 2019/20. This affirms that O&M and salaries and wages take the largest portion of the recurrent spending in the country. Operations and maintenance registered a growth of 214.5 per cent from Ksh 201.0 million in 2008/09 to Ksh 632.2 million in 2018/19. In 2019/20 the O&M expenditure supplementary budget estimate is Ksh 663.2 million. Expenditure on wages and salaries grew by 169 per cent from Ksh 155.2 million in 2008/09 to Ksh 417.5 million in 2018/19. The supplementary budget estimate indicates that wages and salaries in 2019/20 amounts to Ksh 487.6 million according to the National Treasury statistics. The significant growth of salaries and wages may be attributed to the increasing size of public sector employees, wage agitations and implementation of the arising Collective Bargaining Agreements (CBAs) with labour unions. The various implemented CBAs for teachers, doctors and nurses among others have increased average wages and salaries per employee from Ksh 353,300 per annum in 2008 to Ksh 716,900 per annum in 2018, with the amount approximated at

Ksh 773,900 in 2019, leading to an expanded wage bill. In addition, the size of employees in the public sector has grown by 32.1 per cent from 638,000 in 2008 to 842,900 in 2018, with the size approximated at 865.,200 in 2019.

The total Government expenditures' classification by function indicates that public debt transactions, economic affairs and the education sector accounted for the largest shares of total expenditure during the period under study (Figure 6). The share of public debt transactions increased from 18.1 per cent in 2008/09 to 28.7 per cent in 2018/19, though it is expected to decrease to 21.4 per cent of total spending in 2019/20. In the last 12 years, the share of public debt transaction averaged 21.3 per cent, taking up the largest share of total expenditure. During the same period, the share of economic affairs averaged 18.9 per cent of the total spending, accounting for the second largest share of total spending. Allocation to the education sector ranked third, with an average of 17.3 per cent of the total expenditure over the same period. The average share of all the other sectors[1] was less than 10 per cent each, with recreation and environmental protection functions accounting for the least shares of 0.4 per cent and 0.8 per cent of the total expenditure, respectively. Further analysis indicates that the share of transfers to other levels of Government registered significant growth, increasing from an average of 1.5 per cent of total expenditure in 2008/09-2012/13 to an average of 12.8 per cent of total expenditure in 2013/14-2019/20. The growth is attributed to implementation of a devolved system of government. Similarly, the share of housing and community amenities has significantly increased from 1.97 per cent in 2008/09 to 3.30 per cent of total expenditure in 2019/20 on account of investments to support the "Big Four" agenda.

---

1   The other sectors/function include: general public service, transfers of general character between levels of government, defense, public order and safety, housing and community amenities, health, recreation, culture and religion, social protection and environmental protection.

Figure 6: National government expenditure classification by function (% of total expenditure)
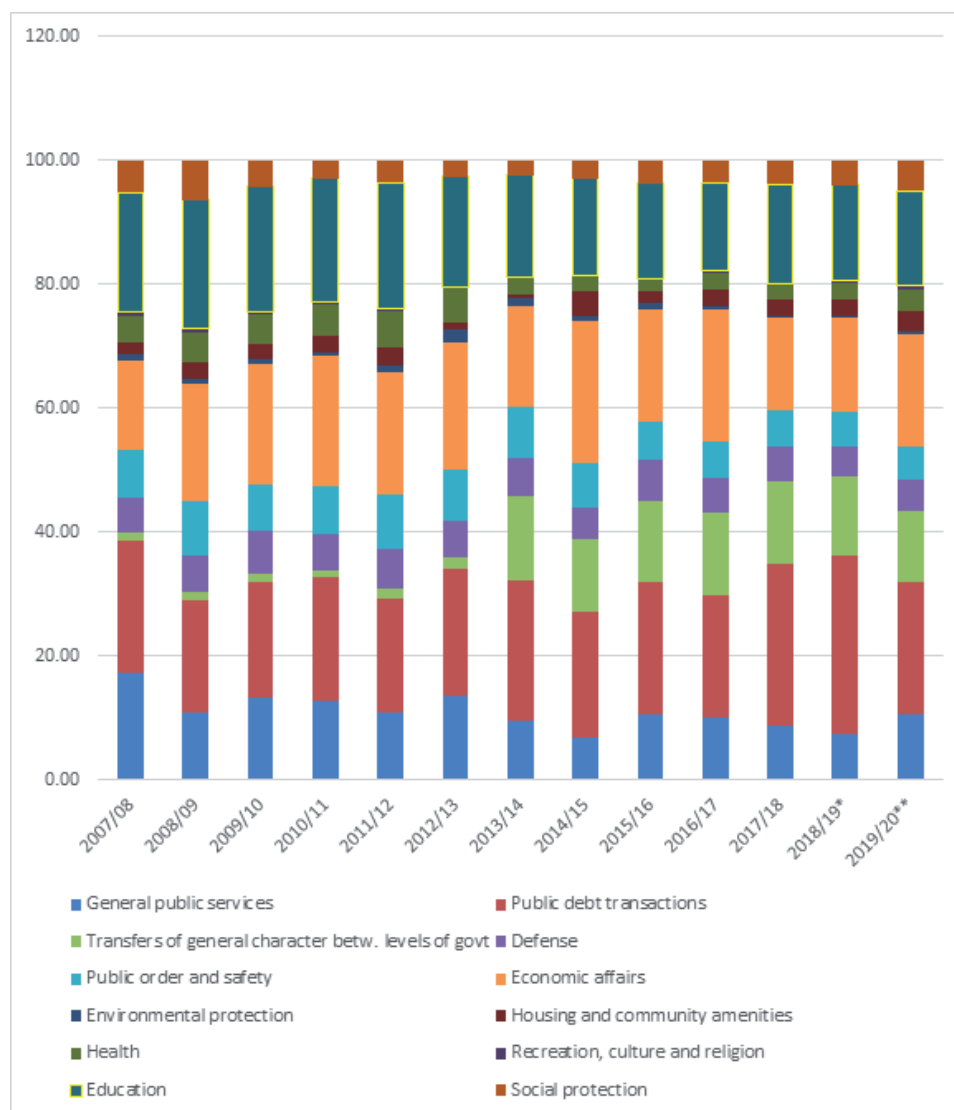
*Source: Author's computation using data from KNBS, Economic Survey (2012-2020) * Provisional actual ** Revised estimates*

Components of government revenues

The total Government revenue is largely driven by tax revenue and hence its stable contribution is key to anchoring expenditure decisions. The share of tax revenue averaged 89.8 per cent of total Government revenue, while non-tax revenues[2] averaged 7.6 per cent and grants 2.6 per cent between 2008/09 and 2019/20 (Figure 7). This implies that the performance of tax revenue is critical to financing Government spending and therefore has a strong correlation with economic development.

Figure 7: Components of national government revenue (broad classification)
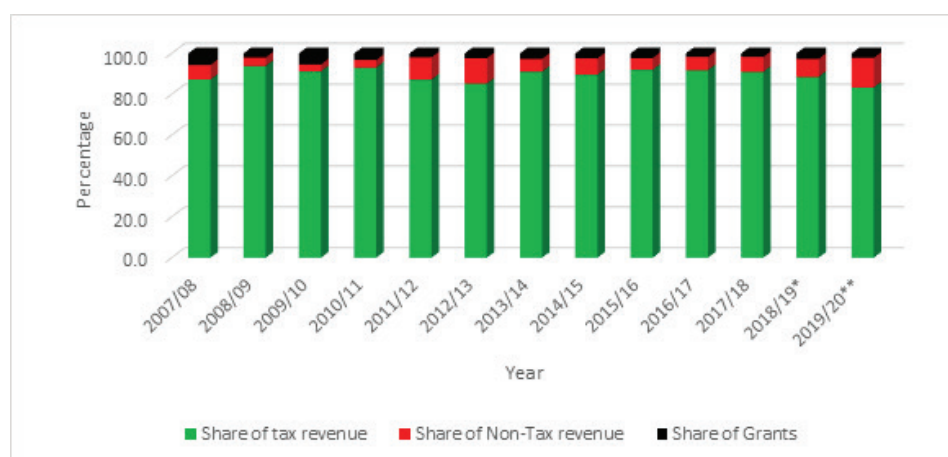
*Source: Author's computation using data from KNBS, Economic Survey (2012-2020) * Provisional actual ** Revised budget estimates*

Disaggregation of tax revenue into various tax heads indicates that income tax contributes the largest share of total tax revenue followed by value added tax (VAT) as shown in Figure 8. Income tax contributed on average 46 per cent of total tax revenue between 2008/09 and 2019/20, underscoring its importance in contributing to total Government revenue. The contribution by VAT averaged 25.8 per cent of total tax revenue over the same period. The performance of income tax is dependent on taxes from individuals (Pay As You Earn -PAYE) and corporations (Corporate Income Tax - CIP), of which the contribution from individuals have always been higher over the period under study. The low performance recorded by the corporate tax may be attributed to generous tax exemptions, slowed profitability and differentiated CIT rates according to World Bank (2017). Nevertheless, all components of tax revenue have maintained

2   Non-tax revenue includes: social security contributions, property income, sale of goods and services, fines penalties and forfeitures, ministerial A-i-A and other receipts not elsewhere classified.

an increasing trend in nominal terms since 2008/09 (Figure 8).For instance, income tax increased from Ksh 194.2 million in 2008/09 to Ksh 685.4 million in 2018/19, VAT increased from Ksh 126.9 million to Ksh 413.2 million while excise duty increased from Ksh 69.9 million to Ksh 194.3 million over the same period. Similarly, the first supplementary budget estimates for 2019/20 indicate growth in all tax heads except for VAT which has a slight decrease in comparison to 2018/19 (Figure 8).

Figure 8: Components of tax revenue in Ksh million
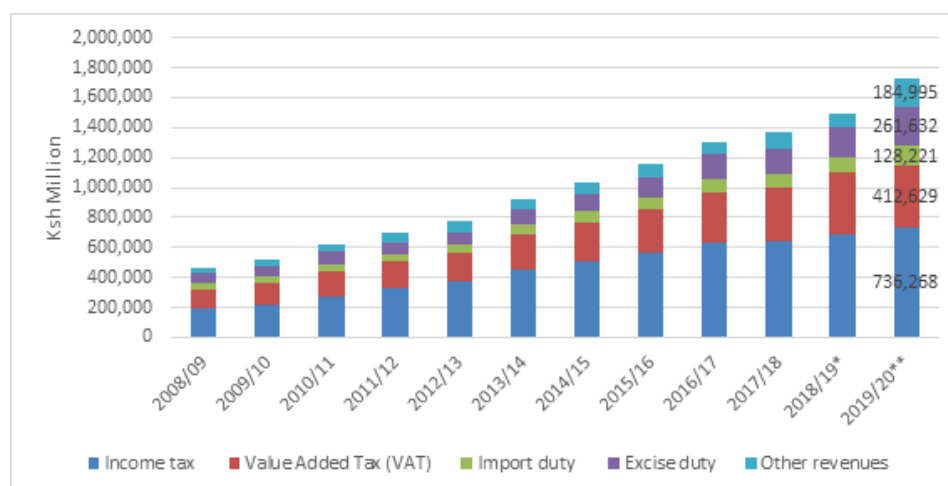
*Source of data: National Treasury, QEBR(various issues) * Preliminary actual ** 1st Supplementary budget*

Notwithstanding the increase in tax revenue in nominal terms, the share of tax revenue to GDP has been on a declining trend. Tax revenue as a share of GDP declined by 4.4 percentage points from 20.4 per cent in 2008/09 to 16 per cent in 2018/19. This may be attributed to lower buoyancy of tax revenue in relation to the expanding nominal GDP over the years as the structure of the Kenyan economy changes. Specifically, the increase in the various tax heads is lower than the increase in nominal GDP, which could suggest that economic growth in Kenya emanates from sectors (such as agriculture and informal sectors) that are difficult to levy taxes. The decline is also reflected in the various tax heads over the same period (Figure 9). For instance, income tax decreased by 0.9 percentage points from 8.2 per cent to 7.3 per cent on account of tax exemptions, differentiated CIT rates and slowed profitability of firms especially in the banking sector. Proliferation of exemption and compliance challenges partly led to foregoing of VAT revenues that resulted in decrease in the share of VAT revenue to GDP from 5.7 per cent in 2008/09 to 4.4 per cent in 2018/19. Similarly, excise tax revenue decreased by 1.0

percentage points from 3.1 to 2.1 per cent partly due to leakages emanating from fake excise stamps and inelastic nature of some specific excises.

Figure 9: Components of tax revenue as a percentage of GDP
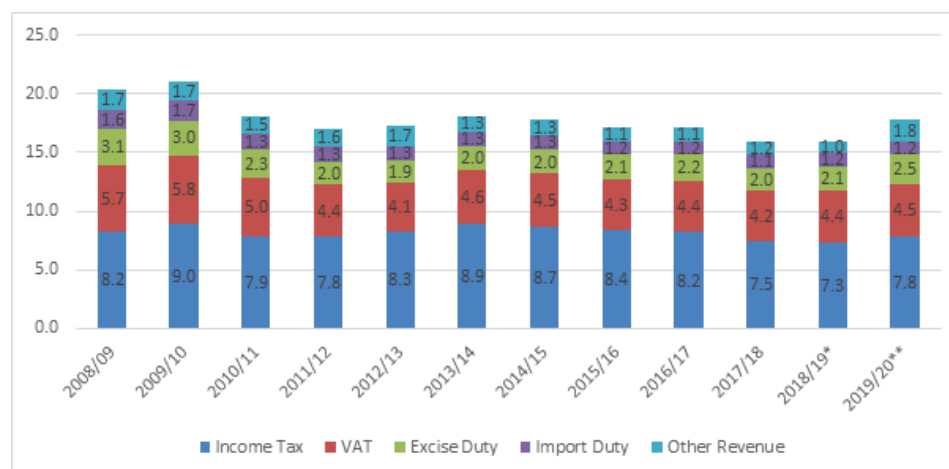
*Source of data: National Treasury, QEBR (various issues) * Preliminary actual **1st Supplementary budget*

In comparison to regional peers (Uganda, Tanzania, Rwanda and Ghana), Kenya's tax revenue as a percentage of GDP is higher, though lower than the middle-income aspirational peers (South Africa and Namibia). Kenya's tax revenue as a share of GDP averaged 18 per cent from 2008 to 2017, which was above those of regional peers but below that of aspirational peers (Figure 10). Namibia and South Africa had higher tax revenues as a share of GDP, averaging 30.5 and 27.3 per cent of GDP, respectively, over the same period. This indicates that there is potential for improvement in Kenya's tax revenue mobilization given that its tax revenue as a share of GDP is below those attained by countries with almost similar incomes. As such, revenue mobilization effort to match those reported by aspirator countries is key to increasing revenues and closing the fiscal deficit gap.

Figure 10: Average tax revenue for selected countries (as a % of GDP for 2008-2017)
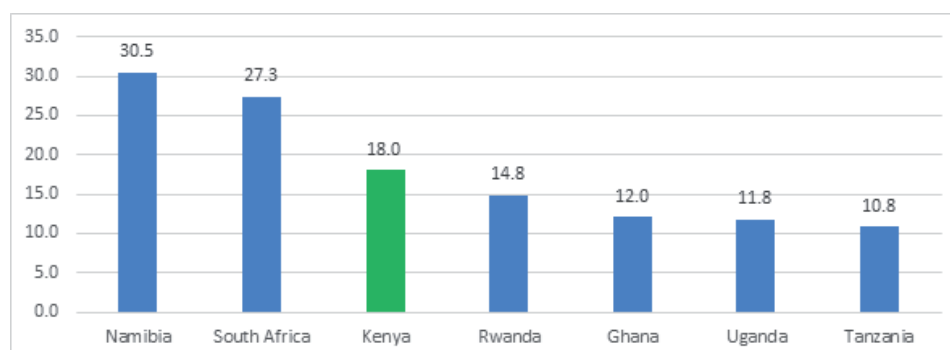
Source: Authors computation based on OECD data (https://stats.oecd.org/WBOS/index.aspx)

2.3   Fiscal Deficit and its Financing in Kenya

The country's fiscal deficit has been growing over the years as shown in Figure 11 below. In the last ten years, fiscal deficit has shown increasing trends, rising from Ksh 107.83 billion (equivalent to 4.8% of GDP) in 2008/09 to Ksh 734.86 billion (7.9% of GDP) in 2018/19. Supplementary budget estimates indicate that fiscal deficit will increase slightly in nominal values to Ksh 789.9 billion (7.6% of GDP) in 2019/20 though a slight decline of 0.3 per cent from 7.9 per cent of GDP recorded in 2018/19. The declining trend observed between 2018/19 and 2019/20 reflects the growth in revenue from Ksh 1,746.3 billion in 2018/19 to Ksh 1,935.7 billion in 2019/20, implying an improvement in the fiscal position of the country. This was supported by the Government's efforts to increase collected revenue through improved operating economic environment, expansion of the tax base and tight measures put in place to curb tax evasion and avoidance by the National Treasury and KRA. The reducing fiscal deficit is motivated by the desire to create more fiscal space and reduce the public debt.

Figure 11: Fiscal deficit (in Ksh million and as a percentage of GDP)
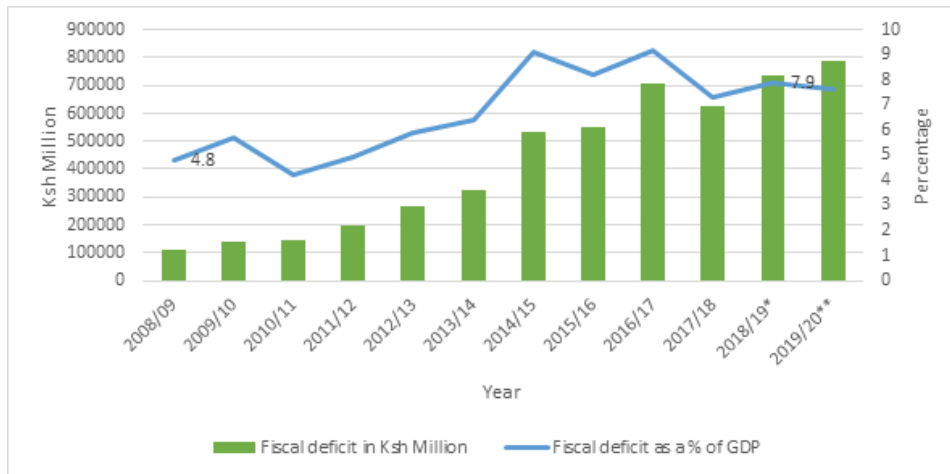
*Source of data: National Treasury; QEBR (various reports) * Preliminary actual ** 1st Supplementary budget estimates*

Kenya, however, has not been able to meet its fiscal deficit targets over the last decade. Figure 12 shows that the country has continuously failed to attain its target, a worrying trend to policy makers. In 2008/09, the fiscal performance was impressive based on the fact that the target was 3.9 per cent of the GDP and the actual realized was 4.01 per cent, a 0.11 per cent gap. However, the country has experienced a widening gap since 2009/10, with the highest of 4.85 per cent being experience in 2016/17.

Figure 12: Kenya's fiscal deficit targets and actuals (as a percentage of GDP)
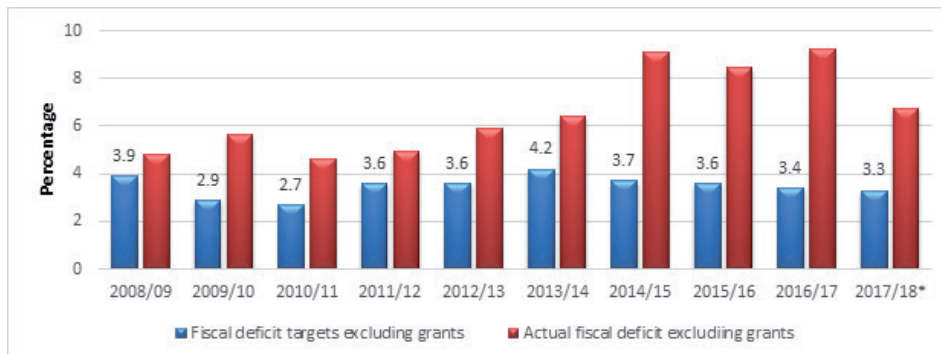
*Source: National Treasury, QEBR various reports * Preliminary actual*

The fiscal deficit is financed mainly through external financing, domestic financing and other domestic financing such as domestic loan repayments (Table 1). Domestic financing contributed the largest share of financing fiscal deficit compared to external financing between 2008/09 to 2013/14. The increase in the share contribution of external financing relative to domestic financing reversed the financing trend in 2014/15. The share contribution of external financing between 2014/15 and 2019/20 averaged 56 per cent compared to 35.7 per cent registered between 2008/09 and 2013/14. During the same period, the share of domestic financing averaged 44 per cent compared to 64.1 per cent recorded between 2008/09 and 2013/14. This indicates that the country is currently in favour of external financing relative to domestic financing mostly used five years ago. This could be attributed to cheap concessional loans obtained internationally.

Table 1: Kenya financing fiscal balance (Ksh billion and as a percentage of total financing)

External Financing	Domestic Financing	Other Domestic Financing	Total Financing				
	In Ksh billion	Share of total financing (%)	In Ksh billion	Share of total financing (%)	In Ksh billion	Share of total financing (%)	In Ksh billion
2008/09	41.1	35.1	75.9	64.9			117
2009/10	22.9	13.1	151.5	86.9			174.4
2010/11	28.4	23.9	90.4	76.1			118.8
2011/12	113.1	64.1	63.4	35.9			176.5
2012/13	85.3	33.2	169.8	66.0	2.1	0.8	257.2
2013/14	104.7	34.0	201.7	65.6	1.3	0.4	307.7
2014/15	217.5	46.1	251.1	53.3	2.9	0.6	471.5
2015/16	269.9	56.9	202.3	42.6	2.4	0.5	474.5
2016/17	386.2	55.4	309.2	44.3	2.3	0.3	697.7
2017/18	355	56.2	273.7	43.4	2.6	0.4	631.3
2018/19*	414.5	57.5	303.7	42.1	2.9	0.4	721.1
2019/20**	353.5	53.8	300.7	45.7	3.2	0.5	657.4

*Source: National Treasury, QEBR, Various reports. * Preliminary actual ** 1st Supplementary budget estimates*

In comparison to East Africa Community (EAC) states, Kenya has a high fiscal balance as a percentage of GDP (Table 2). Rwanda, Tanzania and Uganda have maintained a low fiscal deficit averaging 1.5 per cent, 3.2 per cent and 3.8 per cent,

respectively, from 2008 to 2017. In the same period, Kenya's fiscal deficit averaged 5.9 per cent. The deficit is attributed to the size of the economies of various states, reflected in the size of their budgets. In EAC, Kenya has the largest economy supported by its budget allocation that is greater than that for Rwanda, Tanzania and Uganda combined. For instance, Kenya's budget allocation for 2018/19 was Ksh 3.07 trillion whereas Uganda, Rwanda and Tanzania had approximately Ksh 800 billion, Ksh 281 billion and Ksh 140 billion, respectively, for the same financial year. In addition, Kenya's public expenditure is relatively higher than its EAC counterparts as a result of the developments projects being implemented.

Table 2: East Africa Community Fiscal balance as a percentage of GDP

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019*
Burundi	-2.7	-5.1	-3.6	-3.5	-3.8	-1.8	-3.6	-5.3	-6.2	-7.8	-8.6	-9.1
Kenya	-3.4	-4.3	-4.4	-4.1	-5.1	-5.7	-7.4	-8.1	-8.5	-7.9	-7.4	-7.4
Rwanda	1.4	0.6	-0.2	-0.9	-2.5	-1.3	-4.0	-2.8	-2.3	-2.5	-2.6	-3.7
South Sudan	n/a	n/a	n/a	4.6	-14.8	-3.5	-9.2	-17.4	-15.5	3.3	1.2	-2.4
Tanzania	-1.9	-4.5	-4.8	-3.5	-4.1	-3.8	-2.9	-3.2	-2.1	-1.2	-1.9	-2.9
Uganda	-2.6	-2.1	-5.7	-2.7	-3.0	-4.0	-4.7	-4.7	-4.8	-3.8	-4.2	-6.6

*Source: IMF (2019), World Economic Outlook, * projection*

Globally, the fiscal policy index is used to assess the short-term and medium-term sustainability of fiscal policy and its impact on growth. The index lies between one and six, where one is low level of sustainability and six is high level of sustainability. In 2018, Kenya's fiscal policy rating was 3.5, similar to that of Tanzania but lower than that of Uganda and Rwanda among the EAC countries (Figure 13). Based on the rating, Kenya's fiscal policy sustainability is moderate and higher than Sub-Saharan Africa's average of 3.0. Globally, Aruba had the highest rating in 2018 with a value of 5, setting precedence internationally for other countries to benchmark. The exemplary performance was achieved following the implementation of several recommendations outlined by Centrale Bank Van Aruba (2013) that aimed at achieving fiscal sustainability. The recommendations were classified in three broad approaches that include: actions to raise government revenues, spending reduction measures and a complementary path entailing changes that targeted decentralization of government functions, fiscal rules and public debt management.

Figure 13: CPIA fiscal policy rating for EAC and selected countries (CPIA)
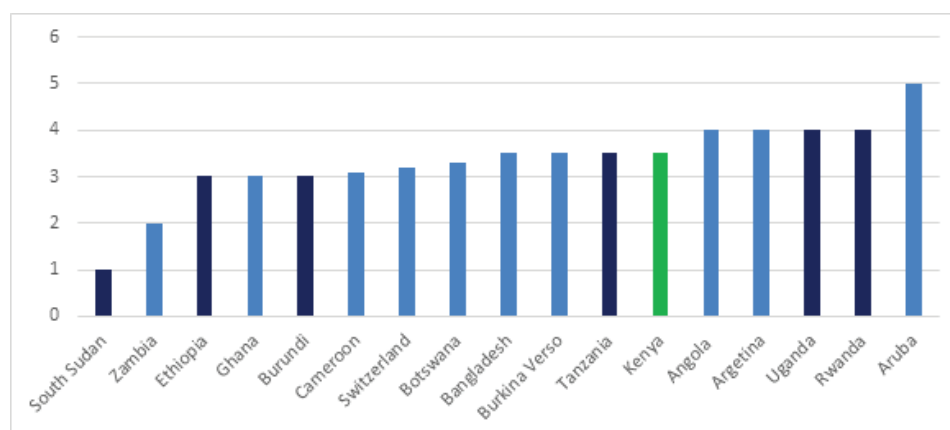
Source of data: World Bank 2018 (World Development Indicators)

2.4   Sustainability of Fiscal Policy

Sustainability of fiscal policy is defined based on two indicators; the debt to GDP ratio and the present value (PV) constraint also referred to as the intertemporal budget constraint (IBC). The first indicator defines fiscal policy to be sustainable when public debt to GDP ratio is bounded; that is, when the ratio remains within limit (Wickens, 2011). This implies that the Government ought to have the ability to redeem its debt within a stipulated time. As such, if public debt to GDP ratio rises indefinitely, it raises concerns about the ability of the Government to meet its debt obligation without having to resort to monetizing the debt. In principle, fiscal sustainability requires that the debt to GDP ratio remains finite. As the debt to GDP ratio rises, however, fears of default may increase. As a result, it is a common phenomenon to set an upper limit on the debt to GDP ratio.

The second creteria states that a sustainable fiscal policy is one that would cause the discounted value of debt to be zero at the limit for the present value borrowing constraint to hold (Cunado, Gil-Alana and Perez de Gracia, 2004). This implies that fiscal deficit is sustainable if the expected present value of the future resources available to the Government for debt service is at least equal to the face value of its current debt stock. Under these circumstances, the Government will be able to service its debt on market terms. Notably, IMF (2002) states that a country's fiscal position is sustainable if it satisfies the present value budget constraint without a major correction in the balance of revenue and expenditure given the costs of financing it in the market. This condition holds when there is a long run

cointegrating relationship between Government expenditures and Government revenues.

In spite of diverse definitions of fiscal sustainability, broad consensus exists that fiscal sustainability entails fiscal policies that promote economic growth, maintain solvency and create stable taxes that are fair across generations. As such, governments should strive to have a sustainable fiscal policy given that an unsustainable fiscal policy has adverse implications on economic growth and financial stability of the country. It affects the macroeconomic performance, retards the smooth operation of private sector, and generates economic instability and poor economic growth, which could necessitate policy change. In addition, it poses a risk of rising future interest rate brought about by low private investor confidence in Government debt, which in the long run may lead to a slowdown in economic growth.

3. Literature Review

3.1 Theoretical Literature

Theoretical literature on fiscal sustainability is underpinned in three schools of thought: the Neo-classical, Keynesian and the Ricardian Equivalence theory. Whereas, the Keynesian view propounds that expansionary fiscal policy constitutes a key policy prescription to grow the economy, theorists persuaded by Ricardian equivalence assert that fiscal policy does not really matter except for smoothening the adjustment to expenditure or revenue shocks. While the Neo-classical and Ricardian schools focus on the long run, the Keynesian view emphasizes the short run effects of fiscal policy.

The Neo-classical Theory

According to the neo-classical theory, fiscal deficit has a detrimental effect on domestic investment and economic growth. Bernheim (1989) outlined the three main assumptions that this paradigm is based on. First, it assumes that consumption of each individual or household is determined as the solution to an inter-temporal optimization problem where both borrowing and lending are permitted at the market rate of interest. Secondly, it asserts that individuals have determinate life spans and each member of the society belongs to a specific generation and the life spans of successive generations overlap. Based on the two assumptions, fiscal deficit increases lifetime consumption of the present generation by shifting taxes to the future generations. Lastly, the theory assumes that the economy operates under full employment, implying that increased consumption leads to lower savings. This leads to an increase in interest rates to bring equilibrium in the capital markets. The increase in interest rates has an effect of crowding out the private sector investment. Therefore, the theory proposes that fiscal policy managers should strive to minimize government spending, budgetary deficits and government debt to promote fiscal sustainability. It argues that the fiscal restrictions are important to avoid the crowding-out effect.

The Keynesian Theory

The Keynesian economists differed from the Neo-classical economists in two ways. First, they relaxed the assumption of full employment and argued that in an economy, some resources are unemployed. Secondly, they assumed that there exists many income constrained individuals and, as a result, the aggregate consumption tends to be very sensitive to changes in disposable income (Keynes, 1936). Wickens (2011) argued that existence of some unemployed resources

predicts that an increase in autonomous government expenditure, financed by borrowing would cause output to expand through a multiplier process. From the multiplier principle, Keynesian economists envisage a rise in the demand for money. Therefore, in their perspective, fiscal deficit does not necessarily lead to crowding out effect given that an increase in aggregate demand enhances the profitability of private investment and leads to higher investment at any given rate of interest. In addition, the traditional Keynesian framework does not state as whether the revenues raised to finance fiscal deficit should be utilized for government consumption or investment expenditure. Similarly, it does not distinguish between alternative sources of financing the fiscal deficit as to whether it should be through monetization, external borrowing or internal borrowing.

Ricardian Equivalence Theory

The Ricardian equivalence theory argues that financing of fiscal deficit through debt amounts only to postponement of taxes (Barro, 1989). Accordingly, the budget deficit in the present period can be considered as the present value of future taxation that is required to pay off the increment to debt resulting from the deficit. This implies that any expenditure by government must eventually be paid for, whether now or later, and the present value of spending must be equal to the present value of the total revenue. Therefore, the Ricardian equivalence theory argues that fiscal deficits are useful in smoothening the impact of revenue shocks or for meeting the requirements of non-smooth expenditures since tax financing may be spread over time.

3.2   Empirical Literature Review

Empirical studies on the sustainability of fiscal policy are becoming increasingly important.[3] However, only few studies have focused on Kenya (Nganga, Chevallier and Ndiritu, 2018; Mutuku, 2015). The studies reviewed mainly differ in econometric approaches. This study, therefore, categorizes the empirical literature into two, based on the econometric approach used by the authors.

Studies under the first category estimated the time series properties; the stationarity and cointegration tests of the fiscal dataset (Burret, Feld and Köhler 2017; Oyeleke and Adebisi 2014; Lusinyan and Thornton, 2009; Afoso, 2005). Some of the authors under this category relied on these estimations to infer fiscal sustainability whereas others estimated cointegrating vector between government

---

3   Some of the reviewed studies include Nganga, Chevallier and Ndiritu 2018; Oyeleke and Adebisi 2014; Stoian and Campeanu 2010; Lusinyan and Thornton 2009; Afoso 2005; Kalyoncu, 2005; among others.

expenditures and revenues to ascertain the existence of a long run relationship. The idea behind this approach is to establish that a one per cent increase in expenditures causes a one per cent increase in revenues.

The second category comprise of studies that estimate the Fiscal Reaction Function (FRF) of the fiscal dataset. Under this category, the regression of the FRF is used to deduce a causal relationship between the initial debt level and fiscal policy. The regression gives the responsiveness of fiscal primary balance to debt accumulation. According to Mutuku (2015), fiscal policy will be sustainable if the coefficient is positive and significant at conventional levels.

The studies reviewed under the first category include Burret et al 2017, Oyeleke and Adebisi 2014, and Lusinyan and Thornton, 2009. Burret et al. (2017) analyzed the sustainability of public finances in the 16 states (Laender) of the Federal Republic of Germany. Their results provided evidence against strict fiscal sustainability in a majority of German Laender, except for Bavaria. For Ghana, Oyeleke and Adebisi (2014) examined the sustainability of fiscal policy for the period 1980 to 2010. Their findings indicated that the fiscal stance for Ghana was sustainable, although weak. In addition, the results revealed that in case of shocks in the economy, only 29 per cent of disequilibrium between revenues and expenditures were restored yearly. Lusinyan and Thornton (2009) examined the long-run fiscal sustainability in South Africa. The results showed that South African revenue and spending were integrated of order one and cointegrated when structural breaks for the years between 1985 and 2005 were considered. The estimated long-run equilibrium relation indicated the existence of a weak fiscal deficit sustainability. The authors further noted that an error correction method of analysis was a sufficient condition to establish fiscal sustainability.

Studies that applied the second category of modelling include Ng'ang'a et.al (2018), Baharumshaha, Soon and Lau (2017), Mutuku (2015), Potrafke and Reischmann (2015) and Kalyoncu (2005). Ng'ang'a et al (2018) sought to establish the nature of fiscal policy regime in Kenya and its sustainability, taking into account periodic regime changes. Their results indicated that the regime-switching model was appropriate in explaining regime sustainability. Further, their investigation found that both sustainable and unsustainable regimes were dominant and lasted for an average of four years each. The study also established existence of pro-cyclical fiscal policy in Kenya. The authors also found that the No-Ponzi game condition weakly holds in the Kenyan economy based on regime switching. In addition, regime-based sensitivity analysis revealed that persistence of unsustainability regime for more than four years could threaten long-run fiscal sustainability.

In assessing the sustainability of fiscal policy in Malaysia, Baharumshaha et al (2017) found that the country in the past had followed a sustainable fiscal policy path, with an exception of short-term periods of economic difficulty. The authors established that the Government ought to reduce the deficits to ensure their sustainability in the long run.

Similarly, Mutuku (2015) estimated a fiscal reaction function derived from an inter-temporal Government budget constraint to ascertain the fiscal policy sustainability for Kenya. Applying multivariate analysis based on VAR and VECM model, the analysis indicated that the fiscal behaviour was incoherent with intertemporal budget constraint. This implied that fiscal adjustment was necessary to curb debt accumulation in Kenya. In addition, the findings showed that election cycles expenditures threatened Kenya's long run fiscal sustainability. Potrafke and Reischmann (2015) estimated a Bohn-model for West German Laender during the period 1980-2010 in panel OLS regressions with two sided fixed effects. They found that fiscal policy was sustainable when fiscal transfers are included.

In examining the fiscal stance sustainability for Turkey, South Africa, Philippines, Mexico and South Korea, Kalyoncu (2005) estimated the reaction function based on the intertemporal borrowing constraint approach. Their empirical findings established that there exists a unique long run relationship among variables for South Korea and Turkey, and hence their fiscal stance satisfied the weak sustainability condition. The fiscal stance for Mexico, the Philippines and South Africa was not sustainable based on the violation of the long run intertemporal budget constraints.

3.3   Overview of Literature Review

Articles on fiscal sustainability focus on the behaviour of expenditures, debt and tax revenues in a time series to investigate whether the behaviour of these series is coherent with the inter-temporal budget balance. The results of the studies vary depending on the methodology used and sample period chosen. There is little empirical work done to assess fiscal sustainability in specific African countries, and more particular in Kenya. The two papers reviewed for Kenya have one main shortcoming. The studies do not analyze time series characteristics, which are meaningful to discuss given the relatively short time dimension. Therefore, this motivates the need to undertake this study, taking cognizant of the time series properties to inform policy making.

4.   Methodology

4.1   Theoretical Framework

The literature reviewed shows that various methods have been used to ascertain fiscal deficit sustainability in different parts of the world. The methods have yielded different conclusions based on type and size of economy, fiscal policy stance and government expenditure. This paper is based on Ricardian Equivalence theory and applies the cointegration method of estimation derived from the inter-temporal budget constraint approach to assess fiscal sustainability in Kenya.

The concept of fiscal sustainability starts with formulation of the government budget constraint,[4] which is applied to derive the present value borrowing constraint. The government budget constraint gives the relationship between government revenue and expenditure, which comprises the total spending on goods and services by the government, various transfer payments and interest paid on debts (Jibao, Schoeman and Naraidoo, 2012). The government expenditures are assumed to be financed by taxes and debt issued at an interest rate, *r*, for simplicity. In financing the deficit using debt, it follows that the debt consumed in period *t* is issued in period *t-1*. Therefore, at period *t*, the budget constraint is given as follows:

$$E_t + (1 + r_t)\,D_{(t-1)} = R_t + D_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

Where *E* is government expenditure in nominal terms excluding interest payments, *r* is the rate of interest, *R* is government revenue and *D* is the stock of debt.

Iterating equation (1) further yields the following government's inter-temporal budget constraint:

$$E_t + R_t = \sum_{j=o}^{\infty} \prod_{i=1}^{\infty} (1 + r_t)^{-j+1} (R_{t+j} - E_{(t+j)}) + lim_{(j \to o)} \prod^{\infty} = 1 + {}^{(1+r}{}_{(t+1)})\,{}_{(t+j)} \ldots\ldots\ldots\ldots (2)$$

Where *(1+r)^{(-j+1)}* is the discounting factor while $R_{(t+j)} - E_{(t+j)}$ is the difference between government revenue and expenditure. Equation 2 gives the present value budget constraint (PVBC), which holds that solvency is achieved when the present value of primary surplus[5] is equivalent to the initial debt stock (*Dt*). Building on the foregoing, and following Hamilton and Flavin (1986), the model assumes that the interest rate is stationary with unconditional mean, r_t, and the growth rates of supply of debt, on average, are equal to or lower than the average interest rate. The

---

4   The model was introduced by Blanchard, Chouraqui, Hagemann, & Sartor, (1990) and later advanced by Jibao, et al, (2012) and Oyeleke, (2014)

5   Primary Surplus = *Rt - Et*

above assumptions yield the transversality condition (equation 3), which states that the debt stock, when discounted to present value terms, equals to zero:

$$lim_{(j \to o)}(1+r_{(t+1)}) \, D_{(t+j)}=o \dots\dots\dots\dots\dots\dots (3)$$

Given equation 3, equation 2 can therefore be re-written as follows;

$$E_t+R_t=\sum_{(j=o)}^{\infty}(1+r)^{(-j+1)} (\Delta R(t+j)\Delta E_t+rD_{(t+j)})\dots\dots\dots (4)$$

Equation 4 is the inter-temporal government budget constraint. The constraint must be stationary if government revenue, expenditure and the stock of debt are all integrated of order 1. This follows, therefore, that R_t and E_t are likely to be cointegrated if both are integrated of order 1. Based on this, an error-correction mechanism pushing government finances towards the levels required by the intertemporal budget constraint will exist.

To test the hypothesis of fiscal policy sustainability, equation (4) can be rewritten as follows:

$$E_t=\alpha+R_t+lim \, D_{(t+j)}/(1+r)^{(j+i)} +\varepsilon_t \dots\dots\dots\dots (5)$$

Equation 5 prohibits the government from infinite borrowing given that the limit term is zero[6]. As a result, equation 5 may be expressed as:

$$\Delta R_t=\alpha+\beta\Delta E_t+\varepsilon_t \dots\dots\dots\dots (6)$$

where R_t, and E_t are as defined before, α is a constant parameter, β is the expenditure coefficient and ε_t is the error term of the model.

The fiscal policy is said to be sustainable if *R* and *E* are cointegrated. Following Oyeleke and Adebisi (2014), Jibao et al. (2012), and Kalyoncu (2005), as *β* tends towards zero, the fiscal policy is weakly sustainable and as it tends towards one, it portrays a strong form of sustainability. Therefore, the necessary and sufficient conditions[7] of fiscal policy sustainability are satisfied when *0 < β <1*.

The study applied two-step Engle-Granger approach to achieve the second objective. First, the OLS technique was used to estimate equation 6 to attain the long run model. Secondly, the short run analysis between government revenues and expenditures was estimated using the error correction model (ECM). According to

6   From equation 3.

7   Quintos (1995) and Ahmed and Rodgers (1995) extensively discussed the necessary conditions for fiscal sustainability in relation to the order of integration and this was later elaborated in Afoso (2005).

Lusinyan and Thornton (2009), the existence of cointegration between revenues and expenditures may imply the presence of corresponding error correction representation. It is worth noting that the change in government revenues not only depend on changes in government expenditure and its past values but also on the extent of disequilibrium between both variables in instances of economic shocks. First differencing the variables in equation 6 gives:

$$\Delta R_{\_t} = \alpha + \beta \Delta E_{\_t} + \varepsilon_{\_t} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (7)$$

Therefore, using equation 7, the study specified the error-correction model as follows:

$$\Delta R_t = \alpha + \sum_{(i=1)}^{n} \partial \Delta R_{(t-i)} + \sum_{(i=0)}^{n} \beta \Delta E_{(t-i)} + \delta ECT_{(t-1)} + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (8)$$

Where $\Delta R_{\_t}$ is the first difference of government revenue, ΔE_t is the first difference of the government expenditures and $ECT_{(t-1)}$ is the error correction term generated from the residuals in equation 6 and δ is the coefficient of ECT that represents the speed of adjustment to equilibrium in case of shocks in the economy. The model also includes the lags of both dependent and independent variables.

4.2   Specification and Estimation Procedure

The empirical estimation involves testing for stationarity of the variables, cointegration and estimating the cointegrating relation. The study applies the Phillips-Perron (1988) test and Kwiatkowski, Phillips, Schmidt and Shin (KPSS) test to test for stationarity of the variables. Phillips-Perron is based on the null hypothesis that the series has unit root (Non-stationary) whereas the null hypothesis for KPSS is that the series has no unit root (stationarity). The choice of two tests is justified based on the weakness of low power[8] in the presence of structural breaks associated with the Augmented Dickey-Fuller (ADF) test. The two tests are therefore superior to ADF given that they take into account the presence of structural breaks and they have higher power against very persistent alternatives.

In testing for cointegration, the study employs the Johansen (1991) cointegration test. The test involves testing the rank of r and π using the likelihood ratio test. The approach uses two tests, the maximum eigenvalue test (Max test) and trace test to ascertain the cointegrating vectors. On one hand, the Max test tests the null hypothesis that there are r cointegrating vectors against the alternative of r

---

8   The ADF have very low power against I(0) alternatives that are close to being I(1). That is, it cannot perfectly distinguish highly persistent stationary processes from nonstationary processes.

+1 vectors. The trace test tests the null hypotheses, $r = r_o$ against the alternative, $r \geq r_o + 1$ such that the first r eigenvalues are non-zero. Trace test has been found to be superior to Max test based on its robust to skewness and excess kurtosis. Furthermore, the trace test can be adjusted for degrees of freedom, which can be of importance in small samples (Johansen and Juselius, 1990). The cointegration test was preferred over two-step procedure of Engel and Granger because it can estimate more than two cointegrating equations. A linear coefficient restriction test was also undertaken to ascertain whether the coefficient of the independent variable in the long-run cointegration model is statistically different from one.

Based on the analysis, Kenya's fiscal policy is sustainable if and only if the intertemporal government budget constraint holds in the present value terms. This implies that the current debt stock should be offset by the sum of the expected future discounted budget surpluses. Any violation to this constraint indicates that the current fiscal policy is not sustainable and thus corrective measures are undertaken to correct it.

4.3   Data Type and Source

The data on the total national government revenues and expenditures was used to estimate the aforementioned model. Total national revenues comprise of both tax and non-tax revenues whereas national expenditures comprise of total recurrent and development expenditures as classified by the National Treasury. The variables were measured in Kenya shillings (millions), nominal values. The dataset is from the first quarter of 2007 to the last quarter of 2018 obtained from various issues of the Quarterly Economic Budget Review published by the National Treasury.

5. Empirical Results and Discussion

5.1 Descriptive Statistics

The descriptive statistics presented in Table 3 give the summary of the data used in the study to establish the distribution of the variables. The summary statistics show that the variables are normally distributed based on the mean, median and standard deviation statistics, implying that the data has no serious outliers. This is also supported by the Jarque-Bera (JB) normality test on the residuals. The JB test tests the null hypothesis that residuals are normally distributed. The results, as indicated in table, show that both government expenditure and revenue have normally distributed residuals based on their p-values that are more than 0.05 hence the failure to reject the null hypothesis.

Table 3: Descriptive statistics

	LNEXP	LNREV
Mean	12.522	12.231
Median	12.452	12.273
Maximum	13.489	13.105
Minimum	11.460	11.472
Std. Dev.	0.540	0.438
Skewness	0.081	0.013
Kurtosis	2.043	1.844
Jarque-Bera	1.728	2.451
Probability	0.422	0.294
Sum	550.951	538.157
Sum Sq. Dev.	12.557	8.249
Observations	44	44

Source: Authors computation from study data using Eviews software

5.2 Findings for Stationarity Analysis

Prior to estimation, the time series properties were examined to avoid estimation bias. The study employed the Phillips-Perron (1988) and the Kwiatkowski-Phillips-Schmidt-Shin (1992) tests to ascertain the stationarity for both series. The Phillips-Perron results, in Table 4, indicate the presence of unit root at levels for both government revenue and expenditure but stationary at first difference. This implies that they are integrated of order one, I(1). The results are supported

by the findings of Kwiatkowski-Phillips-Schmidt-Shin (1992) test (Table 4) as this test rejects the null of stationarity for both series. This implies that there is consistency in the order of integration, necessitating the use of first differenced series in the study.

Table 4: Unit root tests

Panel A: In level	PP	KPSS
Expenditure	-2.327	0.832*
Revenue	-0.620	0.839*
Panel B: First difference		
ΔExpenditure	-28.154*	0.321
Δ Revenue	-25.885*	0.429

The asterisk, ***, **, * denote 10%, 5% and 1%, significance level respectively

Source: Author's own computation using Eviews software

5.3   Diagnostic Test Results

The study conducted the post-estimation diagnostic tests to ensure that none of the classical linear regression assumptions are violated. This is essential since it ensures that the estimator is unbiased, consistent and efficient. To achieve this, the study employed the Breusch-Godfrey Serial Correlation LM test to test for serial correlation. The results presented in Appendix Table A1 indicate the none rejection of the null hypothesis[9], given the P-value corresponding to the observed R-squared is greater than 5 per cent. This implies that the residuals are not serially correlated, hence the estimator will be best, linear and unbiased. The Breusch-Pagan-Godfrey test was applied to test for heteroskedasticity. The results, presented in Appendix Table A2 indicate that the null hypothesis of constant variance could not be rejected and hence the model has no heteroskedasticity problem. To test for the stability of the variables, the CUSUM test presented in Appendix Figure A3 was applied. The figure shows that the model is stable given that the calculated CUSUM statistics lies within the given range and hence the failure to reject the null hypothesis of model stability. In general, the diagnostic test results indicate that the assumptions were satisfied. Thus, the results are consistent and can be interpreted.

---

9   The null hypothesis for serial correlation is that residuals are not serially correlated against the alternative that residuals are serially correlated.

5.4   Cointegration Test Results

The stationarity tests showed that government revenue and government expenditures were integrated of order one. Therefore, it was necessary to test for cointegration to establish whether they have a long run relationship. The study employed Johansen cointegration test given that the approach allows for testing of restricted versions of cointegrating vectors and the speed of adjustment parameters. In addition, the approach can estimate several cointegration relations among the variables (Enders, 2004). The trace (λtrace) test and the maximum eigenvalue (λmax) test, reported in Table 5a, were used to ascertain the number of cointegrating vectors. The results indicate the presence of one cointegrating equation at 5 per cent level of significance. This implies that revenues and expenditures have a long run relationship and therefore are on a sustainable path. However, the existence of a long run relationship between revenues and expenditures is a necessary but not a sufficient condition for fiscal policy sustainability.

Table 5a: Unrestricted cointegration rank test

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.666	46.482	15.495	0.0000
At most 1	0.009	0.390	3.841	0.5321
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.666	46.092	14.265	0.0000
At most 1	0.009	0.390	3.841	0.5321
Trace test indicates 1 cointegrating eqn(s) at the 0.05 level				
Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source: Author's own computation from study data using Eviews software

In addition to the existence of cointegrating relationship between revenues and expenditures, the coefficient should lie between zero and one in absolute value for fiscal policy to be sustainable. The study applied the concept of normalized cointegrating coefficient and Wald statistic coefficient restriction test as discussed by Quintos (1995) to ascertain the strength of sustainability. The results indicate that the estimated cointegrating coefficient (β) in absolute is 0.4253, which is closer to zero than one as shown in Table 5b. This implies that fiscal policy has a weak form of sustainability over the period under consideration. The results compare with the findings of Ng'ang'a et al. 2018; Burret et al., 2017; Oyeleke and Adebisi, 2014; and Kalyoncu 2005.

Table 5b: Normalized cointegrating coefficients

	Coefficient	Std error	P>|z|
Revenues	1.000		
Expenditures	-0.427	0.054	0.000

Source: Author's own computation from study data using Eviews software

5.5   Long run and Short run Analysis

The existence of the cointegrating vector necessitates the estimation of the error correction model to capture the short run dynamics. Prior to the estimation of the long run and short run analysis, the optimal lag length was selected based on the results of the information criteria including Akaike information criterion (AIC) Schwarz information criterion (SC), Hannan-Quinn information (HQ) criterion, Final prediction error (FPE) and Sequential modified LR test statistic. As indicated in Appendix Table A4, the optimal lag is 2 as majority of the information criteria selects it.

The long run analysis presented in Appendix Table A5 shows that the long run coefficient of government expenditure is positive and statistically significant at one per cent level of significance. This suggests that one per cent increase in government expenditure leads to an increase in government revenues by 0.76 per cent. It implies that as the government increases expenditures, government revenues increase.

The short run analysis, error correction model (ECM) specified in equation 8, was estimated to achieve the second objective on the rate of adjustment between government revenues and expenditures. The results presented in Table 6 indicate that all the variables are statistically significant at one per cent level of significance. The error correction term, which is the variable of interest, has the conventional

negative sign and is statistically significant at one per cent level of significance. The results are in line with the findings of Oyeleke and Adebisi 2014 and Jibao et al., 2012. The estimated coefficient of -0.79 implies that in case of shocks in the economy, 79 per cent of the disequilibrium between government expenditures and revenues generated were restored quarterly. Based on this result, it can be concluded that Kenya's fiscal policy is weakly sustainable though fast in adjustment in case of disequilibrium.

Table 6: ECM short-run estimation results

Dependent Variable: D(LNREV)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ECT (-1)	-0.789	0.206	-3.833	0.0005
D(LNEXP)	0.395	0.060	6.568	0.0000
D(LNREV (-1))	-0.384	0.128	-2.990	0.0051
D(LNEXP (-1))	0.333	0.063	5.306	0.0012
D(LNEXP (-2))	0.283	0.048	5.851	0.0001
C	0.006	0.016	0.402	0.6902
R-squared	0.87	Durbin-Watson stat 1.88		
F-statistic	45.07	Prob(F-statistic) 0.0000		

Source: Author's own computation from study data using E-views software

6.   Conclusion and Policy Recommendations

The study aimed at assessing the sustainability of fiscal policy in Kenya using the intertemporal budget constraint approach. The government budget constraint was used to derive the analytical formulations necessary for empirical testing. The model derived estimated the cointegration equation between government revenue and expenditure. Empirical findings support the existence of long-run equilibrium between Government revenues and expenditures in Kenya. Specifically, the results indicate that the fiscal policy is weakly sustainable, though fast in adjustment in case of disequilibrium caused by shocks in the economy. The results compare with the findings of Ng'ang'a et al. (2018) and Mutuku (2015) for Kenya, who found that fiscal policy was sustainable though election expenditures threatened Kenya's long run fiscal sustainability.

Evidence based on this study show that Kenya's fiscal policy is sustainable within the period analyzed. However, the absolute value of the estimated coefficient of interest is significantly below one, implying that the fiscal position may not be sustainable in the long run. Therefore, the country faces a challenge of having Government expenditures growing at a higher rate compared to the growth rate of Government revenue.

To avert the situation, it is imperative for the Government, through the National Treasury and the State Department of Planning and KRA to adopt a fiscal consolidation plan that emphasizes reduction in spending[10], and expansion of the tax base. Reduction in the current Government spending may be achieved through various ways. At the moment, there is need to review recurrent spending given that it accounts for almost three-quarters of the total Government spending. To achieve this, the National Treasury and the State Department of Planning could focus on scaling down expenditures on salaries and wages as they account for the largest shares of recurrent expenditures.

Specifically, regulating the rising wage bill both at the National and County governments is vital to create needed fiscal space to fund other programmes. To contain the wage bill, a thorough counter check of the payrolls is essential to eliminate any ghost workers at both levels of Government. This can also be achieved through the full implementation and transition to the proposed IFMIS Human Resource Module aimed at improving payroll management. Further, there is need to restrict hiring of public servants to critical and technical services such as health care, security and teaching for a given period to control the ballooning

---

10 For instance, cuts in social transfers, government wages and other recurrent expenditures. Empirical work in Kenya is necessary to establish whether social spending and transfers are areas of key interest to focus on in terms of spending cuts to realize a successful fiscal consolidation as Guichard et al. (2007) found.

size of public sector employees and contain the rising wage bill. Reducing Government consumption (material) is also key in cutting expenditures. This may be achieved through review of the operational and maintenance costs of Ministries Departments and Agencies (MDAs) on an individual basis and identifying areas of non-core expenditure that can be reduced without causing adverse effects on its operations; for instance leveraging technology to save on money spent on stationery. Finally, public debt transaction was noted to account for the largest share of total government spending. Therefore, there is need for the National Treasury to adopt a plan that focuses on retiring short-term and expensive commercial debt to reduce interest rate obligation. This could be achieved by increasing the share of concessional loans as opposed to non-concessional loans in financing fiscal deficit.

In increasing the tax revenue and expanding the tax base, the overhauling of the Income Tax Bill by the National Treasury and KRA is a move in the right direction. Similar procedures should be encouraged to revise other tax bills that would see expansion of the tax base and hence growth in Government revenue. Income tax remains the largest contributor to the country's tax revenue, though it is highly affected by tax exemptions. Therefore, KRA and the National Treasury could consider tax policies and administrative measures that focus on rationalizing, awarding and monitoring corporate income tax exemptions to safeguard the corporate tax base and ensure that the exemptions granted achieve the targeted purpose. In addition, implementation of the proposed presumptive tax for the informal sector by KRA and other line agencies will enhance Government revenue as it will broaden the tax base. In general, there is need to review the relevance and costs of multiple exemptions including those on VAT and other incentive schemes such as deductibles and investment allowances under corporate tax to reduce revenue forgone.

Overall, based on the findings, Kenya is currently on a sustainable fiscal path, though weak. Therefore, it is essential to develop a fiscal deficit reduction plan that will ensure that public finances remain on a sustainable fiscal path in the long run. The plan may broadly encompass policies that would decrease spending or increase revenues as aforementioned. This is vital given that once the country is on a sustainable path, it creates fiscal space that gives it room to address future economic and financial shocks and financing new projects. Further, coordination between the National and County governments, and among the various Ministries, Departments, Agencies and stakeholders to ensure consistency in fiscal deficit reduction is important.

References

Afoso, A. (2005), "Fiscal sustainability: The unpleasant European case". *Finanzarchiv*, 61(1): 19-44.

Ahmed, S. and Rodgers, J. (1995), "Government budget deficits and trade deficits. Are present value constraints satisfied in long-term data?" *Journal of Monetary Economics*, 36: 351-374.

Baharumshaha, A. Z., Soon, V. and Lau, E. (2017), "Science direct fiscal sustainability in an emerging market economy: When does public debt turn bad?" *Journal of Policy Modelling*, 39: 99-113.

Barro, J. (1989), "The Ricardian approach to budget deficit". *Journal of Economic Perspectives*, 3(2): 37-54.

Bernheim, D. B. (1989), "A neoclassical perspective on budget deficits". *Journal of Economic Perspectives*, 3(2): 55-72.

Blanchard, O., Chouraqui, J. C., Hagemann, R. P., and Sartor, N. (1990), "The sustainability of fiscal policy: New answers to old question". *OECD Economic Studies,* (15): 7-31.

Burret, H. T., Feld, L. P. and Köhler, E. A. (2017), "Fiscal sustainability of the German Laender: Time series evidence". *Public Finance Analysis*, 73(1), 103-132.

Centrale Bank Van Aruba (2013), A roadmap to fiscal sustainability in Aruba: Policy recommendations to the Government of Aruba for the period 2013-2017. Oranjestad: Centale Bank Van Aruba.

Cunado, J., Gil-Alana, L. A. and Perez de Gracia, F. (2004), "Is the US fiscal deficit sustainable? A fractionally integrated approach". *Journal of Economics and Business* (56): 501-526.

Dwivedi, D. N. (2005), *Macroeconomic theory and policy* (2nd ed). New Delhi: McGraw-Hill.

Government of Kenya. (2007), *Kenya Vison 2030: The popular version*. Nairobi: Government Printer.

Guichard, S., Kennedy, E., Wurzel, E. and Andre, C. (2007), "What promotes fiscal consolidation: OECD country experiences". OECD Economic Department Working Paper, 553.

Hamilton, J. D. and Flavin, M. A. (1986), "On the limitation of government borrowing: A framework for empirical testing". *American Economic Review* (76): 808-819.

International Monetary Fund (2002), *Assessing sustainability*. Washington DC: International Monetary Fund Press.

International Monetary Fund (2015), *Fiscal policy and longterm growth*. Washington, DC: International Monetary Fund.

International Monetary Fund (2016), *World economic outlook: Subdued demand, symptoms and remedies*. Washington DC: International Monetary Fund.

International Monetary Fund (2018), *Debt sustainability framework*. Washington DC: International Monetary Fund.

International Monetary Fund (2019), *World economic outlook: Global manufacturing downturn, rising trade barriers*. Washington DC: International Monetary Fund.

Jibao, S. S., Schoeman, N. J. and Naraidoo, N. (2012), "Fiscal regime changes and the sustainability of fiscal imbalance in South Africa: A smooth transition error-correction approach". *South Africa Journal of Economic and Management Sciences* (2), 112-127.

Johansen, S. (1991), "Estimation and hypothesis testing of cointegration vectors in Gaussian Vector Autoregressive Models". *Econometrica,* 59(6): 1551-1580.

Johansen, S. and Juselius, K. (1990), "Maximum likelihood estimation and inference on cointegration with applications to the demand for money". *Oxford Bulletin of Economics and Statistics*, 52(2): 169-221.

Kalyoncu, H. (2005), "Fiscal policy sustainability: Test of intertemporal borrowing constraints". *Applied Economics Letters*, 12(15): 957-962.

Kenya National Bureau of Statistics-KNBS (2020), *Economic Survey*. Nairobi: Government Printer.

Kenya National Bureau of Statistics-KNBS (2018), *Economic Survey*. Nairobi: Government Printer.

Kenya National Bureau of Statistics-KNBS (2015), *Economic Survey*. Nairobi: Government Printer.

Kenya National Bureau of Statistics-KNBS (2012), *Economic Survey*. Nairobi: Government Printer.

Keynes, J. M. (1936), *The general theory of employment, interest and money*. London: Macmillan.

Loizides, J. O. and Vamvoukas, G. E. (2005), "Government expenditure and economic growth: Evidence from trivariate causality testing". *Journal of Applied Economics*, 8(1): 125-152.

Lusinyan, L. and Thornton, J. (2009), "The sustainability of South African fiscal policy: An historical perspective". *Journal of Applied Economics*, 41(7), 859-868.

Mutuku, C. (2015), "Assessing fiscal policy cyclicality and sustainability: A fiscal reaction function for Kenya". *Journal of Economics Library*, 2(3): 173-195.

National Treasury (2020), *Quarterly Economic and Budgetary Review*, February Edition. Nairobi: Government Printer.

National Treasury. (2017), *Quarterly Economic and Budgetary Review*, August Edition. Nairobi: Government Printer.

National Treasury (2015), *Quarterly Economic and Budgetary Review*, August Edition. Nairobi: Government Printer.

National Treasury (2012), *Quarterly Economic and Budgetary Review*, August Edition. Nairobi: Government Printer.

Nganga, W., Chevallier , J. and Ndiritu, S. (2018), Regime changes and fiscal sustainability in Kenya with comparative nonlinear Granger causalities across East-African countries. HAL.

Organization for Economic Co-operation and Development (2020). Retrieved from (https://stats.oecd.org/WBOS/index.aspx

Oyeleke, J.O. and Adebisi, D. G. (2014), "Econometric analysis of fiscal deficit sustainability of Ghana". *Journal of Economics and Sustainable Development*, 5(28): 34-40.

Potrafke, N. and Reischmann, M. (2015), "Fiscal transfers and fiscal sustainability". *Journal of Money, Credit and Banking*, 47(5): 975-1005.

Quintos, C. (1995), "Sustainability of the deficit process with structural shifts". *Journal of Business and Economic Statistics*, 13: 409-417.

Stoian, A. and Campeanu, E. (2010), "Fiscal policy reaction in the short term for assessing fiscal sustainability in the long run in Central and Eastern European countries". *Journal of Economics and Finance*, 60(6): 501-518.

Wickens, M. (2011), *Macroeconomic theory: A dynamic General Equilibrium Approach*, 2nd Edition. New Jersey: Princeton University Press.

World Bank (2018), *World Development Indicators*. Washington DC: World Bank.

World Bank (2017), *Kenya tax policy studies: Value Added Tax and Corporate Income Tax*. Washington DC: World Bank.

Appendix

Table A1: Serial correlation test

Breusch-Godfrey Serial Correlation LM Test:				
Null hypothesis: No serial correlation at up to 2 lags				
F-statistic	0.961	Prob. F(2,35)	0.3924	
Obs*R-squared	2.186	Prob.Chi Square (2)	0.3351	

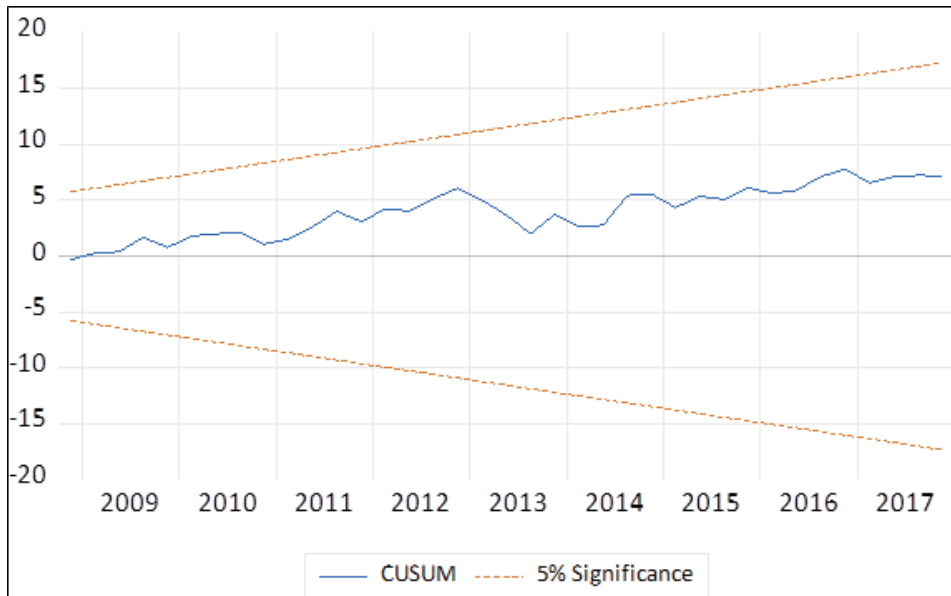*Source: Author's own computation from study data*

Table A2: Heteroskedasticity test

Heteroskedasticity Test: Breusch-Pagan-Godfrey				
Null hypothesis: Homoskedasticity				
F-statistic	0.263	Prob. F(4,37)	0.8997	
Obs*R-squared	1.162	Prob. Chi-Square (4)	0.8843	

Source: Author's own computation from study data using E-views software

Figure A3: CUSUM test

Source: Author's own computation from study data using E-views software

Table A3: Lag selection criteria

VAR Lag Order Selection Criteria						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-11.535	NA	0.006	0.644	0.727	0.675
1	17.582	54.073	0.002	-0.551	-0.303	-0.461

Source: Author's own computation from study data using E-views software

Table A4: Long run analysis

Dependent variable LNREV				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNEXP	0.761	0.043	17.657	0.0000
C	2.703	0.540	5.005	0.0020
R-squared = 0.88		F-Statistic = 311.76		P(F) = 0.0000

Source: Author's own computation from study data using E-views software