

**THE RELATIONSHIP BETWEEN GOVERNMENT SPENDING AND TAX  
REVENUE IN KENYA**

**BY  
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**DECLARATION**

I declare that this research project is my original work and that has not been submitted to any other university or institution of higher learning for an award of a degree.

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## **DEDICATION**

I dedicate this project paper to family, parents, brothers and friends for their continual support and encouragement throughout my project work.

## **ABSTRACT**

The relationship between government expenditure and government tax revenue is important for fiscal policy making and macroeconomic management. The nature and composition of government expenditure influences economic growth and social welfare. Therefore, government expenditure, which influences national GDP, also influences government tax revenues. Economists have been puzzled by this relationship, specifically, whether it is government expenditure that influences government tax revenue or vice versa. Therefore, the objective of this study was to examine the causal relationship between government expenditure and revenue in Kenya.

The study applied the bound testing approach to cointegration, ARDL the ECM and the causality test. The study tested whether there is unidirectional causality or bidirectional causality between government spending and government taxation.

The results show that there is bidirectional causality from government revenue to government expenditure. Therefore, the results support the fiscal synchronization hypothesis. The results indicated that deviation from the long-term growth rate in government expenditure (revenue) is corrected by approximately 73 percent in the following year.

The policy implication of the results shows that there is a relation between government expenditure and revenue. The government makes its expenditures and revenues decision simultaneously. Therefore, the Treasury should increase revenues and decrease expenditures simultaneously in order to manage the budget deficits. Increasing

government expenditure stimulates economic activities, which in turn increase government revenues. In addition, the bidirectional causality between government expenditure and revenues might complicate the government's efforts to control the budget deficit. This particularly the case where in an attempt to reduce government expenditure, there is a reduction in government tax revenues.

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# **CHAPTER ONE**

## **INTRODUCTION**

### **Background to the Study**

In managing the economy, a government uses both fiscal and monetary policies. Fiscal policy is the use of government spending and revenue collection to influence the economy. The two main instruments in fiscal policy are government spending and taxation. Changes in the level and composition of taxation and government spending will affect the aggregate demand and level of economic activity as well as the pattern of resource allocation and the distribution of income. Fiscal policy can also be used to bring the economy to the potential level if policymakers understand the relationship between government expenditure and revenue.

Abdulnasser (2002) states that budget sustainability refer to the government's ability to maintain given spending, taxation, and borrowing patterns and to modify policies to satisfy its longrun budget constraints. In other words, budget sustainability is the ability of the government to maintain a given policy stance. Thus, government has an important role in budget sustainability.

Castro and Cos (2002). point out that strong budget sustainability means that no problem in deficit behavior is expected, and there is no need for structural fiscal reforms. In contrast, weak sustainability implies that government might have a problem in marketing its debt. Fiscal policy is crucial to sustainable growth. Thus, understanding the relationship between government revenue and expenditure is important in order to

evaluate budget sustainability. There is a large public finance literature that analyzes the nexus between government revenue and expenditure. Most of these studies describe the efforts of the fiscal authority to maintain the budget balance. From a fiscal perspective, maintaining a stable long-term relationship between expenditure and revenue is a key requirement for a stable macroeconomic environment and a sustainable economy. Budget deficits happen when government expenditures exceed revenues. Conversely budget surpluses occur when government revenues are more than expenditures. A budget balance exists when government revenues and expenditures are equal; it is difficult to obtain a budget balance.

### **1.1.1 Government Spending**

In National Income Accounting, government spending, government expenditure, or government spending on goods and services includes all government consumption and investment but excludes transfer payments made by a state. Government acquisition of goods and services for current use to directly satisfy individual or collective needs of the members of the community is classed as government final consumption expenditure. Government acquisition of goods and services intended to create future benefits, such as infrastructure investment or research spending, is classed as government investment (gross fixed capital formation). Government outlays that are not acquisition of goods and services, and instead represent transfers of money, such as social security payments, are called transfer payments and are not included in what the national income accounts refer to as government expenditure. The two types of government spending, on final

consumption and on gross capital formation, together constitute one of the major components of gross domestic product.

Keynes (1930) was one of the first economists to advocate government deficit spending as part of the fiscal policy response to an economic contraction. In Keynesian economics, increased government spending is thought to raise aggregate demand and increase consumption, which in turn leads to increased production. Keynesian economists argue that the Great Depression was ended by government spending programs such as the New Deal and military spending during World War II. According to the Keynesian view, a severe recession or depression may never end if the government does not intervene. Classical economists, on the other hand, believe that increased government spending exacerbates an economic contraction by shifting resources from the private sector, which they consider productive, to the public sector, which they consider unproductive.

Government spending can be financed by seigniorage, taxes, or government borrowing. Government acquisition of goods and services for current use to directly satisfy individual or collective needs of the members of the community is called government final consumption expenditure (GFCE.) It is a purchase from the national accounts "use of income account" for goods and services directly satisfying of individual needs (individual consumption) or collective needs of members of the community (collective consumption). GFCE consists of the value of the goods and services produced by the government itself other than own-account capital formation and sales and of purchases by

the government of goods and services produced by market producers that are supplied to households - without any transformation - as "social transfers" in kind.

Government acquisition of goods and services intended to create future benefits, such as infrastructure investment or research spending, is called gross fixed capital formation, or government investment, which usually is the largest part of the government. Acquisition of goods and services is made through production by the government (using the government's labor force, fixed assets and purchased goods and services for intermediate consumption) or through purchases of goods and services from market producers. In economic theory or in macroeconomics, investment is the amount purchased per unit time of goods which are not consumed but are to be used for future production (i.e. capital). Examples include railroad or factory construction.

### **1.1.2 Government Tax Revenue**

Government revenue is revenue received by a government. It is an important tool of the fiscal policy of the government and is the opposite factor of government spending. Revenues earned by the government are received from sources such as taxes levied on the incomes and wealth accumulation of individuals and corporations and on the goods and services produced, exported and imported from the country, non-taxable sources such as government-owned corporations' incomes, central bank revenue and capital receipts in the form of external loans and debts from international financial institutions.

Tax revenue is the income that is gained by governments through taxation. Just as there are different types of tax, the form in which tax revenue is collected also differs; furthermore, the agency that collects the tax may not be part of central government, but may be an alternative third-party licensed to collect tax which they themselves will use. For example, in Kenya, the Kenya Revenue Authority (KRA) collects vehicle excise duty, which is then passed onto the treasury.

Tax revenues on purchases can come from two forms: 'tax' itself is a *percentage* of the price added to the purchase (such as sales tax in US states, or VAT in the UK), while 'duty' is a *fixed amount* added to the purchase price (such as is commonly found on cigarettes). In order to calculate the total tax raised from these sales, we must work out the effective tax rate multiplied by the quantity supplied.

The effect of a change in taxation level on total tax revenue depends on the good being investigated, and in particular on its price elasticity of demand. Where goods have a low elasticity of demand (they are price inelastic), an increase in tax or duty will lead to a small decrease in demand—not enough to offset the higher tax raised from each unit. Overall tax revenue will therefore rise. Conversely, for goods which are price elastic, an increase in tax rate or duty would lead to a fall in tax revenue.

The Laffer curve theories that, even for price inelastic goods (such as addictive necessary items), there will be a tax revenue maximising point, beyond which total tax revenue will fall as taxes increase. This may be due to a number of causes: A cost limit on what can

actually be afforded; The existence of expensive substitutes (which become less expensive); An increase in tax evasion (through the black market or similar); The shrinking of business caused by increased taxes.

The Laffer curve however is not necessarily widely accepted as economic reality with prominent economists such as Paul Krugman referring to it as "Junk economics". Former white house economic adviser Austan Goolsbee was even more dismissive stating [The]"Moon landing was real. Evolution exists. Tax cuts lose revenue. The research has shown this a thousand times. Enough already", during a panel where of 40 economists surveyed, none believed tax cuts could increase government revenue.

A limiting factor in determining the size of a budget in the public sector is the capacity to tax. Per capita personal income (PCI) is the most often used measure of relative fiscal capacity. But this measure fails to base tax capacity computation on other important tax bases like the sales and property tax and corporate income taxes. A representative tax system should assess the level of personal income, the value of retail sales and the value of property to compute fiscal capacity. To do so the average tax rate for each base is computed by dividing the total revenue derived by the total value of the base. Thus, as an example, income taxes collected would be divided by total income to yield a rate of taxation.



The averages of each tax base can be used in comparison to other states or communities, that is, the average of other states or communities, to determine whether or not a government compares favorably regionally or nationally. A state or community's standing on these various bases may affect its ability to attract new industry. The resulting rates, high or low in comparison, can become targets for change. The mission of revenue administration is to provide prudent and innovative revenue, investment and risk management and to regulate the use of government capital.

There are four core responsibilities for the revenue administrator: 1. Manage and invest financial assets prudently. 2. Administer tax and revenue programs fairly and efficiently. 3. Manage risk associated with loss of public assets. 4. Regulate capital expenditures.

Example of Balance: The Conflict of Economic Development and the Tax Base.

New real estate development may not only enhance the economic base of a state or community, and it may also expand the tax base. It is not always the case, however, that new developments, especially if not properly planned, can in the aggregate, have a negative impact on the tax base. Economic development traditionally focuses on such things as job generation, the provision of affordable housing, and the creation of retail centers. Tax base expansion focuses primarily on maintaining and enhancing real estate values within the municipality. Municipalities tend to pursue economic development with almost a religious fervor, and often do not think strategically about the overall real estate impacts of their economic development initiatives. Yet the existing tax base in almost every municipality throughout Kenya is an important source of revenue for funding municipal and school expenditures.

### **1.1.3 The Relationship between Government Spending and Tax Revenue**

There are three competing hypotheses on the relationship between government revenue and expenditure: 1) the fiscal synchronization hypothesis, 2) the tax-and-spend hypothesis, and 3) the spend-and-tax hypothesis. Those hypotheses provide useful guidelines for decision-makers on the choice of preventive or corrective measures.

Despite the causality between government revenue and government expenditure, it is important to explore the way to address fiscal imbalances. Empirical studies on this issue are scarce, especially in developing countries. Hence, this study investigates both the causality and long-run relationships between government revenues and government expenditures in Kenya applying P-VAR model.

Narayan and Narayan (2006) suggest three reasons why the relationship between government expenditures and revenues is important. The first reason states that if the revenue-spend hypothesis holds, a budget deficit can be avoided by enacting policies that stimulate government revenue. The second reason states that if the bi-directional causality does not hold, government revenue decisions are made independent from government expenditure decision. This can cause high budget deficit; government expenditures will rise faster than government revenues. The third reason is that if the spend-revenue hypothesis holds, the government spends first and pays for the spending later by raising taxes. This will lead to more taxes in the future and encourage the outflow of capital.

#### **1.1.4 Government Spending and Revenues in Kenya**

The International Monetary Fund wants Kenya to slash its swelling public expenditure and increase its revenue base to cushion it from expected harsh economic conditions this year. The financial institution argues that the government should also continue focusing on consolidation of medium-term plans and effective monetary policy to curb domestic demand. The data on government spending and revenue in Kenya over the sample period is provided in Appendix I.

The VAT Bill is expected to improve the administration and collection of VAT to boost revenues. The government argues that the old law that excludes taxation on certain goods, organizations, people and property, as well as zero-rating, has been a stumbling block in administering the tax. It is estimated that the government loses more than Sh100 billion through these policies annually.

Kenya government expenditure consists of operating and development expenditures. Since 1999, operating expenditure has accounted for less than 40% of the total Kenya government expenditure; the balance is from development expenditure. Operating expenditure is essential for the smooth operation of government machineries that cover personal emolument, supplies and services, procurement of assets, grants and fixed payments. Development expenditures are allocated to the States ministries, departments and agencies to implement approved development projects.

The Kenya state government also uses fiscal policy by increasing expenditure to stimulate economic growth. Thus, expenditures sharply increased from 1999 to 2001. Government expenditures increased about 40% compared to 1999: At the same time government revenues increased about 19%. In addition, government also practices prudent financial spending and exercised strict control over operating expenditures to ensure the long-term sustainability of the state's financial position.

## **1.2 Research Problem**

A large and persistent government budget deficit can pose a serious threat to the country's economic growth. The fiscal imbalance would imply a need for a larger and more painful adjustment for the economy. The government has to pay off its outstanding debt through large future budget surpluses, which require increases in taxes or cuts in spending. Higher taxes have many distortion effects on the economy. Furthermore, a large increase in the government debt may impose a burden on future generations. The budget imbalance can be avoided if relevant policymakers in Kenya understand the relationship between government revenues and expenditures. In addition, government must ensure that the adjustment of policy is within the framework of the sustainable budget position.

At a recent meeting convened by the executive directors of the IMF to assess the country's economic status, the institution urged the government to adopt a more ambitious medium-term target by reducing non-priority expenditure and front-loading adjustment. Increased public expenditure, as a result of increased demand for goods and

services, has seen the country's public debt rise sharply from 48 per cent to 54.2 per cent, more than five percentage points above the IMF's recommended ceiling of 45 per cent. This has got a negative impact on the economy. Therefore, there is need to understand the relationship between government spending and revenue in Kenya.

Despite the causality between government revenue and government expenditure, it is important to explore the way to address fiscal imbalances. Empirical studies on this issue are scarce, especially in developing countries. Hence, this study investigates both the causality and long-run relationships between government revenues and government expenditures in Kenya applying P-VAR model.

Hakkio and Rush (1991) examined the long 'run cointegrating relationship between government revenues (R) and expenditures (G). In this context, the sustainability condition holds when there is a long run (cointegrating) relationship between public expenditures and public revenues. In other words, rejecting the null hypothesis of no cointegration relationship between the two variables would infer a sustainable fiscal imbalance (weak form).

Studies about the relationship between government expenditure and government revenue have been flourishing recently. Abdul and Muzafar (2002) examined the causal relationship between the government tax revenues and government expenditures in Malaysia by using the case of Toda and Yamamoto during 1960-1997. The evidence generally supports the existence of bi-directional causality between the two variables.

Fasano and Wanq (2002) also investigated the direction of causality between total government expenditure and revenue in oil dependent GCC countries by using VECM method. The findings show that government expenditures follow oil revenues. Moalusi (2004) examined the casual relationship between government expenditure and tax revenue in Botswana during the period 1976-2000 by applying both bivariate and multivariate Granger casualty method. The findings revealed that there is a negative unidirectional relationship between variables revenue and spending, which in turn supports the “tax-and-spend” hypothesis.

Wahid (2008) tested the causality link between government revenue and spending for the Turkey by using the Granger-causality. The findings supported that growth of government expenditure causes increases in tax revenues in Turkey. Maynard and Guy (2009) investigate the interrelationship between government expenditure and tax revenue in Barbados by using Engle-Granger co-integrating models during 1985-2008. The results suggest that there is a unidirectional link from government spending to revenue. Aisha and Khatoon (2010) examined the causal relation between government expenditure and tax revenue for Pakistan, and found unidirectional causality from expenditure to revenue. This study intends to address the question: What is the relationship between government spending and Tax revenue in Kenya?

### **1.3 Objective of the Study**

This study examines the relationship between Government spending and Tax revenue in Kenya.

#### **1.4 Value of the Study**

There are three reasons why the nature of the relationship between government expenditure and revenue is very important. Firstly, if the tax-spend hypothesis is supported, budget deficits can be avoided by implementing policies that stimulate government revenue. Secondly, if the bi-directional causality does not hold, it means that government revenue decisions are made independent from expenditure decisions. This can cause high budget deficits and government expenditure rise faster than government revenue. Finally, if the spend-tax hypothesis is supported, it means that the government spends first and pays for this spending later by raising taxes. This will have as a result a fear of paying more taxes in the future and will encourage the outflow of capital.

It is widely accepted that an improvement in the long-run economic efficiency can be achieved by reducing significantly government activities. Kenya is a country where the government spending to GDP is extremely high and creates significant inefficiencies in the operation of the Kenyan economy such as unemployment, high inflation and huge public debt.

Like policy makers academicians are interested in knowing which of the three reasons holds about the nature of the relationship between government expenditure and revenue. Firstly, if the tax-spend hypothesis holds, budget deficits can be avoided by implementing policies that stimulate government revenue. Secondly, if the bi-directional causality does not hold, it means that government revenue decisions are made independent from

expenditure decisions. Lastly, if the spend-tax hypothesis is supported, it means that the government spends first and pays for this spending later by raising taxes.

Currently, the theory of public expenditure is mainly informed by empirical studies. Therefore, by adducing more evidence on the relationship between government spending and revenue in Kenya this study will enhance the development of the theory of public expenditure.



## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter presents the literature review. In section 2.2 discusses theoretical literature. Section 2.3 presents empirical literature and section 2.4 discusses developing countries studies on government revenue and expenditure. Section 2.5 is the summary.

#### **2.2 Theoretical Review**

This section presents four main theories of public expenditure. These are Adolph Wagner's Law of Increasing State Activity, The Peacock-Wiseman Hypothesis, Musgrave and Rostow's Development Model and the Critical-Limit Hypothesis

##### **2.2.1 Adolph Wagner's Law of Increasing State Activity**

Wagner (1864), the German economist made an in depth study relating to rise in government expenditure in the late 19<sup>th</sup> century. Based on his study, he propounded a law called "The Law of Increasing State Activity". Wagner's law states that "as the economy develops over time, the activities and functions of the government increase". According to Adolph Wagner, "Comprehensive comparisons of different countries and different times show that among progressive peoples (societies), with which alone we are concerned; an increase regularly takes place in the activity of both the central government and local governments constantly undertake new functions, while they perform both old and new functions more efficiently and more completely. In this way economic needs of

the people to an increasing extent and in a more satisfactory fashion, are satisfied by the central and local Governments."

Wagner's statement indicates following points. In progressive societies, the activities of the central and local government increase on a regular basis. The increase in government activities is both extensive and intensive. The governments undertake new functions in the interest of the society. The old and the new functions are performed more efficiently and completely than before. The purpose of the government activities is to meet the economic needs of the people. The expansion and intensification of government function and activities lead to increase in public expenditure. Though Wagner studied the economic growth of Germany, it applies to other countries too both developed and developing.

The principal criticisms of Wagner's law have concerned his view of history and of the relationship between the state and its citizens. Peacock and Wiseman also queried whether Wagner's ideas could be applied to all societies at all times and suggested that the time pattern of actual public expenditure growth did not fit well with Wagner's law.

### **2.2.2 The Peacock-Wiseman Hypothesis**

Peacock and Wiseman (1896) conducted a new study based on Wagner's Law. They studied the public expenditure from 1891 to 1955 in U.K. They found out that Wagner's Law is still valid. Peacock and Wiseman further stated that "The rise in public expenditure greatly depends on revenue collection. Over the years, economic

development results in substantial revenue to the governments, this enabled to increase public expenditure". There exists a big gap between the expectations of the people about public expenditure and the tolerance level of taxation.

Therefore, governments cannot ignore the demands made by people regarding various services, especially, when the revenue collection is increasing at constant rate of taxation. They further stated that during the times of war, the government further increases the tax rates, and enlarges the tax structure to generate more funds to meet the increase in defence expenditure. After the war, the new tax rates and tax structures may remain the same, as people get used to them. Therefore, the increase in revenue results in rise in government expenditure. Wagner's law and Peacock-Wiseman hypothesis emphasize on the fact that public expenditure has tendency to increase overtime.

### **2.2.3 Musgrave and Rostow's Development Model**

The economist, Musgrave (1980), and the economic historian, Rostow (1970), (separately) suggested that the growth of public expenditure might be related to the pattern of economic growth and development in societies. Three stages in the development process could be distinguished. The early development stage where considerable expenditure is required on education and on the infrastructure of the economy (also known as social overhead capital) and where private saving is inadequate to finance this necessary expenditure (in this stage, government expenditure must thus be a high proportion of total output). The phase of rapid growth in which there are large increases in private saving and public investment falls proportionately; and high income

societies with increased demand for private goods which need complementary public investment (e.g. the motor car and urbanisation).

The increasing need in high-income societies for skilled labour leads education to become increasingly an investment good for society as a whole. Increased population movements lead to the development of urban slums. Such factors and others lead once again to an increase in public expenditure in relation to total output. These views are interesting in relation to theories of growth and development but are rather too general to provide much of a guide to recent experience in developed industrial countries.

#### **2.2.4 Critical-Limit Hypothesis**

Another hypothesis is known as critical-limit hypothesis, and concerned with the tolerance level of taxation, was enunciated by the British economist Clark (1930) immediately after the World War II. Analysis of the empirical data of several western countries for the inter-war period results in the critical-limit hypothesis that when the government sector taxes and other receipts exceeds 25 per cent of aggregate economic activities, inflation necessarily arises, even when the budget is balance. Clark lays down that when government tax system extricates increasing proportions of additional income from taxpayers, whose incentives are harmed and whose productivity falls. People become less resistant to inflationary methods of government financing. While the aggregate demand expands as a result of inflationary financing techniques, aggregate supply falls due to loss of incentives and, hence, inflation results.

As the hypothesis is based upon institutional factor like the tolerance level of taxation, it resembles the displacement effect. In quite other respects, the two hypotheses are quite different. Whereas this hypothesis has received very little support from academic circles, it has received popular support from business circles. Recent decades have however, proved that many countries have crossed the 25 per cent limit without much inflationary tendencies.

### **2.3 Determinants of Government Spending**

While there is a tendency to consider Keynesian macroeconomics as a falsified and outdated theory, at least in Italy it still constitutes the cultural background of economic policymakers. Furthermore, as Buchanan and Wagner (1977) pointed out, when it did represent the scientific mainstream, Keynesianism provided the theoretical justification for debt financing. Hence, whatever its current standing in economics, Keynesian macroeconomic policy holds an explanatory potential of both past and present Italian fiscal policy choices.

Keynesian macroeconomic policy sees deficits as a tool for counter cyclical policy. The unemployment and/or the output growth rate are generally considered the relevant indicators of the state of the economy. The prediction is that budgets deficits be positively correlated with the rate of unemployment and negatively correlated with the growth rate of real output. In the analysis we choose three state variables: 1) The deviations of the unemployment rate around a time-varying trend, approximated as a Hodrick-Prescott filter of the annual series. This variable (labeled TRU) is consistent

with the standard Keynesian-Phillips curve interpretation of unemployment, which implies that politicians respond only to its cyclical component. 2) The rate of unemployment (U). This specification presupposes that policy makers try to reduce the social and political problems that high unemployment engenders, irrespective of the position of the economy through the cycle or of the structural component of U overwhelming the cyclical one. 3) The growth rate of real output (GY), calculated as the first differences of the logs of real gross domestic product; a significant coefficient on this variable suggests that fiscal policy is essentially aimed to stimulate output. The presence of GDP measures among the independent variables is an additional reason to specify the dependent variable in real terms rather than in GDP ratios.

The fundamental difference between the Keynesian and the optimal finance approach to public debt is that, in the neo-Ricardian framework, individuals do not consider government bonds as net wealth. Barro (1974, 1979) holds that whenever government chooses to deficit finance a given level of expenditures, individuals save the debt issues (and their rates of return) to meet the taxes levied to pay the interest and eventually retire the principal. As debt issues do not impact on aggregate consumption, deficits are no longer a useful tool to ease out of recessions. Still, deficits can be used to smooth tax rates over time, despite fluctuations in government expenditures and GDP (tax base). A constant fiscal pressure requires budget deficits when government spending is above its trend value (such as in wartimes) and budget surpluses when it is below it (such as in peacetimes). Similarly, business cycle-induced fluctuations of the tax base require deficits in downturns and surpluses in upswings to keep the tax rate and government

expenditures constant. We measure deviations of public expenditures from their normal level (labeled TREXP) and of income from its normal level (labeled TRY) as the ratio of their current value and trend value at time  $t$ . The trend value is obtained as an Hodrick-Prescott filter of the annual series.

A class of public choice models explains the choice of financing public expenditures through debt rather than taxation by evaluating the political influence of interest groups that stand to gain from deficit spending (Rowley, Shughart and Tollison, 1988). While some controversy exists over which group fits in this characterization, Cukierman and Meltzer (1988), Rowley, Shughart and Tollison (1988) and Goff (1993), among others, conclude that elderly people who do not leave bequests to future generations are the most obvious candidate. The political influence of this group is supposed to increase with its percentage share of total population. This “special interest group theory” predicts a positive correlation between percentage of the population represented by elderly people and deficit levels. Incidentally, these theories are observationally equivalent, and conceptually similar, to Tullock’s (1982) “malevolent parents” explanation of debt creation. The same variable can then be used to test both theories.

A line of research (Alesina and Drazen, 1991; Kontopoulos and Perotti 1999) identifies coalition or divided governments as an explanation for the creation and persistence of fiscal disequilibria. After an exogenous fiscal shock, coalition governments tend to delay stabilization and accumulate debt because each member of the coalition seeks to transfer the political costs of the adjustment onto the others. Padovano and Venturi (2001) argue

that it is important to control for the fragmentation of the opposition coalition too, as it may affect the costs for the government coalition to delay fiscal stabilization and, by that, the equilibrium deficit level. A government coalition of, say, three parties will find it easier to stabilize the budget when it has to overcome the opposition of several poorly coordinated political forces rather than a single monolithic party. Several power indices measure political fragmentation (Huber, Kocher and Sutter, 2003) but there is no clear reason to prefer one to the others. We choose the standard Herfindhal index, because it shows the higher variability when applied to Italian government data. On the other hand, measures of ideological polarization do not seem convincing; Padovano and Venturi (2001) show that the impossibility of the Communist Party and of the parties on the extreme right to go into the government (at least until the 1990s) made it rational for the other parties to behave opportunistically rather than ideologically.

A variant of this model suggests that debt is created as a by product of a war of attrition (Alesina e Perotti, 1999) within the government. Finance and spending ministers hold opposite objective functions within the government and become increasingly opposed when the economy needs to be stabilized. The ratio of the spending ministers to the finance ministers (SPENDMIN) indicates the intensity of this type of war of attrition within the government. The rational political budget cycles literature argues that, inasmuch as it ensures a boom, an expansionary fiscal policy before the elections raises the probability for the incumbent government majority to win the elections. That because voters perceive the boom as a sign of competence and reward it accordingly (Rogoff, 1990; Alesina, Roubini and Cohen, 1997).



Recent contributions to the literature on the determinants of public deficits focus their attention on the procedures that discipline the approbation of the budget bill to explain the considerable cross country differences in fiscal performances within highly interconnected and similarly developed economies (Alesina and Perotti, 1999). The general idea is that democratic institutions allow policymakers to partially internalise the political costs of their spending decisions, with consequent deficit. Different budget procedures, however, put similarly deficit-biased policymakers under different sets of constraints. Budget outcomes thus vary according to the degree of stringency of these constraints (von Hagen, 1992; von Hagen and Harden, 1996). During the sample period, Italy has reformed its budgetary rules twice. In 1978, the introduction of the Legge Finanziaria (“Financial Bill”) effectively circumvented the original provision for a budget balanced on a yearly basis enshrined in article 81 of the Constitution. The law 362/1988 introduced two corrections that limit the deficit drift engendered in the Legge Finanziaria.

First, it broke the set of provisions of the original Finanziaria into a plurality of financial bills to be approved in different times of the year, thereby limiting the possibilities of logrolling, and the associated tendencies towards deficit spending, that the comprehensive structure of the Finanziaria allows. Second, it imposed voting on the budget totals at the beginning of the approbation of the budget rather than at the end, as foreseen in the original Legge Finanziaria. By that the deficit is set at the beginning and cannot be increased by the parliamentary struggles that occur during the budget session. The literature (da Empoli, de Ioanna and Vegas, 2000) agrees to interpret the reform of 1978 as a major reduction of the degree of stringency of the Italian budget rules; the

reform of 1988 is evaluated as a partial correction, which failed to fully restore the constraining power of the pre-1978 procedures. We capture the different binding forces of the Italian budget rules by means of a qualitative variable BUDRULE that takes the value of 2 between 1950 and 1977, 0 between 1978 and 1987 and 1 between 1988 and 2002.

## **2.4 Empirical Review**

There are several studies that have examined the problem of fiscal sustainability in different economies. There are two types of analysis used to examine the spend-tax or tax-spend hypothesis; time series and panel data analysis. Studies using time series analysis (Blackley 1986, Jones, Manuelli & Rossi 1993, Jones, Joulfaian 1991, Hasan, Lincoln 1997, De Castro, González-Páramo & De Cos 2004, Baharumshah, Lau 2007, Saunoris, Payne 2010, Puah, Lau & Teo 2011) examined the long run relationship between government spending and revenues for a particular country over time.

Finally, there are studies (Wilcox 1989, Hakkio, Rush 1991, Tanner, Liu 1994, Quintos 1995, Makrydakis, Tzavalis & Balfoussias 1999, Jayawickrama, Abeysinghe 2006) investigating the sustainability of public deficits in many countries. These studies mainly examined the long-run relationship between government spending and revenues. However, one very important feature that can be linked with the existence of a cointegration relation between spending and revenues is the direction of the causality between these variables. This causality will help us to understand how fiscal policy is set-up in practice. There are several studies examined the sustainability of budget deficits and

the spend-tax hypothesis(e.g. Konstantinou 2004,Baharamshauh 2007, Puah et al. 2011). Hatemi-J (2002) examined the fiscal policy in Sweden and the effects of EMU criteria convergence for the period 1963-2000. Firstly, he examined the sustainability of fiscal policy and found that the Swedish government is not in violation of its intertemporal budget constraint and that a fiscal policy is feasible with respect to the EMU criteria. He could not reject the hypothesis of bi-directional causality between spending and revenues for the entire sample, thus he confirmed that spending and revenues changes simultaneously in Sweden.

Since 1980 there has been a growing concern over the relationship between government spending and revenues which some economists call the “tax-spend debate” or the “revenue-expenditure nexus”. During this debate economists outlined four different hypotheses. The first one is the tax-spend hypothesis and has two alternative views, the Friedman (1978) and Buchanan and Wagner (1977) hypothesis. Friedman (1978) claimed that if the government authorities increase the taxes, the resources that will be available for the government will be increased in the attempt to reduce the budget deficits and there will only be results in increased government spending. Payne (2003) commented on this view and suggested that indeed if revenues have a positive effect on expenditures, reductions in revenues will in turn reduce government expenditures.

The second view is the spend-tax hypothesis, which suggests that a political system somehow determines how much to spend and then makes the adjustments in tax policy and revenue sources in order to finance the government spending. Ricardian equivalence

argues that a cut in present taxes leads to higher future taxes with the same value as the initial cut. This happens because the government cannot change the present values of taxes but can change the present spending. Later Roberts (1978) and Peacock and Wiseman (1979) suggested that temporary increases in government spending because of a crisis or a war, will have higher permanent taxes as a result. So, according to the spend-tax hypothesis, when the government decides to reduce the government spending, the deficits will be reduced also.

Hamilton and Flavin (1986), Trehan and Walsh (1988), MacDonald (1992), Uctum and Wickens (2000), Jayawickrama and Abeysinghe (2006) tested the univariate stationarity of the debt or deficit for the whole trajectory path of the fiscal positions over time. Hamilton and Flavin (1986) showed that if deficits and government debt followed a stationarity process, then intertemporal budget balance is satisfied. They found stationarity of undiscounted US debt under the assumption of constant real interest rates. Trehan and Walsh (1988), Jayawickrama and Abeysinghe (2006) and Smith and Zin (1991) are among those who have found support for the sustainability of U.S. and Canadian fiscal policies, respectively.

The panel data analysis (Marlow, Manage 1987, Ram 1988, Chowdhury 1988, Dahlberg, Johansson 1998) investigated the relationship between revenues and spending across different countries over time. The majority of studies (De Castro, González-Páramo & De Cos 2004, Hatemi-J, Shukur 1999, Hatemi-J 2002b, Ewing et al. 2006) used time series data and tested the spend-tax hypothesis for a single country, while only a few studies

(Baharumshah, Lau 2007, Kollias 2000, Oshikoya, Tarawalie 2009, Konukcu-Önal, Tosun 2008) have examined a group of countries. Furthermore, some of these studies examined developing countries (Darrat 2002, Payne, Ewing & Cebula 2003, Wahid 2008, Eita, Mbazima 2008).

However, the majority of studies have focused on developed countries, the case of U.S.A. (Blackley 1986, Jones, Joulfaian 1991, Ewing et al. 2006, Anderson, Wallace & Warner 1986), the U.K. (Hasan, Lincoln 1997, Saunoris, Payne 2010)), or Canada (PAYNE 1997). Numerous studies with different methods and approaches developed to investigate whether the government spending determines the revenues and whether government revenue determines the government spending. The majority of these studies applied Johanshen (Eita, Mbazima 2008, Payne 1997, Hondroyiannis, Papapetrou 1996, Katrakilidis 1997, Park 1998) and Engle-Granger (Jones, Joulfaian 1991, Kollias 2000, Kollias, Mylonidis & Palaiologou 2007, Miller, Russek 1989) cointegration techniques to test for long run relationship between government spending and revenues. Consequently, they deployed Granger causality test (Oshikoya, Tarawalie 2009, von Furstenberg, Green & Jeong 1985, von Furstenberg, Green & Jeong 1986, Konstantinou 2004) in order to identify the direction of causality. Hatemi-J and Shukur (1999) deployed the Rao's F-test, while Ewing et al. (2006) used the TAR and M TAR models developed by Enders and Granger (1998).

Some studies (e.g. Hasan, Lincoln 1997, Katrakilidis 1997, Manage, Marlow 1986, Hatemi-J 2002a) found support of Fiscal synchronization (a bi-directional causality between spending and revenues). Manage and Marlow (1986) extended the data period (1929-1982) of Anderson et al. (1986) and tested the case of the USA. They followed the procedure of Granger (1969) and used the Granger causality test between spending and revenues. Their empirical results indicate either support of the fiscal synchronization hypothesis or the tax-spend hypothesis, depending upon the number of lags in the VAR. This supposition is consistent with Katrakilidis (1997), who made an attempt to re-evaluate the long-run relationship between government spending and revenues in Greece for the period 1974-1991. In his empirical analysis he followed Liu and Maddala (1992) and used Johansen's (1990) cointegration approach and error correction models. Furthermore, he included the variable of real income. The results indicate evidence of a bi-directional effect between the government spending and revenues and support the fiscal synchronization hypothesis.

There are studies (e.g. Baghestani, McNown 1994, Hoover, Sheffrin 1992) that found an absence of any causal relationship (Institutional separation), Baghestani and McNown (1994) used quarterly data of the United States during the period of 1955-1989. They used Johansen-Juselious (1990) cointegration approach and error correction models. In order to take into account any macroeconomic change they included real GNP. They did not find any evidence of a respond of revenues or spending to the budgetary equilibrium, and they concluded that there is evidence of the institutional separation of the allocation and taxation of government. Moreover, they found strong evidence of long run

relationship (cointegration) between spending and revenues. However, both of the variables do not respond to budget disequilibrium and reject the tax-spend and spend-tax hypotheses.

Many studies examine the tax-spend and spend-tax debate at the national level, however, there is a fewer number of studies examining the long-run relationship between spending and expenditures at the sub-national level. There are several key differences between budgetary processes at national and sub-national level (especially for the United States (Von Fusterberg 1986, Marlow, Manage 1987, Ram 1988)). Firstly, the state and local governments do not have the ability to institute inflationary policies as means to raise revenues as in the case of national governments. Secondly, most of the local and state governments operate under legislative and constitutional requirements that attempt to constrain budget deficits.

Finally, the budgets of local and state governments are influenced more than national governments form changes in grants. Most of the studies examined the sub-national level (state and local governments) for the United States ( (Marlow, Manage 1987, Ram 1988, von Furstenberg, Green & Jeong 1986), Joulfaian and Mookerjee (1990) used annual data for the period 1960-1986 and made a multi-country study of spend-tax debate for local and state governments. They followed Sims (1980) methodology and their results are mixed. Evidence of the spend-tax hypothesis is supported in the cases of Greece, Ireland, France, Japan, Netherlands and the United Kingdom, tax-spend hypothesis is supported in Canada, Portugal and the United States of America. Finally, they found evidence of

institutional separation for Australia, Luxembourg, Germany, Belgium, Finland and Sweden. Dahlberg and Johansson (1998) tested 265 municipalities in Sweden. Miller and Russek (Miller, Russek 1989) examined the case of Greece, while Puah et al. (Puah, Lau & Teo 2011) investigated the Sarawak state.

Another article, consistent with the spend-tax hypothesis made by Kollias and Makrydakis (1995), who examined the validity of the proposition that there is a causal relationship between government expenditure and government revenue for Greece over the period 1950-1990 by using annual data. They used Engle Granger (1987) cointegration approach between government spending and revenues. There was a strong evidence of spend-tax hypothesis, concluding that a political system somehow determines how much to spend and then makes the adjustments in tax policy and revenue sources in order to finance the government spending.

Many authors examined the tax-spend hypothesis in Greece. The majority of the studies applied time series analysis in order to examine the relationship between government spending and revenues. There is no clear pattern on empirical results of previous studies, however, most of studies ((Hondroyiannis, Papapetrou 1996, Kollias, Makrydakis 1995, Vamvoukas 1997b, Vamvoukas 1997a) found support of unidirectional causality running from spending to taxation. Konstantinou (2004) found evidence of Tax-spend hypothesis. Finally, Katrakilidis (1997) concluded that there is Fiscal synchronization, while Miller and Russek (1989), and Kollias and Makrydakis (2000) found mixed results.



In the presence of interdependence between the two sides of government policy, government spending and revenues, four possible outcomes can be emerged from an empirical investigation: firstly a bi-directional causality between the two variables, secondly an absence of any causal relationship, thirdly a unit-directional causality from government revenues to spending and finally a unit-directional causality from government spending to revenues.

There are several studies (e.g. Ewing et al. 2006, Darrat 2002, Park 1998, Konstantinou 2004) found support of the tax-spend hypothesis. For instance, Blackley (1986) used annual data for the period of 1929-1983 and tested the case of the United States of America. He followed the approach of Sims (1972) and used Granger causality tests between government spending and revenues with GNP as a control variable of macroeconomic changes. His empirical results indicate that tax leads government spending. Another article, consistent with the tax-spend hypothesis is Ahiakpor and Amirkhalkhali (1989) study. They tested the case of Canada during 1926-1985, by using Granger causality tests between government spending and revenues, and found evidence of tax-spend hypothesis. Similarly the study of Payne (1997) examined the long-run relationship between spending and revenues in Canada during 1950-1994. He used Johansen and Juselius cointegration approach and found that revenues follow a time path independent from revenues and GDP, while expenditures respond to budgetary disequilibrium in that budget imbalances would be corrected by expenditure changes. He used also the GDP in order to capture the overall movements in the economy and found support of the tax-spend hypothesis in Canada.

There is also another strand in literature (e.g. De Castro, González-Páramo & De Cos 2004, Saunoris, Payne 2010, Wahid 2008, Vamvoukas 1997a) supported the spend-tax hypothesis. Anderson et al. (1986) used annual data for the period 1948-1983 and tested the case of the United States of America. They followed the procedure of Hsiao (1981) and McMillin et al. (1984) and used Granger causality tests between government spending and revenues. They also included into their analysis real GNP and inflation rate. Their empirical results support the spend-tax hypothesis and suggest that limitations in spending will be effective for the economy of the United States but they cannot say that limitations of taxation will be ineffective. Von Fürstenberg et al. (1985) tested the case of the USA during the period 1954-1982 by using quarterly data. In this study they used GDP in order to control the macroeconomic effects instead of potential GNP but their results indicate also support of spend tax hypothesis in the case of the USA.

Some studies found mixed results in the relationship between public spending and revenues. These studies used data from different countries and found results indicate that causality is running from spend to tax, while in other countries the directions is the opposite (e.g. Kollias & Makrydakis, 2000; Narayan, 2005; Baharamshauh, 2007). Furthermore, there are several studies found different results for state and local governments (e.g. Marlow & Manage, 1987; Ram, 1988; Miller & Russek, 1989). Finally, Jones and Julfaian (1991) had mixed results for short run and long run.

## **2.5 Summary of Literature Review**

In summary, there are three reasons why the nature of the relationship between government expenditure and revenue is very important. Firstly, if the tax-spend hypothesis is supported, budget deficits can be avoided by implementing policies that stimulate government revenue. Secondly, if the bi-directional causality does not hold, it means that government revenue decisions are made independent from expenditure decisions. This can cause high budget deficits and government expenditure rise faster than government revenue. Finally, if the spend-tax hypothesis is supported, it means that the government spends first and pays for this spending later by raising taxes. This will have as a result a fear of paying more taxes in the future and will encourage the outflow of capital.

There is a wide consensus that an improvement in the long-run economic efficiency can be achieved by reducing significantly government activities. In a country where the government spending to GDP is extremely high it creates significant inefficiencies in the operation of the economy such as unemployment, high inflation and huge public debt. The empirical evidence on budget sustainability is generally mixed. Therefore the question of budget sustainability in Kenya, as is elsewhere, is an empirical one.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter outlines the methodology used to conduct the study. Section 3.2 explains the research design that will be used, section 3.3 describes the target population, and section 3.4 also describes data collection procedures and instruments to be used. Section 3.5 discusses data analysis.

#### **3.2 Research Design**

The study employs an empirical research design since the question of direction of relationship is an empirical issue. This will allow the data to be analyzed and allow the determination of the relationship between government expenditure and tax revenue in Kenya. Therefore the study will employ quantitative method through analysis of the time series data using various models – cointegration analysis, causality and long-run equilibrium analysis.

#### **3.3 Data Collection**

The sample period of the study consists of monthly observations of government revenue and expenditures from 1966 to September 2013. The sample consists of monthly data of government expenditures and revenues which cover the period of September 1999 to June 2013 in millions of shillings. The data are obtained from the Annual Economic Reviews and Statistical Abstracts of Kenya.

### **3.4 Data Analysis**

This study will employ unit root tests, cointegration analysis, estimation of long-run equilibria and Granger causality tests to examine fiscal sustainability in Kenya.

#### **3.4.1 Unit Root Tests**

In this study, we use the Augmented Dickey-Fuller (ADF) unit root test to examine the stationarity properties of the time series before carrying out the cointegration analysis. Overall, we found a realization of an  $I(1)$  stochastic process from the ADF (Dickey and Fuller, 1981) testing procedure.

#### **3.4.2 Cointegration Tests**

Table I presents the Johansen and Juselius (1990) cointegration test results with and without the adjustment factor. We are aware of the fact that the standard Johansen's likelihood ratio trace test for making inference on cointegrating rank is biased when the sample size is small as in our case.

#### **3.4.3 Estimation of Long-run Equilibria**

In this study, we follow the dynamic ordinary least squares (DOLS) method proposed by Stock and Watson (1993) in estimating the long-run equilibrium relationship between government revenues and expenditures. This is because the DOLS is a more robust test in which it can correct for possible simultaneity bias among the regressors by the inclusion of lagged and lead values of the first difference in the regressors. In addition, it allows for

the dynamic estimation of cointegration vectors for systems involving deterministic components.

The study tests whether the cointegration coefficient  $b-1$  (strong form of sustainability condition) is insignificantly different from 1. From Table 2, the estimated  $b$  was 0.776, which is not close to unity or  $0 < b < 1$ . The null hypothesis of  $b=1$  (strong form) is decisively rejected at conventional significance levels ( $P=0.00$ ). The empirical results suggest that government revenue (GR) and government expenditure (GE) are cointegrated with the cointegration coefficient less than 1 implying that the fiscal stance satisfying the weak form of sustainability condition. The results seem to be robust from the standard regression assumptions in terms of serial correlation of residuals; autoregressive conditional heteroscedasticity (ARCH) effects; mis-specification of functional form (RESET test); non-normality (Jarque-Bera test); and heteroscedasticity of residuals (White test).

$$GR_t = a_i + b_i GE_t + \sum_{j=k}^k c_j GE_{t-j} + \mu_i \quad (6)$$

.Estimation of DOLS is based on the period from 1999 to June 2013 with four lags and four leads of first-differenced explanatory variables. There are five diagnostic checks: AR(2) is a test of 2<sup>nd</sup> order serial correlation using Breusch-Godfrey serial correlation LM Test. ARCH (4) is an 4<sup>th</sup> order test for autoregressive conditional heteroscedasticity. Ramsey's RESET (regression specification test) uses the square of the fitted values. J-B (Jarque-Bera) is the test of the normality of the residuals. The White general heteroscedasticity test is based on the regression of squared residuals on squared fitted values. Parenthesized values are the probability of rejection (p-value).

Besides that, we utilize the CUSUM square (CUSUMSQ) stability test for the estimated model. If the plot of the (CUSUMSQ) sample path moves outside the critical region (5% significant level), the null hypothesis of stability over time for intercept and slope parameters is rejected. The null hypothesis of parameter stability cannot be rejected at the 5% level of significant, this because the plot of the CUSUMSQ test was fluctuates inside the 5% critical band. Thus, this implies that the model is indeed stable over the estimated period.

#### **3.4.4 Granger Causality Tests**

The modified WALD (MWALD) for testing Granger non-causality linkages proposed by Toda and Yamamoto (1995) will be estimated with the Seemingly Unrelated Regression (SUR) to examine the causal interaction between government expenditure and revenue in Kenya (see also Rambaldi and Doran, 1996). This method allow causal inference to be conducted in the level VARs that may contain integrated and (non-) cointegrated processes whether the individual variables are  $I(0)$ ,  $I(1)$  or  $I(2)$  process. More importantly, the procedure overcomes the pre-test biases that practitioners may be confronted with the Vector Error Correction Model (VECM) and other modeling formulation involving unit root and cointegration tests. To use the MWALD test, we have to decide the maximal order of integration  $d_{\max}$  for the variables in the system and the optimal lags structure ( $k$ ) for the VAR model. The augmented VARp ( $k + d, 7iax$ ) model is expressed as follows:

$$\begin{aligned}
GE_t &= a_{11} + b_{11}GE_t + \sum_{j=k}^k c_i GE_{t-j} + \mu_i \\
GR_t &= a_{21} + b_{22}GR_t + \sum_{j=k}^k c_i GR_{t-j} + \lambda_i
\end{aligned} \tag{7}$$

To test whether GE does not Granger causes movement in GR, the null hypothesis  $H_0$ :

$\beta_{11}^{(2)} = \beta_{12}^{(2)} = 0$  in the first equation of the system (if  $k=2$  and  $d_{\max}=1$ ). The existence of the causality from GE to GR can be established through rejecting the above null hypothesis, which requires finding the significance of the MWALD statistics for  $GE_{t-1}$  and  $GE_{t-2}$  identified above while  $GE_{t-3}$  is left unrestricted as a long run correction mechanism (spend and tax hypothesis). Similar analogous restrictions and testing procedure can be applied in testing the hypothesis that GR does not Granger cause movement in GE, i.e. to test  $H_0: \beta_{21}^{(1)} = \beta_{22}^{(1)} = 0$  of the second equation of the system (Eq. 6). This would be in line with Friedman's (1978), tax-and-spend hypothesis. This procedure can be easily generalized for a larger number of lags in the VAR system. The causality tests will provide a useful indicator of how the authorities may respond to the imbalances in the future.



## CHAPTER FOUR

### DATA ANALYSIS, RESULTS AND DISCUSSION

#### 4.1 Introduction

This chapter presents the results obtained from data analysis. Section 4.2 presents the summary statistics, section 4.3 examines the results of Granger causality tests, section 4.4 discusses the results. Lastly, section 4.5 summarises the results.

#### 4.2 Summary Statistics

**Table 4.1 Summary Statistics for Government Tax Revenue and Spending  
September 1999 to June 2013**

	<b>TAX</b>	<b>EXPENDITURE</b>
<b>Mean</b>	180793.7	258110.6
<b>Median</b>	141846.0	188979.5
<b>Maximum</b>	739894.0	1263372.
<b>Minimum</b>	9998.000	13826.00
<b>Std. Dev.</b>	146827.0	225816.5
<b>Skewness</b>	1.310747	1.590118
<b>Kurtosis</b>	4.490845	5.718295
<b>Jarque-Bera</b>	60.63235	116.6869

Source: Central Bank of Kenya

Table 4.1 shows that both government spending and tax revenues are positively skewed. This means that they are more likely to increase than decrease over time. These variables are also leptokurtic. Their respective excess kurtosis are 60.63 and 116.69 for government tax and government spending respectively. Therefore, there are likely to be many large increases in the government taxation and government expenditure than cuts of similar magnitude in these variables.

### **4.3 Results of the Empirical Models**

#### **4.3.1 Results of Correlation Analysis**

**Table 4.2 Correlation between Government Tax Revenue and Spending September 1999 to June 2013**

	<b>TAX</b>	<b>EXPENDITURE</b>
<b>TAX</b>	1.0000	0.9935
<b>EXPENDITURE</b>	0.9935	1.0000

**Source: Research Findings**

From Table 4.2 there is an almost perfect correlation between government spending and tax revenue. This implies that these two variables move in the same direction at the same time.

### 4.3.2 Results of the Unit Root Tests

**Table 4.3 Unit root Tests for the Government Spending and Tax Revenue Variables**

	<b>Levels</b>	<b>DF</b>	<b>Decision</b>
<b>EXPENDITURE</b>	-0.5009	-7.039 <sup>b</sup>	Accept H <sub>0</sub>
<b>TAX</b>	-0.7742	-5.693 <sup>b</sup>	Accept H <sub>0</sub>
	<b>Differences</b>	<b>ADF</b>	<b>Decision</b>
<b>ΔEXPENDITURE</b>	-6.9057	-1.334 <sup>a</sup>	Reject H <sub>0</sub>
<b>ΔTAX</b>	-7.2190	0.329 <sup>a</sup>	Reject H <sub>0</sub>

**Source: Research Findings**

Critical values for OF and ADF are as follows: at 1% -4.04, at 5% -3.45(Fuller 1976, p.373, Table 8.5.2). The variables were lagged once.  $\Delta$  denotes the first difference operator; SP = stock price index; EX = nominal exchange rate. <sup>a</sup> statistical significance at 5% level. <sup>b</sup> statistical significance at 1% level.

The stationarity test was performed in level forms and first differences for government spending and tax revenue. In particular, it was tested whether stock prices and tax revenue are integrated of order zero,  $I(0)$ , that is whether Government Spending and Tax Revenue are stationary. Next the ADF test was performed based on the standard regression and a time trend. The results show that all variables are not stationary in level forms; Both the Dickey-Fuller (DF) and the augmented Dickey-Fuller (ADF) reject the null hypothesis at the 5% and 1% levels of significance after the variables have been first

differenced. Thus the variables are integrated of order one,  $I(1)$  and therefore the classical Granger-causality test is inappropriate in this case.

These results indicated the use an error correction model (ECM) to proceed instead of the classical Granger-causality test since the two variables are co-integrated. Miller and Russek (1990) have shown that, Granger causality tests are misspecified if they are applied to standard vector autoregressive form to differenced data for co-integrated variables.

### 4.3.3 Results of the Error-Correction Model

**Table 4.4 Full Information Estimates of the Error-Correction Model** September 1999 to June 2013

<b>Equation</b>	<b>Exchange rates causes Stock prices</b>	<b>Granger- Stock prices causes exchange rates</b>
Dependent variable	$\Delta EXP$	$\Delta TAX$
Constant	15.46	-0.08
Error correction term (ECT)	-0.7346 (-4.085) <sup>a</sup>	-0.0831 (-0.068)
$\Delta EXP_{t-1}$	-0.0098 (-0.886)	0.06841 (0.486)
$\Delta TAX_{t-1}$	0.0103 (0.182)	-0.5218 (-3.906)

Notes: t-statistics are in parentheses <sup>s</sup> significance at the 1% level.

**Source: Research Findings**

Table 4.4 reports the short-run coefficient estimates obtained from the ECM version of the ARDL model. The error correction term indicates the speed of the equilibrium restoring adjustment in the dynamic model. The ECM coefficient shows how quickly/slowly variables return to equilibrium and it should have a statistically significant coefficient with a negative sign. Bannerjee et al. (1998) holds that a highly significant error correction term is further proof of the existence of a stable long-term relationship. Table 4.4 shows that the expected negative sign of the ECM is highly significant. The estimated coefficients of the ECM (-1) is equal to -0.7346 when EXP is as a dependent variable; suggesting that deviation from the long-term GE path is corrected by 73 percent over the following year, thus 73% of the budgetary disequilibrium is mitigated within 1 year.

Although, the long-run relationship between the variables indicating the existence of causality between variables at least in one direction, but cannot determine direction of granger causality. As explained earlier, in this study error correction model applied for causality test. The short-run causality is supported by the *F*-statistics, which are statistically significant in the both government revenue and government expenditure equation. Results show that the coefficients on lagged TAX in the EXP equation to be significant at the 5% level, also while those on lagged EXP in the TAX equation are significant, the conclusion is that there is a bidirectional short run causal relationship. The coefficients on the ECTs in the GE equation and in the TAX equation are significant at the 1% level. Therefore, the conclusion is that there is a bidirectional long-run causal relationship.

#### 4.3.4 Results of the Granger Causality Test

**Table 4.5 Granger Causality Test for the Government Spending and Tax Revenue**

**Variables September 1999 to June 2013**

<b>Null Hypothesis:</b>	<b>Obs</b>	<b>F-Statistic</b>	<b>Probability</b>	<b>Decision</b>
EXPE does not Granger Cause TAX	158	2.26499	0.10730	Reject H <sub>0</sub>
TAX does not Granger Cause EXPE		2.24704	0.10919	Reject H <sub>0</sub>

**Source: Research Findings**

Table 4.4 reports the results of the Granger causality test. The findings show that there is bi-directional causality between Government Spending and Tax Revenue.

#### 4.4 Interpretation of Findings

The results reported in Table 4.4 show that in the short run and long run there is bidirectional causality between government revenue and government expenditure. This outcome is consistent with Musgrave (1966) and Meltzer and Richard (1981). However, the evidence of Granger causality between government expenditure and government revenue is consistent with the findings of Payne (1998), Cheng (1999) for Chile, Panama, Brazil and Peru, Li (2001), Chang et al. (2002) for Canada, AbuaiI-Foul and Baghestani (2004) at the case of Jordan, Al-Qudair (2005), Gounder et al. (2007), Aslan and Taşdemir (2009), Chang and Chiang (2009). In addition, Wolde-Rufael (2008) finds a same result for Mauritius, Swaziland and Zimbabwe.

The policy implication of the results is that there is interdependence between government expenditure and revenue. This implies, as suggested by the results of correlation analysis, that the government make its expenditures and revenues decision simultaneously. Therefore, the Treasury should increase tax revenues and reduce expenditure simultaneously in order to manage the budget deficits.

This study examined the causal relationship between government expenditure and revenue. The study applied the bound testing approach to cointegration, ARDL the ECM and the causality test. The study tested whether there is unidirectional causality or bidirectional causality between government spending and government taxation.

The results show that there is bidirectional causality from government revenue to government expenditure. Therefore, the results support the fiscal synchronization hypothesis. The results indicated that deviation from the long-term growth rate in government expenditure (revenue) is corrected by approximately 73 percent in the following year.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter presents the summary and conclusions of the study. Section 5.2 presents the summary of the study; section 5.3 draws the conclusions, section 5.4 discusses the limitations of the study. Lastly, section 5.5 is the recommendation for further research.

#### **5.2 Summary**

This study examined the causal relationship between government expenditure and revenue. The study applied the bound testing approach to cointegration, ARDL the ECM and the causality test. The study tested whether there is unidirectional causality or bidirectional causality between government spending and government taxation.

The results show that there is bidirectional causality from government revenue to government expenditure. Therefore, the results support the fiscal synchronization hypothesis. The results indicated that deviation from the long-term growth rate in government expenditure (revenue) is corrected by approximately 73 percent in the following year.

The policy implication of the results shows that there is a relation between government expenditure and revenue. The government makes its expenditures and revenues decision simultaneously. Therefore, the Treasury should increase revenues and decrease



expenditures simultaneously in order to manage the budget deficits. Increasing government expenditure stimulates economic activities, which in turn increase government revenues. In addition, the bidirectional causality between government expenditure and revenues might complicate the government's efforts to control the budget deficit.

### **5.3 Conclusion**

From the results presented in chapter four the study draws the following conclusions. First, there is bidirectional causality between government spending and tax revenue in Kenya. Second, the time series data for government spending and tax revenue are non-stationary and integrated of order one. Hence, the two variables are cointegrated.

### **5.4 Recommendations for Policy**

First, the policy implication of the results is that the government makes its expenditures and revenues decision simultaneously. Therefore, the Treasury should increase revenues and decrease expenditures simultaneously in order to manage the budget deficits. Increasing government expenditure stimulates economic activities, which in turn increase government revenues.

Lastly, the bidirectional causality between government expenditure and revenues might complicate the government's efforts to control the budget deficit. The reason is that the government cannot decrease spending and increase tax revenue simultaneously.

### **5.5 Limitations of the study**

First, this study examined data from June 1999 to March 2013. Therefore, the findings of this study cannot be generalized over the period that precedes the sample period for the study.

Second, the study employed data sampled at a monthly interval. Therefore, the results cannot be generalized to other sampling intervals.

Thirdly, the study does not take into account the effect of changing price levels on government expenditure. When inflation rises, in general, prices increase thereby increasing government expenditure.

### **5.6 Recommendation for Further Research**

First, this study recommends that future studies re-examine the causal relationship between government spending and tax revenue in Kenya for the period not covered by this study.

Second, this study recommend that future studies examine the relationship between government expenditure and government tax revenue at other sampling intervals to determine if the findings are dependent on the sampling interval.

Third, future studies should take into account the impact of changing price levels on the relationship between government spending and government tax revenues.

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## APPENDICES

### APPENDIX I: GOVERNMENT SPENDING

FISCAL	
YEAR*	TOTAL
	EXPENDITURE
	REVENUE
Sep-99	44,478
Dec-99	86,435
Mar-00	137,761
Jun-00	175,119
Jul-00	15,418
Aug-00	31,669
Sep-00	49,810
Oct-00	69,785
Nov-00	85,948
Dec-00	104,912
1-Jan	123,391
1-Feb	142,028
1-Mar	166,023
1-Apr	187,699
1-May	208,360
1-Jun	232,921
1-Jul	13,826
1-Aug	34,301
1-Sep	48,982
1-Oct	65,656
1-Nov	87,617
1-Dec	102,161
2-Jan	122,427

2-Feb	140,384
2-Mar	157,592
2-Apr	178,254
2-May	199,168
2-Jun	226,915
2-Jul	18,788
2-Aug	40,394
2-Sep	57,835
2-Oct	79,246
2-Nov	98,673
2-Dec	120,750
3-Jan	143,691
3-Feb	166,298
3-Mar	182,121
3-Apr	204,334
3-May	231,008
3-Jun	264,144
3-Jul	21,550
3-Aug	43,728
3-Sep	61,255
3-Oct	81,284
3-Nov	99,017
3-Dec	121,787
4-Jan	146,010
4-Feb	166,639
4-Mar	189,421
4-Apr	212,748
4-May	231,631
4-Jun	282,187
4-Jul	20,442

4-Aug	42,375
4-Sep	65,938
4-Oct	88,779
4-Nov	113,258
4-Dec	133,636
5-Jan	158,123
5-Feb	177,963
5-Mar	202,253
5-Apr	229,954
5-May	260,792
5-Jun	303,705
5-Jul	24,667
5-Aug	57,152
5-Sep	86,552
5-Oct	117,838
5-Nov	141,294
5-Dec	178,688
6-Jan	209,791
6-Feb	235,256
6-Mar	268,415
6-Apr	293,650
6-May	328,887
6-Jun	363,871
6-Jul	25,912
6-Aug	59,357
6-Sep	94,368
6-Oct	128,369
6-Nov	157,477
6-Dec	195,625
7-Jan	219,726

7-Feb	255,437
7-Mar	297,635
7-Apr	330,864
7-May	361,686
7-Jun	406,752
7-Jul	29,293
7-Aug	69,646
7-Sep	94,822
7-Oct	142,819
7-Nov	188,538
7-Dec	221,958
8-Jan	283,616
8-Feb	313,971
8-Mar	358,594
8-Apr	393,926
8-May	448,685
8-Jun	534,841
8-Jul	29,520
8-Aug	74,643
8-Sep	110,066
8-Oct	175,858
8-Nov	210,510
8-Dec	262,945
9-Jan	301,536
9-Feb	359,383
9-Mar	390,126
9-Apr	465,124
9-May	515,703
9-Jun	595,598
9-Jul	44,788

9-Aug	97,645
9-Sep	161,013
9-Oct	210,729
9-Nov	247,746
9-Dec	296,132
10-Jan	374,246
10-Feb	440,026
10-Mar	503,084
10-Apr	565,112
10-May	644,544
10-Jun	791,793
10-Jul	35,933
10-Aug	111,784
10-Sep	163,463
10-Oct	243,482
10-Nov	303,566
10-Dec	363,299
11-Jan	434,102
11-Feb	489,364
11-Mar	555,684
11-Apr	631,061
11-May	687,625
11-Jun	817,089
11-Jul	43,719
11-Aug	95,881
11-Sep	179,625
11-Oct	248,301
11-Nov	320,069
11-Dec	430,926
12-Jan	509,200

12-Feb	586,551
12-Mar	670,182
12-Apr	748,694
12-May	826,227
12-Jun	915,888
12-Jul	50,032
12-Aug	146,185
12-Sep	232,292
12-Oct	308,459
12-Nov	403,067
12-Dec	506,412
13-Jan	589,549
13-Feb	660,191
13-Mar	774,077
13-Apr	878,172
13-May	985,521
13-Jun	1,263,372



**APPENDIX II: TAX REVENUE IN KENYA**

<b>FISCAL</b>	<b>TOTAL</b>
<b>YEAR*</b>	<b>TAX</b>
	<b>REVENUE</b>
Sep-99	35,335
Dec-99	73,198
Mar-00	109,836
Jun-00	152,444
Jul-00	9,998
Aug-00	22,346
Sep-00	37,475
Oct-00	49,681
Nov-00	63,682
Dec-00	76,969
1-Jan	90,241
1-Feb	101,786
1-Mar	115,517
1-Apr	128,085
1-May	143,685
1-Jun	163,171
1-Jul	10,026
1-Aug	23,660
1-Sep	37,230
1-Oct	48,761
1-Nov	62,550
1-Dec	76,215
2-Jan	90,212
2-Feb	102,231
2-Mar	114,716

2-Apr	127,584
2-May	143,466
2-Jun	160,394
2-Jul	10,807
2-Aug	24,206
2-Sep	38,981
2-Oct	52,478
2-Nov	66,299
2-Dec	81,948
3-Jan	96,782
3-Feb	110,021
3-Mar	124,775
3-Apr	141,737
3-May	156,917
3-Jun	176,999
3-Jul	12,716
3-Aug	26,151
3-Sep	43,578
3-Oct	58,616
3-Nov	72,868
3-Dec	91,661
4-Jan	108,080
4-Feb	123,372
4-Mar	140,719
4-Apr	161,746
4-May	177,828
4-Jun	201,544
4-Jul	14,865
4-Aug	32,475
4-Sep	53,463

4-Oct	72,842
4-Nov	91,464
4-Dec	116,617
5-Jan	138,298
5-Feb	155,059
5-Mar	174,862
5-Apr	196,846
5-May	216,775
5-Jun	242,927
5-Jul	14,154
5-Aug	33,861
5-Sep	58,129
5-Oct	78,428
5-Nov	97,976
5-Dec	123,436
6-Jan	145,000
6-Feb	163,386
6-Mar	186,205
6-Apr	206,676
6-May	231,776
6-Jun	305,040
6-Jul	20,787
6-Aug	42,231
6-Sep	67,924
6-Oct	90,428
6-Nov	112,970
6-Dec	140,221
7-Jan	165,473
7-Feb	185,723
7-Mar	211,973

7-Apr	243,952
7-May	271,767
7-Jun	305,040
7-Jul	29,179
7-Aug	55,911
7-Sep	87,194
7-Oct	116,814
7-Nov	146,096
7-Dec	174,197
8-Jan	207,445
8-Feb	232,305
8-Mar	260,903
8-Apr	295,750
8-May	328,450
8-Jun	363,621
8-Jul	29,452
8-Aug	57,410
8-Sep	94,667
8-Oct	126,818
8-Nov	156,692
8-Dec	199,197
9-Jan	233,418
9-Feb	271,011
9-Mar	305,986
9-Apr	350,074
9-May	390,213
9-Jun	417,354
9-Jul	33,410
9-Aug	63,724
9-Sep	106,704

9-Oct	141,955
9-Nov	176,478
9-Dec	224,451
10-Jan	259,767
10-Feb	290,690
10-Mar	329,879
10-Apr	376,403
10-May	415,380
10-Jun	479,568
10-Jul	33,845
10-Aug	70,044
10-Sep	119,470
10-Oct	162,648
10-Nov	203,025
10-Dec	257,979
11-Jan	302,869
11-Feb	339,789
11-Mar	385,369
11-Apr	438,905
11-May	489,735
11-Jun	557,171
11-Jul	36,753
11-Aug	78,451
11-Sep	135,905
11-Oct	179,392
11-Nov	225,147
11-Dec	289,675
12-Jan	332,835
12-Feb	375,669
12-Mar	426,272

12-Apr	488,853
12-May	544,007
12-Jun	626,445
12-Jul	40,395
12-Aug	89,569
12-Sep	151,062
12-Oct	200,992
12-Nov	255,823
12-Dec	324,709
13-Jan	380,793
13-Feb	428,830
13-Mar	483,594
13-Apr	596,623
13-May	625,524
13-Jun	739,894