

**TAX REVENUES AND ECONOMIC GROWTH:  
AN EMPIRICAL CASE STUDY OF KENYA**

*By*

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fulfillment of requirements for the award of Masters of Arts degree in Economics**

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## DECLARATION

This paper is my original work and to the best of my knowledge has not been presented for the award of a degree in any other university.

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## APPROVAL

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Despite their contributions I admit that all views expressed herein are my own and I am wholly responsible for any errors in this paper.

May God bless you all.

## **DEDICATION**

This project is dedicated to my beloved husband Charles, daughter Charity, daughter Joy and son Caleb for their sincere love, prayers and moral support.

## LIST OF ABBREVIATIONS

<b>ADC:</b>	Agricultural Development Corporation
<b>AIA:</b>	Appropriation in Aid
<b>ARDL:</b>	Auto Regressive Distributed Lag
<b>BOP:</b>	Balance of Payment
<b>COMESA:</b>	Common Market for East and Southern Africa
<b>EAC:</b>	East Africa Community
<b>ECM:</b>	Error Correction Model
<b>GOK:</b>	Government of Kenya
<b>ICC:</b>	International Criminal Court
<b>IGAD:</b>	Inter – Governmental Authority on Development
<b>KARI:</b>	Kenya Agricultural Research Institute
<b>KEMRI:</b>	Kenya Medical Research Institute
<b>FDI:</b>	Foreign Direct Investment
<b>GDP:</b>	Gross Domestic Product
<b>GNP:</b>	Gross National Product
<b>GoK:</b>	Government of Kenya
<b>IMF:</b>	International Monetary Fund
<b>JB:</b>	Jarque-Bera Normality Test
<b>KRA:</b>	Kenya Revenue Authority
<b>NICs:</b>	Newly Industrialized Countries
<b>NSE-20 SI:</b>	Nairobi Stock Exchange 20 Share Index
<b>OECD:</b>	Organization for Economic Co-operation and Development
<b>OLS:</b>	Ordinary Least Square
<b>RandD:</b>	Research and Development
<b>UNDP:</b>	United Nations Development Programme
<b>UNICEF:</b>	United Nation Children`s Fund
<b>VAT:</b>	Value Added Tax
<b>SLS:</b>	Two Stage Least Squares

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## ABSTRACT

The relationship between economic growth and tax revenues is a debate that has existed for a long time in the living history. The discussion on the two variables has exhibit contentions from academicians and policy makers with one school holding on the view that taxation is bad for the economy while the other school believe that taxation is good for the economy. Valuable empirical literature exists that studies the relationship between economic growth and tax revenues though most of them analyze the variable at cross – country level. However, not much literature exists exploring the relationship between the two variables at country specific level. The object in this study was thus to fill in the literature gap in country specific studies by exploring the relationship between economic growth and tax revenues in Kenya, and also determining causation between the variables.

Three approaches were utilized to accomplish the study objective. The first method involved a classical linear regression model based on the OLS estimation method. The second method used cointegration test while the third method involved performing a granger causality test on all the variables. The results of the study revealed a positive relationship between economic growth and tax revenues. All the tax variables; income tax, import duties, excise duties and sales tax/VAT showed a positive effect on GDP with income tax posing the highest effect followed by sale tax/VAT, then excise duties and finally import duties showing the least effect. The cointegration revealed that there is at most one cointegrating equation while the Granger Causality test indicated a bi-directional relationship between economic growth and excise duties; a unidirectional relationship between income tax and economic growth, and economic growth and sales tax/VAT; however, there existed no causation between economic growth and import duties.

These results suggest that the government should desist from concentrating on increasing tax revenues by increasing tax levels but instead employ a tax structure that enhances the tax base thus improving growth rate. In addition, the government should utilize the positive relationship between tax and economic growth to realize efficient government investment expenditure that spars growth in turn boosting the revenue levels. Finally, the government should particularly

target income taxes, sales tax/VAT and excise taxes for its revenues by improving the tax collection system, eliminating fraud, evasion and corruption.

# CHAPTER ONE

## 1.0 INTRODUCTION

### 1.1 BACKGROUND

In economics, the major challenge of national governments worldwide is to perpetually increase the welfare of the citizenry through the implementation of appropriate economic policies and programs by direct participation in domestic and global economic activities. Governments attempt to achieve this national objective by providing public goods, such: as roads, bridges, dams, ports and public services such as education, security, health, sanitation etc that form economic and social infrastructure. The adequacy of such infrastructure is a firm foundation for a country's economic growth and development. Ideally, all public expenditures should: contribute to the creation and fostering of an enabling domestic economic environment for local and foreign investments; boost both internal and external trade; attract tourists and other foreign visitors; increase agricultural productivity; and encourage craftsmanship and small scale industrial production. All these economic activities generate gainful employment and accelerate economic growth and development in the short, medium and long terms.

Public expenditure by any governmental authority whether central, regional or local, is financed primarily through tax revenues. The impact of such taxes on economic growth can only be positive if the taxes levied create the right incentives (depending on economic activities) for the efficient allocation of resources in a country. In addition, in order to improve the welfare of its citizens, a prudent government adopts fiscal policies with a tax structure that maximizes positive externalities, and that minimize negative externalities, such as pollution and corrupt practices.

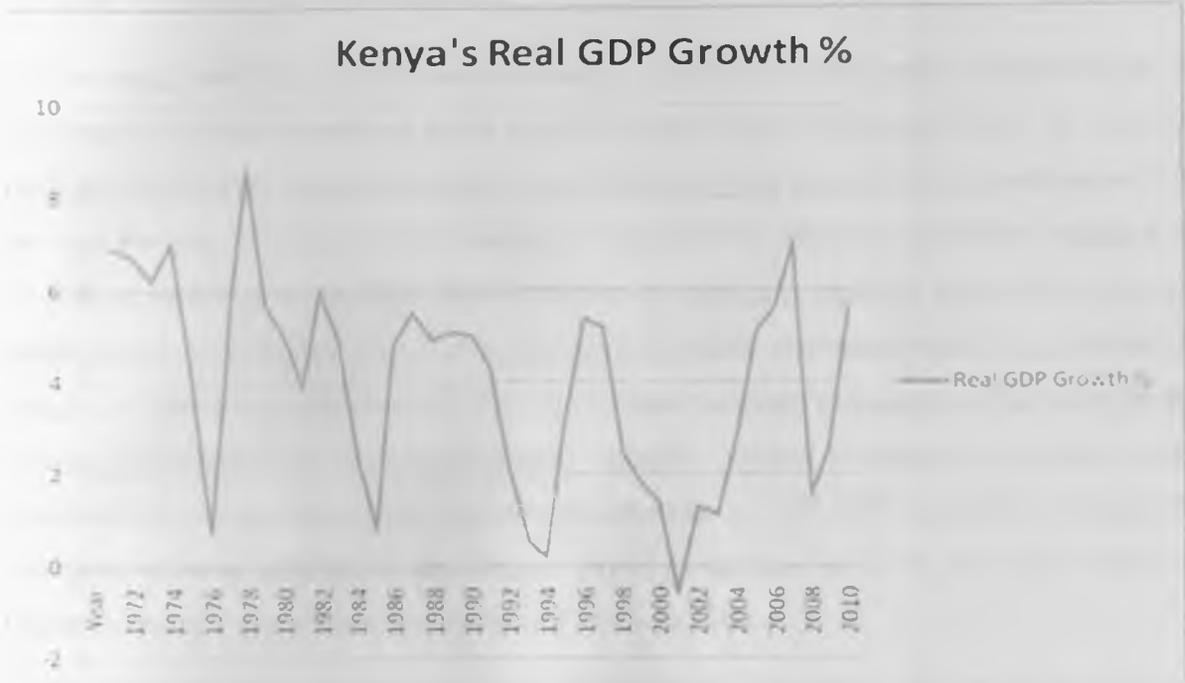
Musgrave and Musgrave (1980) postulated a law of public expenditure growth in the United States of America, where, as national income per capita grew, so did government tax revenue as a percentage of Gross National Product (GNP). The implication here is that as the U.S. registered economic growth, so did the country's tax effort. The authors' findings are in conformity with widely acknowledged empirical findings in the discipline of development economics that: as a country's economy grows, its tax base grows commensurately. However, growth rates of both the economy and tax capacity tend to be different from country to country

and from period to period, due to both short and long term causative factors, including internal and external economic shocks. The low taxable capacity in developing countries like Kenya was noted as far back as when the country gained its independence when Kaldor (1964) noted that; whereas developed countries' tax revenue averaged at least 25% of GNP, in developing countries they barely surpassed 15%. According to the World Bank (1996), tax revenue accruing to the government of Kenya (GOK) increased from 19.8% of GNP in 1980 to 22.4% in 1994. In comparison, the ratios in 1994 were, respectively, 31.9% for the United Kingdom and 38.0% for France, two countries among those the bank classifies and are globally recognized as high income or developed economies. The upward trend in Kenya's tax effort, though relatively small, is an indicator that the country was on the right economic growth path as far as taxation is concerned.

## **1.2 KENYA'S ECONOMIC GROWTH TRENDS**

The Kenyan economy grew robustly in the first decade of the country's independence 1963-1974, with the growth in real Gross Domestic Product (GDP) averaging 6% per year (Ikiara and Killick 1981). This momentum was briefly interrupted by an external shock in the form of a sharp increase in petroleum products due to the Middle-East war of October 1973 that led to a global economic crisis as petroleum prices increased exponentially and world trade and investor confidence dropped. However, the economy bounced back on the back of high commodity prices, beginning with coffee and later tea that resulted from a sharp drop in coffee exports from Brazil (the world's leading producer and exporter) due to a severe frost, a classic example of a domestic shock arising from natural phenomena and culminating in a global economic crisis. In Kenya the *el nino* phenomenon that disrupted economic activity including tea, and horticultural exports also had a global impact on supply and prices but not comparable to the Brazilian case. Fig 1 below demonstrates Kenya's economic growth trends in the 40-year period, 1971-2010:

Figure 1: GDP Growth Rate (1971 - 2010)



Source: Republic of Kenya, *Statistical Abstract*, various issues.

Economic growth hit a peak of 8.6% in 1977 before registering a down ward trend well into the early 1980s. The government took advantage of the high growth rate of the mid-1970's (and the tax revenue accruing from it) to undertake large capital investments in the transport sector that included the construction of two modern international airports in Nairobi and Mombasa, an oil pipeline from Mombasa to Nairobi and modernizing the fleets of Kenya Airways and Kenya Railways, respectively.

A sharp drop in economic growth between 1982 and 1984 is partly attributable to political instability that culminated in an attempted *coup d'etat* in August 1982. In that year, the Government with the support of the International monetary Fund (IMF) and the World Bank formulated a revised macroeconomic policy based on a structural adjustment program through *Sessional Paper No. 4 of 1982 on Development Prospects and Policies* (Republic of Kenya 1982). The thrust of the program was a shift from import substitution industrialization to emphasis on export-led growth, elimination of import concessions and quantitative restrictions, reduction of the budget deficit, an increase in interest rates to encourage savings and dampen

inflationary pressures and reduced government crowding out of the private sector in the foreign exchange market.

For the long term, the Government enunciated a macroeconomic policy framework for the development of the economy up to the year 2000 in the form of *Sessional Paper No. 1 of 1986 on Economic Management for Renewed Growth* that targeted an economic growth rate of 5.6% per year between 1986 and 2000 (Republic of Kenya 1986). While the economy stabilized and growth increased to an average slightly above 4% per year, political instability and poorly managed economic liberalization led to declining economic performance and high inflation that peaked in 1994 at an unprecedented 46%. Government austerity measures and the resumption of foreign development aid, including budgetary support, resulted in improved economic growth that was short-lived as the *el nino* weather phenomenon in 1997-1998 followed by drought that adversely affected agricultural and electric power production led to an economic slump that bottomed out at a recessionary contraction of -0.6% in 2000.

In the new millennium, the Kenyan economy registered increasing growth partly attributable to increased investor confidence due to a government regime change in 2003 and sound economic management that included increased government expenditure on public works programs and free primary education. The upward trend in economic growth was abruptly curtailed to 1.5% in 2008 following violence and economic disruption that followed the disputed results of presidential elections of December 2007. Worse, a global economic crisis stemming from a meltdown of financial institutions in the United States, the world's largest economy by far, had an adverse impact on the domestic economy and the recovery beginning 2009 to date was relatively modest in that year at 2.6% before rising to a more robust 5.6% in 2010. However, high petroleum and food prices in the first half of 2011 has pushed inflation beyond a single digit to 12.95 in May 2011 and the weakening of the Kenya Shilling from 78.03 to the U.S. \$ at the end of 2010 to over 90 shillings in November 2011 are pointers to a gloomy prospect for the Kenya's economic in the near term.

### 1.3 GOVERNMENT OF KENYA TAX REVENUE TRENDS

The government of Kenya levies taxes that generate revenue for the provision of a variety of public goods and services which are not efficiently or adequately supplied by the private sector through free market forces mechanism. GOK's public expenditure programs include the following: Education, such as free primary education; Health, including vaccination and provision of anti-retroviral drugs (ARVs); Infrastructure, current projects include modern highways by-passing central Nairobi; National defense and internal security through the armed forces; the police, prison and intelligent services; Research and development, e.g. in agriculture research institutions include KARI; Kabete Vet Labs, and ADC while in health KEMRI is a notable example; Promotion of the country's external trade and tourism attraction through, respectively, the Export Promotion Council and Kenya Tourism Board; Diplomatic services, that safeguard and promote the nation's strategic interests internationally; and Provision of capital for employment creation through, for example, enterprise development funds for women and youth groups among others.

According to official GOK statistics, Kenya's tax revenue trends between 1970 and 2010 were as shown in the graph below:

**Figure 2: Kenyan's Tax Revenue Trends (1970 - 2010)**



Source: Republic of Kenya, *Statistical Abstract*, various issues.

**Table 1: Kenya's Tax Revenue and Economic Trends (2004 - 2010)**

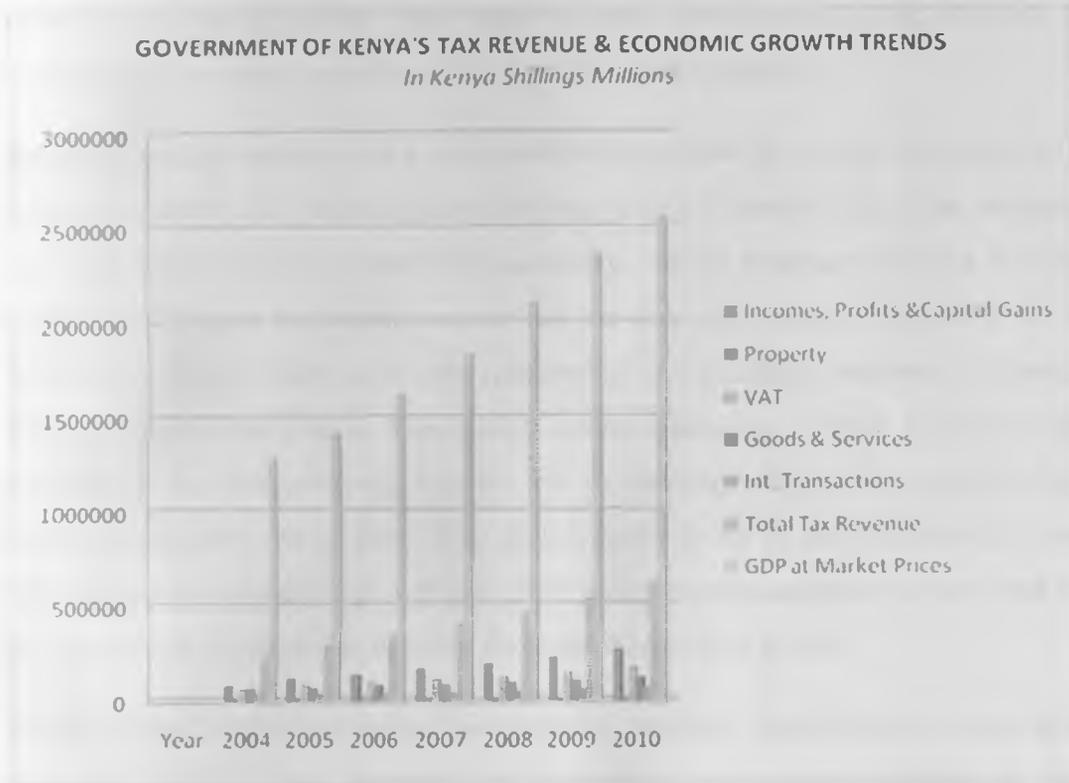
*In Kenya Shillings Millions*

Year	Tax on Incomes/Profits/Capital Gains	Property Tax	Value Added Tax	Tax on Goods and Services	Taxes on International Transactions	Total tax Revenue	GDP at Market Prices	Tax Ratio %	G
2004	77,410	131	58,853	57,490	30,264	226,152	1,286,462	17.6	
2005	114,629	190	79,926	61,710	30,831	289,291	1,415,823	20.4	
2006	130,719	253	96,497	76,111	29,861	335,447	1,622,591	20.7	
2007	165,078	331	111,905	80,736	40,235	400,292	1,833,511	21.8	
2008	194,155	328	126,854	93,052	44,024	460,421	2,11,173	21.7	
2009	228,168	254	146,792	100,492	57,746	535,461	2,365,453	22.6	
2010	268,292	303	172,360	114,759	67,520	625,244	2,551,161	20.8	
<b>Average</b>	<b>168,350</b>	<b>256</b>	<b>113,312</b>	<b>83,479</b>	<b>42,926</b>	<b>410,330</b>	<b>1,883,739</b>	<b>21.4</b>	

Source: Republic of Kenya, *Economic Survey*, various issues.

From the trends, Kenya's tax ratio averaged 21.4% between 2004 and 2010 shown in the table 1 above. However, while the Kenyan economy grew steadily at an increasing rate between 2004 and 2007 (before being adversely affected by post election violence in 2008), as summarized in the table above and in the graph below, tax revenue increased at rates that were not commensurate thus the relationship requires empirical research since tax should grow in line with economic growth (buoyancy). Further, given that the government's capacity to raise taxes is closely linked to its ability to deliver economic growth, the relationship between the two should be scrutinized.

**Figure 3: Kenya's Revenue and Economic Growth Trends (2004 - 2010)**



Source: Republic of Kenya, *Economic Survey*, various issues.

In an attempt to elaborate the scenario, the causal relationship between the tax revenue collected by the government of Kenya and the country's economic growth in the last four decades will be empirically analyzed.

#### 1.4 STATEMENT OF THE PROBLEM

From the above analysis of official GOK statistics, Kenya's tax ratio averaged 21.4% between 2004 and 2010, while economic growth rate in real terms averaged 4.9% per year. While the tax ratio in 2007 was 21.8%, close to the 7-year average, economic growth peaked at 7.1%. This contrasts sharply with the following year, 2008 when the tax ratio remained almost unchanged at 21.7% but the economic growth plunged to its lowest at 1.6% as indicated by the data above. This mixed trend gives a paradoxical relationship between tax revenues and economic growth which is not sufficiently addressed in the empirical literature. The literature also fails to show the possibility of a reverse causation between tax and economic growth. The aim in this study is

therefore to contribute to the tax policy-growth literature by examining the case of Kenya looking in particular if there is any evidence that taxation have a causal role in explaining the process of economic growth. This empirical study also determines the causality between tax variables and economic growth and the direction of such causality.

Preceding studies indicate that a well stabilized and agile tax system is a gateway to incessant economic growth. Tax revenues therefore emerge as a necessary step in the attempt to enhance economic growth and prosperity within a country. The tax revenues in Kenya as indicated by the statistics have been fluctuating and so has the economic growth; this calls for the need to investigate whether there exist any relationship and causation between the variables. These findings would contribute to fiscal policy recommendations; whether to shift focus on the tax structure or the revenue levels with the aim to ensuring efficiency in taxation thus enhancing economic growth in the country. This study majorly focus on the relationship between Kenyan tax revenues and economic growth and offers policy recommendations on how best to reform the tax system and consequently improve the level of economic growth.

Further, every country has unique geographical, political, administrative, social and, above all, economic dynamics that determine the tax regime and revenue collected on one hand and economic growth trends on the other. Country-specific in-depth case studies adopted in this research is thus useful in addressing effects of taxation on economic growth in Kenya and vice versa.

## **1.5 THE RESEARCH QUESTIONS**

In analyzing the relationship between tax revenues and economic growth in Kenya, the following questions will be addressed: how are the variables related in the long run? What is the dynamics causal relationship between the variables? From the results, what fiscal measures should the government of Kenya adopt to have an optimal tax regime i.e. where GOK maximizes tax revenue collection without reducing economic growth?

## **1.6 OBJECTIVES OF THE STUDY**

The specific objectives of the study are:

1. Examine how the variables are related in the long run:

2. Analyze the causal relationship between taxation and the country's economic growth:
3. Recommend policy measures that the government of Kenya may adopt to accelerate economic growth.

## **1.7 SIGNIFICANCE OF THE STUDY**

A study of Kenya's tax regime and its impact on long term economic growth will provide an insight on how fiscal policy changes may increase the pace of Kenya's economic growth if Kenya has to achieve Vision 2030 targets. In particular, the statistical significance of key elements in determining Kenya's economic growth is expected to shed light on the linkage between tax revenues and economic growth and how mutual causality impacts on inter-temporal economic development for the current and future generations. This will be useful to policy makers who will ensure prudent use of tax revenues to achieve economic growth.

## CHAPTER TWO

### 2.0 LITERATURE REVIEW

This section focuses on review of existing literature on the subject on the study. The first part looks at the theoretical postulations and the second part reviews the empirical research findings by authoritative economic scholars on both the global and Kenyan economies.

### 2.1 THEORETICAL LITERATURE REVIEW

Musgrave and Musgrave (1980) correctly stated that a government derives receipts to finance expenditures from taxes, charges, or by borrowing. The authors argued that a good tax structure had attributes that included: *equitability* in the distribution of the tax burden; *minimal misallocation* of resources; facilitation of *macroeconomic stability*; and *efficiency* in administration.

Kalecki (1976) explored what he termed as “the Problem of Financing Economic Development” where governments may use taxation as a tool of managing inflation in a situation where public investments are either partially or fully financed through taxes. The author argued that taxation on lower income groups reduced real wages leading to less savings and, hence, investments. While for the higher income groups, increased taxes decreased the level of consumption; with the overall effect of reducing economic growth. Since demand for goods and services is reduced by a higher tax burden across the board, inflationary pressures are minimized.

Kaldor (1963) posed that a country’s tax potential depended on per capita real income, distribution of income, structure of the national economy, political and administrative governance. According to the author, the developing country tax performance would best be measured not by static indices such as tax ratios but by dynamic means such as tax effort and income-elasticity of the tax regime.

Bird (1978) noted authority on taxation explored the use of political and administrative measures in increasing a developing country’s tax effort, whereby tax payers are compelled to save in order to minimize the tax incidence with the resultant increase in investment especially in public

projects and programs through funds mobilized from government bonds. It should, however, be noted that in both developed and developing countries, relatively attractive rates of guaranteed returns on government securities crowd out the private sector from capital markets.

Boadway and Sato (2009) observed that trade taxes were more efficient than VAT because the tax net is much broader in that even the informal sector cannot avoid paying taxes on goods taxed at a country's border point of entry. This observation is relevant to Kenya, a country that has an open economy where international trade contributes substantially to GDP.

Lewis (1966) was of the view that governments tend to avoid raising taxes because of the adverse political consequences and instead resort to printing money or creating (easy) credit a monetary policy that leads to or fuels inflation. While taxation may raise prices, depending on income and price elasticities, the development economic scholar concluded that taxation was superior to inflation for a country's capital formation.

Bilas (1990) analyzed taxation from a microeconomic perspective and stated that it was one fiscal instrument that a government may use to control monopoly power. The imposition of a fixed tax per unit, the Kenyan example being an excise tax, is the equivalent of a variable cost to the monopolist. Both the average and marginal cost curves shift upwards resulting in a fall in both output and price of the taxed commodity/service. In this regard, the tax burden is shifted to consumers, an inflationary outcome that may not be politically palatable. The government has the option of ensuring that a monopolist bears the full tax burden in the form of a fixed cost by charging and/or raising the license fee of the monopolist.

Zuvekas (1979) in discussing benefit/cost analysis contrasted the treatment of taxes and subsidies in finance and economics, respectively. While in financial analysis benefits and costs are valued at market prices with taxes being treated like any other cash flows, economists treat taxes and subsidies as transfer payments that afford a prudent government a handy fiscal policy instrument of redistributing income more equitably. Unfortunately, they tend to distort the allocation of resources and as Krueger aptly noted create room for rent seeking and corrupt practices.

Killick (1981) referred to Kenya as a classic case of "crony capitalism" and Krueger (1974) termed the major beneficiaries of government control of the economy as "the rent-seeking society". In brief, the two scholars argued persuasively that where there is tight government

control of economic activity, the major beneficiaries tend to be those who wield political power, their family members and friends and other predatory economic agents they incorporate in their wealth seeking schemes. The end result for the affected country include economic inefficiency, wastage of public resources (on, for example, “white elephant” projects), endemic corruption, capital flight and incidence of crime. The end result is gross inequitable distribution of resources that, in turn, stifle growth and grossly skew economic development. Such gross inequalities have been known to be recipes for violent social and political upheaval.

Blanchard and Perotti (2002), claim that both increases in taxes and increases in government expenditures affect investment spending negatively. Accordingly, tax reforms through raising individual and corporate taxes do not necessarily spell out economic growth through increased government revenue but they could also derail economic growth through reduced social welfare and poor investment incentives. Taxes levied to the public and business entities must be reasonable and an effective tax reform strategy should not aim at increasing the citizens’ tax burden. Instead, reforms should focus on streamlining the system and ensuring that tax proceeds are used effectively to achieve economic growth.

## **2.2 EMPIRICAL LITERATURE REVIEW**

Mashkooor (2010) study of the relationship between tax revenues and the rate of economic growth in Pakistan narrowed on the “perception that the low ratio of direct to total taxation promotes high economic growth”. The author argues that higher taxes decrease the investment rate, discourage research and development activities (that are key to higher productivity), reduce the work effort and distort both labour and capital markets. By using Pakistani data for the period 1973-2008, the author concluded that the direct tax to GDP ratio Granger caused the growth in real GDP significantly and recommended that the country should decrease its heavy reliance on indirect taxation.

Todaro and Smith (2006) found that between 1995-1997 developing countries collected an average of 18.2% of GDP in tax revenues while the OECD group of developed countries collected an average of 37.9%. The authors attributed this disparity to developed countries’ higher demand for public expenditure and greater capacity to generate tax revenues. They argued that the causality of high revenue generation is the greater rate of development though

prudent public expenditure on human capital and infrastructure lead to the causality running the other way i.e. higher tax revenue generating rising economic growth and development.

Karingi *et al* (2004) assessed the impact of economic, demographic, institutional and technological changes on fiscal policy in Kenya using the representative tax system. They found that the changes had been experienced in Kenya. They further revealed that the government had been under collecting revenues with tax efforts for VAT, excise and import duties being quite low. The authors finally concluded that the taxes for the future would be PAYE, excise tax and VAT while cautioning that the government should desist from import duties due to emerging globalization.

Bordinon (1993) in his study of tax evasion, a worldwide phenomenon Kenya included, averred that a taxpayer's wish to evade taxation is determined by his/her perception of fiscal treatment with respect to both the government's supply of public goods and the perceived behavior of the taxpayers i.e. the fairness of the tax system.

Musgrave and Musgrave (1980) by using data generated by Chelliah *et al* (1975) for 30 countries demonstrated that indeed as GNP *per capita* increased so did tax revenue as a percentage of GNP. Incidentally, Kenya emerged among the 30 as the country with the least income per head and tax ratio. The authors through regression analysis concluded that per capita income had a high explanatory value for tax ratio and tax effort.

Moyi and Ronge (2006) observed that despite the Kenya Government's tax modernization program aimed at, *inter alia*, enhanced revenue collection, improved tax administration and reduced compliance and collection costs, there were concerns that the challenges that confront the Kenya Revenue Authority (KRA) today are not much different from those it faced before the reforms. According to the authors, there also remains the perception that "tax competitiveness" (*sic*) in Kenya is relatively low and that the country is considered by both local and foreign investors as very tax unfriendly.

McLure (1972) explored how developing countries could utilize indirect taxation to raise the rate of economic development. Among author's proposed measures are: imposing charges on the benefit of using public services; levying charges on economic agents who cause pollution;

minimizing market distortion by levying taxes that vary significantly; and promoting private sector economic activity because of the taxable revenue they generate.

Shoup (1969) analyzed different economic aspects of tax administration including evasion, embezzlement, avoidance and cost of compliance. All these have a bearing on the amount of tax revenue collected and, in turn, public expenditures. The author concluded the ideal tax administration system was a self-enforcing one where tax officials' primary roles would be collecting voluntarily paid taxes and keeping appropriate records. However, the author admitted that the desire for "pecuniary gain" by both tax payers and tax collectors rendered such a system extremely difficult to implement.

Stein (1988) in his book on fiscal policy by successive United States of America Presidents from the great depression of the 1930s to the recession and economic recovery of the 1980s, a span of over half a century is an insightful study national economic policy making and implementation. One relevant aspect to Kenya is the "supply-side" economics practiced by the Reagan administration (1981-1988) to get the U.S. economy out of a recession that began in 1980. The policy included the reduction of marginal tax rates to stimulate savings and investments and a reduction of government regulation of the economy to allow the private sector to function under minimal compliant costs in terms of license fees and corporate taxes. While America's economic growth increased over time it came at a heavy inter-temporal cost in the form of record high budget deficits and international indebtedness.

Clark (1993) analyzed tax incentives for business investment. The author noted that frequent changes by the United States government in the taxation of income from capital created uncertainty among investors. He proposed a tax stimulus for investment as one way of encouraging investment growth which, in turn, would create employment and result in higher economic growth. He cited depreciation allowance and investment tax credits as example for such stimuli. The author used a logarithmic model to analyze the effect of tax on output and concluded that higher taxation led to increased accumulation of "short-lived" capital at the expense of "long-lived" assets. The result was adverse impact on long term economic growth potential.

Hatzipanayotou (1994) examined the impact of higher capital taxes on welfare in a small open economy (like Kenya's). The author concluded that such taxes reduce the domestic rate of return on capital and asserted that the optimal fiscal policy should be a zero-rate or even a subsidy on the return from domestic capital.

Pechman (1990) stated that progressive income tax was justified on the principle of *ability to pay* which is assumed by most economists to increase as income increase. In addition, it resulted in equal sacrifice by all tax payers. The author noted, however, that the effects of progressive income tax on incentives to work and save were hard to measure because the income and substitution effects of taxation work against each other and the net result could not be predicted. He cited empirical econometric studies that found higher payroll taxes reduced the work effort of both primary and secondary wage earners in the United States. Pechman concluded that income tax was distinctly superior to consumption expenditure tax because the latter causes disincentives that are detrimental to demand and hence economic growth.

Creedy (1996) compared alternative tax and transfer systems aimed at poverty alleviation. He stated that the desire (by governments) to reduce inequality usually lead to a preference for systems such as linear forms of taxation. The author, through an econometric model, derived a bell-shaped curve that represented the relationship between pre-and post- tax income and transfers and the different income groups.

Mieszkowski and Zodrow (1989) explored the Tiebout model where independent local governments implemented different expenditure and tax policies which in turn, had a direct bearing on consumer choices of residences. They argued that a property tax may be viewed as a benefit tax or user-charge for local services received. Such taxes were borne by capital holders as opposed to excise taxes affected all consumers. The authors concluded that a head or poll tax was inefficient while a tax on land rents was the most efficient means of finance because the former resulted in people migrating to avoid taxation.

Bolnick and Haughton (2001) found that excise tax on tobacco, petroleum products and alcoholic beverages raised on average, approximately 2% of sub-Saharan African countries revenue. The authors were of the view that excise taxes were a good revenue source, cheap to administer and potentially efficient, especially when applied to goods that cause negative externalities or

exhibited price-inelasticity of demand. The authors concluded that revenue from excise taxes could be doubled in most African countries and that there was considerable scope for efficiency-enhancing change in the structure of such taxes. They recommended that excise taxes should be confined to a limited number of luxury products.

The Organization for Economic Co-operation and Development (O.E.C.D.) in 1965 published a report titled *Fiscal Incentives for Private Investment in Developing Countries*. The organization considered how fiscal incentives in capital exporting (i.e. developed) countries may be used to increase private investment in developing countries like Kenya, thus spurring economic development. While taxation was a key element the report emphasized that the overall investment climate had to be conducive if full benefits of such incentives were to be realized. The O.E.C.D. defined the investment climate as “the general political, economic, legal, cultural and psychological conditions obtaining in a country”. The relevance of the report’s finding to us is that, it brings to the fore the importance of international development co-operation in increasing the economic development pace of low income and emerging economies. According to the report, some of the fiscal incentives that may be applied by developed countries include: granting tax exemptions to domestic corporations on dividends received from subsidiaries in developing countries; taxing dividends received from abroad at a lower rate than that imposed on domestic business profits; reducing the tax liability of a taxpayer who invests in a developing country; and providing an investment credit or allowance both of which reduce tax liability of an investor in a developing country.

According to the O.E.C.D., developing countries like Kenya may supplement the above fiscal incentives by adopting similar measures in order to attract Foreign Direct Investment. An essential element in the implementation of fiscal incentives is the establishment of tax treaties between capital exporting and importing countries particularly to avoid double taxation.

Westlake<sup>\*</sup> conducted an empirical study of tax evasion, tax incidence and the distribution of income in Kenya using data for the fiscal year 1970/71. The author, at the very outset, states that while the study was able to show the direction in which Kenya’s then tax structure redistributed

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<sup>\*</sup> M. J. Westlake, “Tax Evasion, Tax Incidence and the Distribution of Income in Kenya, in the *East Africa Economic Review* pp.1-27. (Unfortunately, the volume number and date of the publication cannot be cited as only a photocopy of the whole chapter was available to this researcher).

incomes. specific measures of income redistribution was not possible owing to data limitations. Westlake's concluded that: the structure of income taxation in Kenya did not lead to substantial redistribution of incomes; income tax revenue did not contribute as much as it should to the desired expansion of the public sector; there was a general downward trend in the incidence of indirect taxation as incomes increased; import duties levied on cars and various levies on petroleum appeared to be progressive; personal income tax evasion, ranged from zero to 36%, depending on income groups; and tax evasion, *a priori*, was easier by the self employed and harder by salaried employees. The paucity of data notwithstanding, Westlake provided an insight on Kenya's tax structure and the subject of the study is a reminder that the distribution of income is an important factor in determining economic development and that tax evasion stifles a country's capacity to finance public projects and programs and hence hinders economic growth and development.

Engen and Skinner (1996) studied taxation and economic growth in the United States. They used three approaches to look at the impact of a major tax reform on the long term growth rates in which they found that there were modest effects in growth rates in response to a major tax reform.

Lee Young (2004) in his study of tax structure and economic growth explored how tax policies affected a country's growth rate. Using cross-country data during 1970 – 1997, he drew a conclusion that statutory corporate tax rates are significantly negatively correlated with cross-sectional differences in average economic growth rates. In a similar study by Yaya Kebo (2011) on tax structure and economic growth in cote d'Ivoire, it was established that tax variables except direct taxes and real GDP exhibit a long term and positive relationship. They further demonstrated that there was bidirectional causality between tax revenues and output in the long run.

Yang (1993) explored the trade-off between equity and efficiency (two major attributes of a good tax regime) in a situation where a government faces uncertainty because of random revenue i.e. income that cannot be accurately forecasted because of internal or external economic shocks. That disrupts the financing of public expenditure and a windfall may lead to wastage and/or inflation if not prudently managed. Governments across the world nowadays invest revenues

that exceed their domestic absorptive capacity in sovereign wealth holdings, usually in global financial markets, foreign government bonds or other tradable financial instruments.

Anastassiou and Dritstaki (2005) examined the relationship of the rate of economic growth to the ratio of gross savings to GDP, to the marginal direct tax rate and tax revenues. The authors tested the hypothesis that a low ratio of direct to indirect taxation promoted economic growth using annual data on the Greek economy for the period 1965-2002. By use of Granger causality tests they concluded that there was a unidirectional (one way) causal relationship between the marginal direct tax rate and the rate of economic growth. The policy recommendation from the study was that the Greek government should minimize the rate of direct taxation in order to attract capital and technology in order to maximize economic growth. Greece is currently grappling with an economic crisis arising from an unsustainably large public debt due to excessive budget deficits. The government is implementing austerity measures underwritten by other Euro-zone countries and the International Monetary Fund (IMF). The lesson for Kenya is that the level of taxation should minimize budget deficits while ensuring that savings and investments are not stifled.

Solow (1956) in his Neo- Classical growth model implied that taxes do not affect the steady state of growth. In other words, tax policy though distortionary, has no impact on long term economic growth rates and total factor productivity. On the other hand, Romer (1986) endogenous growth theory emphasized factors such as spillover effect and learning by doing by which firms specific decision to invest in capital and RandD or individual investment in human capital can yield positive external effects that benefit the rest of the economy hence in this model, government spending and tax policies can have a long-run permanent growth effects.

Arnold (2008) examined a set of panel growth regressions for 21 OECD countries and found that a significant effect of taxes on growth.

Johansson et. al. (2008) found that taxes cause growth. According to their findings, corporate taxes are found to be most harmful for growth, followed by personal income taxes and then consumption taxes. Recurrent taxes on immovable property appear to have the least impact.

They concluded that a revenue neutral growth-oriented tax reform would, therefore, be to shift part of the revenue base from income taxes to less distortive taxes.

Dornbusch (1992) found inflation to be of particular concern to economic policy makers because of its capacity to impoverish individuals on a large scale and, eventually, to corrupt social institutions. The same author rightly considered inflation as a tax on currency holding; which the public avoids by investing in (high) interest bearing deposits and foreign currency (*dollarization*) as witnessed in the recent past in Zimbabwe. Dornbusch further observed that a country with a large external debt is particularly vulnerable to external shocks because it has to generate real resources for increased debt service obligations or, failing that, purchase requisite foreign exchange by increased money supply, which depreciates the domestic currency thus fuelling inflation.

Lee and Gordon (2005) study the impact of corporate taxes on economic growth. The authors used cross-country data in the U.S ranging from 1970 to 1997 to investigate the impact of tax policies on a country's economic growth. Their study finds that increases in corporate taxes have a negative impact on economic growth. Such an outcome in economic growth can be attributed to the fact that increased corporate taxes tend to discourage investment and also impact on the income of already established businesses, thus sabotaging possible advancement in economic growth. As a matter of fact, they found that a ten percent reduction in the corporate tax rate will result in a one to two percent increase in the annual rate of growth. A similar outcome of this research was later reached by Djankov, Ganser, McLiesh, Ramalto, and Shleifer (2008); who established that corporate taxes negatively impacted on aggregate investment as well as economic growth. The cross-sectional study which comprised 85 countries in 2004 further proved that while countries seek to achieve tax reforms, it is imperative to assess each instrument used to ensure that it does not lead to a slowdown in the national economy.

Johnson (1966) argued that moderate inflation was necessary for efficient economic mobilization as long as the public retained confidence in the stability of the value of money. He further argues that due to structural rigidities in developing economies, higher wages and prices may motivate the relocation of labour and resources from subsistence production to more productive sectors of the economy. However, high and spiraling inflation would wipe out any gains from economic efficiency arising from moderate inflation. The author states that a developing country

government that uses inflationary development policies of borrowing or printing money instead of raising taxes for its programs would be under strong political pressure to protect vested interests from effects of inflation through price controls. Such controls distort the allocation of resources in the economy which retards economic growth.

Levine (1991) focused on the role of financial market in economic development by using an endogenous growth model. The author concluded that liquidity risk and productivity risk create incentives for the development of capital markets. In essence, stock markets encourage investors to diversify their investment portfolios in order to minimize risk. In addition, the element of transparency exposes management to close scrutiny in the performance of their duties as agents of principals i.e. shareholders

### **2.3 OVERVIEW OF LITERATURE**

Implicit in the above review of literature is that government fiscal policy, of which taxation is an integral part, has some bearing on a country's level of economic growth.

Most of the above cited empirical studies such as Johansson et. al. (2008), Anastassiou and Dritstaki (2005) and Mieszkowski and Zodrow (1989) show that the different uses of total government revenue affect growth differently and a similar argument applies to the way tax revenue raised is used. The possibility exists that an economy with higher tax rate experiences at least short-run growth if taxes are used to finance tangible public spending that benefits households and private sector. In general, the correlation between tax revenue and economic growth seems to be stronger for developing countries. From this review, it appears that there is no study that has investigated the for Kenya specifically.

## CHAPTER THREE

### 3.0 METHODOLOGY

#### 3.1 CONCEPTUAL FRAMEWORK

This study is based on the frameworks applied in the study of taxation and economic growth as conceptualized by Engen and skinner (1996), Lee Young (2004), Ogbonna and Appah (2012). Egen and Skinner (1996) conceptualize their study from the accounting framework first developed by Solow (1956). In this approach, the output,  $y$ , of an economy, typically measured by GDP, is determined by its economic resources; the size and skill of its workforce,  $m$ , and the size and technological productivity of its capital stock,  $k$ . Thus, a country well endowed with resources might be expected to have larger per capita output than one not well endowed with resources because its (per capita) capital stock is so much larger and more technologically advanced and its workers have more skills, or human capital. The argument advanced by these authors therefore, is that growth rate of economic output therefore will depend on the growth rate of these resources; physical capital and human capital as well as changes in the underlying productivity of these general inputs in the economy. Engen and Skinner (1996) decomposed the growth rate of the economy's output into its different components as follows:

$$\dot{y}_i = \alpha_i \dot{k}_i + \beta_i \dot{m}_i + \mu_i \quad \dots\dots\dots \text{Equation (1)}$$

Where the real GDP growth rate in country  $i$  is denoted  $\dot{y}_i$  and the net investment rate (expressed as a fraction of GDP), equivalently the change over time in the capital stock, is given by  $\dot{k}_i$ . The percentage growth rate in the effective labor force over time is written  $\dot{m}_i$ , while the variable  $\mu_i$  measures the economy's overall productivity growth. There are two other relevant variables in equation (1), which are the coefficients measuring the marginal productivity of capital,  $\alpha_i$ , and the output elasticity of labor,  $\beta_i$ .

Egen and Skinner (1996) used this framework to deduce five propositions on how taxes might affect output growth, corresponding to each of the variables on the right-hand side of equation 1. First, they stated that higher taxes could discourage the investment rate, or the net growth in the capital stock ( $k$ , in equation 1 above), through high statutory tax rates on corporate and individual income, high effective capital gains tax rates, and low depreciation allowances. Second, taxes may attenuate labor supply growth  $m$ , by discouraging labor force participation or hours of work, or by distorting occupational choice or the acquisition of education, skills, and training. Third, tax policy has the potential to discourage productivity growth  $\mu$ , by attenuating research and development (R&D) and the development of venture capital for “high-tech” industries, activities whose spillover effects can potentially enhance the productivity of existing labor and capital. Fourth, tax policy can also influence the marginal productivity of capital by distorting investment from heavily taxed sectors into more lightly taxed sectors with lower overall productivity. And fifth, heavy taxation on labor supply can distort the efficient use of human capital by discouraging workers from employment in sectors with high social productivity but a heavy tax burden. In other words, highly taxed countries may experience lower values of  $\alpha$  and  $\beta$ , which will tend to retard economic growth, holding constant investment rates in both human and physical capital.

Egen and Skinner (1996) applied three approaches to consider the impact of a major tax reform, a 5 percentage point cut in marginal tax rates, on long-term growth rates. They first examined the historical record of the U.S. economy to evaluate whether tax cuts had been associated with economic growth. Then they considered the evidence on taxation and growth for a large sample of countries. And finally, they used evidence from micro-level studies of labor supply, investment demand, and productivity growth.

Lee Young (2004) applies this same principle of a production function as conceptualized by Egen and Skinner (1996) to specify an econometric model to study the tax effects on rates of growth of per capita GDP. The basic specification used by Lee Young (2004) is as follows:

$$GR_t = \beta_0 + \beta_1 \tau_t + \beta_2 t_t + \beta_3 s_t + X_t \gamma + e_t \quad \dots \dots \dots \text{Equation (2)}$$

Where  $GR_t$  is an annual growth rate of GDP per capita,  $\tau_t$  is the top statutory corporate tax rate,  $t_t$  is a representative personal income tax rate,  $s_t$  is the consumption tax rate, and X is a control vector, including the log of GDP per capita, government expenditures over GDP, the primary school enrollment rate, a measure of trade openness, the average tariff rate, an index for corruption and the quality of the bureaucracy during, the average inflation rate from, and the annual rate of population growth from. This study was based on a cross-sectional data set of countries. Egen and Skinner (1996) however, caution that one should be wary of such data due to the biases and mis-measurement of productivity in income and the variation across countries in administrative practices.

Ogbonna and Appah (2012) in their study, impact of tax reforms and economic growth of Nigeria, follow closely the econometric specification used by Lee Young (2004) but take a country specific approach. Their econometric specification is modified as follows;

$$GDB = \alpha + \beta_1 PPT + \beta_2 CIT + \beta_3 VAT + \beta_4 ET + \beta_5 PIT + \beta_6 CED + \varepsilon \dots\dots\dots \text{Equation (3)}$$

Where PPT is Petroleum Profit Tax, CIT is Companies Income Tax, VAT is Value Added Tax, ET is Education Tax, PIT is Personal Income Tax, CED is Custom and Excise Duties and GDP is gross domestic product. This specification ignores the control vector X and uses time series analysis from 1994 to 2009 which is not long enough to determine the long term impact of tax reform on economic growth.

### 3.2 EMPIRICAL MODEL SPECIFICATIONS AND DIAGNOSTIC TESTING

This study applies the analytical framework as conceptualized by Egen and Skinner (1996) and consequently specified in both the modified versions of the Ogbonna and Appah (2012) and Lee Young (2004). The cointegration diagnostic testing is based on Johansen Cointegration test approach to the analysis of long-run relationships. Based on the Ogbonna and Ebimobowei analysis, the relationship between economic growth and tax revenues can be specified as:

$$GDP = F (INTX, IMD, EXD, S/VAT) \dots\dots\dots \text{Equation (4)}$$

Where:

**GDP** is the real Gross Domestic Product which measures economic growth

*INTX* = Income Tax

*IMD* = Import Duties

*EXD* = Excise Duties

*SVAT* = Sales Taxes or Value Added Taxes since VAT was introduced in 1990 to take over from sales taxes

The empirical analysis used annual time-series data on various taxation variables measures and economic growth for the period 1971 to 2010. In theory, increased tax revenue is expected to increase gross domestic product. Therefore, the econometric model becomes;

$$GDP = \alpha + \beta_1 INTX + \beta_2 IMD + \beta_3 EXD + \beta_4 SVAT + \varepsilon \quad \dots\dots\dots\text{Equation (5)}$$

Where:  $\alpha$ , is the constant term,  $\beta_{1-4}$  are the coefficients for the tax variables and  $\varepsilon$  – is the random error term.

Since the data to be used in the analysis is time series data it was necessary to undertake various tests to avoid spurious or nonsensical modeling. The test carried out included; White test, Ramsey RESET test, Breusch Godfrey test, Jacque Berra test, Augmented Dickey Fuller test, Johansen test, and Granger Causality test.

### 3.2.1 Pre-Estimation Tests

We conducted several tests to give the model the proper functional and mathematical form. The first step was a diagnostic test on each of the variables for stationarity. The Augmented Dickey - Fuller test for unit root was utilized. A correlation analysis was undertaken to ascertain the relationship between the regressand and the regressors. Further, a normality test using histogram with normal curve was carried out to check whether the data followed a normal distribution and so as to ensure normality of the residuals.

### 3.2.2 Post Estimation Diagnostic Tests

The tests were conducted to ensure the fitness of the model and to examine the structure of the residuals to ascertain the conclusions made from the estimated results. The tests in this study include: the Ramsey RESET test was undertaken to test for errors in model specification, residual normality test, Breusch Godfrey test for serial correlation and heteroscedasticity test.

## 3.3 COINTEGRATION TEST

This test was necessary to examine the long-run relationship between taxes and economic growth. The estimation method adopted here is based on the Johansen (1995)'s maximum likelihood (ML) estimator of the parameters of a cointegrating VECM. Before estimating the parameters of a VECM models, you must choose the number of lags in the underlying VAR, the trend specification, and the number of cointegrating equations. This method offers several ways of determining the number of cointegrating vectors conditional on a trend specification and lag order. It implements three types of methods for determining  $r$ , the number of cointegrating equations in a VECM. The first is Johansen's "trace" statistic method. The second is his "maximum eigenvalue" statistic method. The third method chooses  $r$  to minimize an information criterion.

The basic VECM is;

$$\Delta y_t = \alpha\beta' y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta y_{t-i} + \varepsilon_t, \dots\dots\dots \text{Equation (6)}$$

Where  $y$  is a  $(K \times 1)$  vector of  $I(1)$  variables,  $\alpha$  and  $\beta$  are  $(K \times r)$  parameter matrices with rank  $r < K$ .  $\Gamma_1 \dots\dots\dots \Gamma_{p-1}$  are  $(K \times K)$  matrices of parameters, and  $\varepsilon_t$  is a  $(K \times 1)$  vector of normally distributed errors that is serially uncorrelated but has contemporaneous covariance matrix. Johansen (1995) built on the work of Anderson (1951) to derive an ML estimator for the parameters and two likelihood-ratio (LR) tests for inference on  $r$ . These LR tests are known as the trace statistic and the maximum-eigenvalue statistic because the log likelihood can be written as the log of the determinant of a matrix plus a simple function of the eigenvalues of another matrix. The null hypothesis of the trace statistic is that there are no more than  $r$  cointegrating relations.

### 3.4 GRANGER CAUSALITY TEST

To shed light on the direction of causality, we perform the Granger causality test. This helps determine whether a change in one variable causes changes in another and whether an endogenous variable can be treated as exogenous. One variable is said to granger cause another if past and present values of that variable provide statistically significant information about future

values of another variable. The series of the F- statistics after regression may give any of the following outcomes:

- a) One variable granger causes the other
- b) Both variables granger cause each other thus we have presence of feedback between them
- c) The variables do not cause each other hence there is no granger causality.

### 3.5 DEFINITION AND MEASUREMENT OF VARIABLES

For the purposes of this study, all the following variables were measured in absolute monetary terms and in Kenya shillings specifically.

**GDP** is the Gross Domestic Product which is the total production within the country by all residents irrespective of nationality. In this study, GDP is measured at market prices.

**Tax Revenue** comprises of tax receipts collected by the Kenya Revenue Authority from statutory deductions and are classified in two broad categories as direct taxes and indirect taxes.

**Income Taxes (PIT)** are direct taxes and include personal income tax and corporate taxes. Personal income tax is derived from business income, employment income, rent income, dividends, interests and pension among others. Corporate taxes on the other hand are direct taxes levied on business profits made by corporate bodies such as limited companies, trusts, members clubs, societies and associations, and cooperatives. Corporate taxes are based on income Tax Act Cap 470, which defines and details the determination of taxable income and the rates of taxation. In this study, income tax measurement combines both the personal income and corporate taxes.

**Sales or Value Added Tax (VAT)** is indirect consumption tax levied in Kenya on designated local supply of goods and services and imports. VAT was introduced in 1989 to replace sales tax and is administered under the VAT Act Cap 476 of the laws of Kenya. It is normally a percentage of the value of the goods or service.

**Excise Duties** are taxes on levied on specific products and services with bit of discriminatory intent. They are levied on alcoholic beverages, tobacco products, petroleum products, motor

vehicles, carbonated drinks, mineral water, cosmetics, jewellery and cell phone airtime. They are imposed under the customs and excise Act (Cap 472) laws of Kenya.

**Import Duties** are predominant source of trade tax revenue in Kenya. The taxes are imposed on imported commodities and serves to raise the domestic price of such commodities above the landed international price level by the margin of the tax. .

### **3.6 ESTIMATION PROCEDURES**

The linear regression analysis was applied on the time series data. The GDP was taken as the dependent variable, while the taxation variables as stated above were the independent variables. The estimation method was OLS and STATA econometric package was used.

### **3.7 EXPECTED OUTCOME**

The research was expected to confirm whether there was a positive or negative relationship between economic growth and the tax variables specified in the model. The empirical studies have showed mixed results between these two variables. Some studies have indicated a negative effect of taxation on economic growth. For instance corporate taxes have been found by some studies to have a negative effect on economic growth due to its negative effect of slowing investment. On the other hand other studies have indicated a positive effect of taxation arguing that through that increased taxation raises revenue for the government hence increased government expenditure on productive public goods and services that is expected to boost economic growth.

### **3.8 DATA SOURCE AND COLLECTION**

This study used secondary annual time series data for Kenya for the period 1970-2010 to investigate the empirical link between taxes and economic growth. Data was collected from publications by the Ministry of Finance, Kenya Revenue Authority, Central Bank of Kenya and Kenya National Bureau of Statistics.

## CHAPTER FOUR

### 4.0 DATA ANALYSIS AND STUDY FINDINGS

#### 4.1 INTRODUCTION

This study used sample data for the period 1970 – 2010 extracted from statistical abstracts and economic surveys obtained from the Kenya National Bureau of Statics. The variables included in the study were; GDP, Income Tax (InTx), Import duties (ImD), Excise duties (ExD) and Sales tax/Value added Tax (SVAT). The variables were selected based on data availability. Before proceeding to empirical modeling, the data is first described in mean values and strength of association between the variables. All data are then transformed into logarithm to minimize the associated problems of heteroscedasticity, autocorrelation and multicollinearity hence the output from the analysis is thus interpreted as elasticities.

#### 4.2 DESCRIPTIVE STATISTICS

The descriptive statics gives the summary of the data in terms of the number of observations, the mean values of the variables, standard deviations and the minimum and maximum values of the variables. Table 2 gives the output of the descriptive statics for the variables.

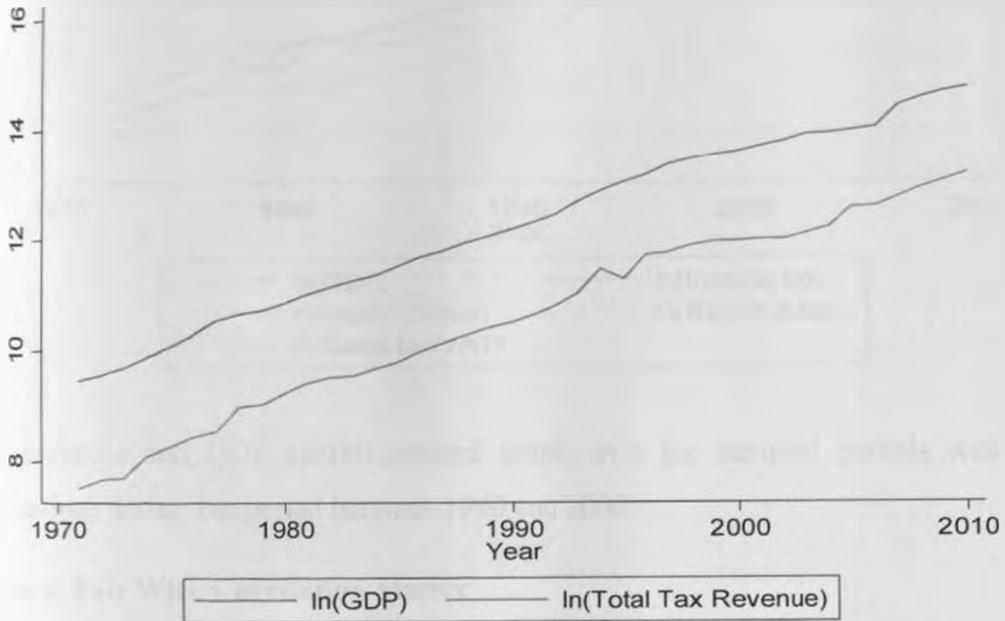
**Table 2: Descriptive Statistics**

Variable	Obs	Mean	Std. Dev.	Min	Max
gdp	40	544914.7	682434.2	12860	2551161
TTR	40	108321.7	137272.7	1859.6	533455
DTx	40	41008.7	56911.56	826	228422
IDTx	40	67312.96	80875.22	1033.6	305033
InTx	40	46763.3	65492.57	755.6	261781
ImD	40	13776.09	13417.43	539.8	47387
ExD	40	19527.66	24746.53	305.4	83808
SVAT	40	33992.78	43419.23	224.2	174360

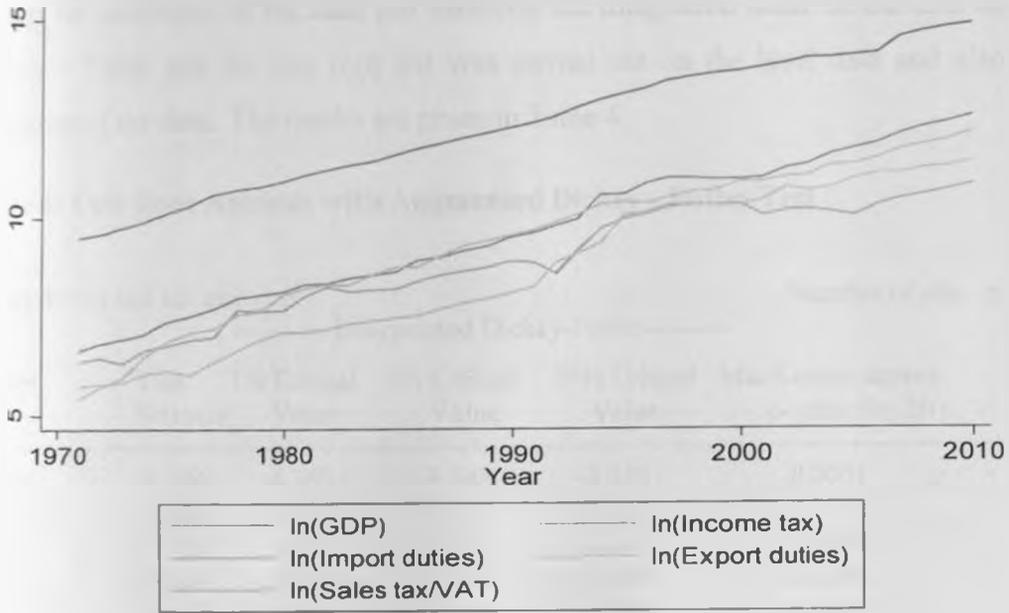
The mean value for GDP for the sample period was 544.9 billion while that for the total tax revenue was 108.3 billion which implies that the tax ratio averaged 19.9% of GDP with direct

taxes taking 7.5% and indirect taxes taking 12.4% of GDP. The other tax variables; income tax, import duties, excise duties and sales tax/VAT constituted 8.6%, 2.5%, 3.6% and 6.2% respectively. The growth trends for taxes and economic growth is further displayed in figure 4 and 5.

**Figure 4: Line graph of GDP and Total Tax Revenue**



**Figure 5: Line Graph of GDP and Tax Variables**



Tax revenues and GDP exhibit upward trends over the sampled periods with some slight fluctuations during the period between 1990 and 2000.

**Table 3: Pair Wise Correlation Matrix**

	ln_gdp	ln_InTx	ln_ImD	ln_ExD	ln_SVAT
ln_gdp	1.0000				
ln_InTx	0.9973	1.0000			
ln_ImD	0.9843	0.9813	1.0000		
ln_ExD	0.9895	0.9923	0.9792	1.0000	
ln_SVAT	0.9915	0.9860	0.9819	0.9717	1.0000

The results in table 3 give the strength of relationship between the GDP and tax variables. They indicate that the dependent variable ln\_gdp is highly correlated with the independent variables ln\_InTx, ln\_ImD, ln\_ExD and ln\_SVAT with of 0.9 for all the variables. This implies that all the four independent variables are included in the regression model analysis.

### 4.3 TESTING STATIONARY / UNIT ROOT ANALYSIS

To test for stationary of the data and establish the integration order of the data an Augmented Dickey – Fuller test for unit root test was carried out on the level data and also on the first difference of the data. The results are given in Table 4.

**Table 4: Unit Root Analysis with Augmented Dickey - Fuller Test**

Dickey-Fuller test for unit root						Number of obs = 39
----- Interpolated Dickey-Fuller -----						
Dfuller Var	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value	MacKinnon approx. p-value for Z(t)	Integration order
ln_gdp	-5.106	-4.260	-3.548	-3.209	0.0001	I (1)
ln_InTx	-6.601	-4.260	-3.548	-3.209	0.0000	I (1)
ln_ImD	-5.769	-4.260	-3.548	-3.209	0.0000	I (1)
ln_ExD	-5.164	-4.260	-3.548	-3.209	0.0001	I (1)
ln_SVAT	-6.545	-4.260	-3.548	-3.209	0.0000	I (1)

The results of the unit root test illustrates that all the variables become stationary in their first difference I (1) thus integrated to order one. The p-values for all the variables are statistically significant hence the rejection of the null hypothesis that the variable exhibit unit root after the first differencing.

### 4.4 REGRESSION ANALYSIS RESULTS

A classical linear regression model fit was employed in this study using the OLS method. The dependent variable GDP (ln\_gdp) is regressed on the independent variables income tax (ln\_InTx), import duties (ln\_ImD), excise duties (ln\_ExD) and sales tax/VAT (ln\_SVAT). The results of the regression analysis are displayed in table 5.

**Table 5: Regression Model**

Source	SS	df	MS	Number of obs = 40		
Model	97.6121588	4	24.4030397	F( 4, 35) =	3190.18	
Residual	.267729961	35	.007649427	Prob > F =	0.0000	
				R-squared =	0.9973	
				Adj R-squared =	0.9970	
Total	97.8798888	39	2.50974074	Root MSE =	.08746	

ln_gdp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
--------	-------	-----------	---	------	----------------------

ln_InTx		.4926874	.0988756	4.98	0.000	.2919593	.6934155
ln_ImD		.0101052	.0651903	0.16	0.878	-.1222382	.1424487
ln_ExD		.111604	.0701404	1.59	0.121	-.0307886	.2539967
ln_SVAT		.2770072	.0585573	4.73	0.000	.1581296	.3958849
cons		3.891923	.2226838	17.48	0.000	3.439851	4.343995

The regression analysis used 40 observations and the output shows that the overall model is statistically significant given that the probability statistic of the F-test is 0.0000. The adjusted R-squared is quite high at 0.9973 indicating that 99.73% of variation in the dependent variable (GDP) is explained by the explanatory variables. All the coefficients of the explanatory variables have a positive sign implying that all the tax variables have a positive relationship with the GDP. The coefficient for the income tax ( $\ln\_InTx = 0.493$ ) implies that a percentage change in income tax will translate to a 49.3 percentage change in the GDP; for the import duties ( $\ln\_ImD = 0.01$ ) implies that a percentage change in import duties will translate to a one percent change in the GDP level. Similarly a percentage change each in excise duties ( $\ln\_ExD = 0.111$ ) and sales tax/VAT ( $\ln\_SVAT = 0.277$ ) will cause 11.1 percentage change and 27.7 percentage change in the GDP respectively. In light of the above results it is revealed that income tax has the highest effect on GDP followed by sale tax/VAT then excise duties and finally import duties having the least effect.

#### 4.5 POST – ESTIMATION TESTS

These tests are performed on the specified model to ensure that the model does not violate the OLS assumptions. The first test is the Ramsey RESET test to check on specification errors and omission of variables in the model. This is followed by heteroskedasticity test, autocorrelation test, multicollinearity test and finally the normality test on the residuals.

##### 4.5.1 Ramsey RESET Test for specification error

This test was carried out to test the overall suitability of the model and confirm if there were some variables omitted from the model. The test results are as shown in table 6.

**Table 6: Ramsey RESET Test**

Ramsey RESET test using powers of the fitted values of ln_gdp	
Ho: model has no omitted variables	
F (3, 32) =	2.52
Prob > F =	0.0755

The test is based on the null hypothesis that there are no omitted variables in the model. The probability value for the F- statistic as displayed in the test results do not allow as to reject the null hypothesis since it exceed the significance level of 5%. It therefore implies that the model as specified is suitable and has no omitted variables.

#### 4.5.2 Heteroskedasticity test

The assumption of the OLS requires that the variance of the error test is constant (homoskedasticity). We therefore test if our model meets this assumption. Two tests are used in this study; Cameron and Trivedi's decomposition of IM-test and the Breusch-Pagan / Cook-Weisberg test for heteroskedasticity. The test results are displayed in table 7.

**Table 7: Cameron and Trivedi's Decomposition of IM - test**

Cameron & Trivedi's decomposition of IM-test

Source	chi2	df	p
Heteroskedasticity	13.45	14	0.4912
Skewness	6.00	4	0.1989
Kurtosis	1.92	1	0.1664
Total	21.37	19	0.3166

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of ln\_gdp

chi2(1) = 1.70

Prob > chi2 = 0.1929

The p-value for IM-test for heteroskedasticity (0.4912) reveals that the hypothesis for existence of heteroskedasticity is rejected. We therefore accept the null hypothesis for existence of homoskedasticity since the p-value is statistically insignificant at 5% level of significance. These results are also confirmed by the Breusch-Pagan / Cook-Weisberg test which accepts the null hypothesis that the model exhibits a constant variance.

#### 4.5.3 Autocorrelation test

The Durbin Watson test, Durbin's alternative test and Breusch – Godfrey LM test were applied to test for the existence of autocorrelation in the specified model. The null hypothesis here is that there is no serial correlation and the test results are as displayed in table 8.

**Table 8: Autocorrelation Tests**

Durbin-Watson d-statistic (5, 40) = 2.012923

Durbin's alternative test for autocorrelation

lags(p)	chi2	df	Prob > chi2
1	0.031	1	0.8610

H0: no serial correlation

Breusch-Godfrey LM test for autocorrelation

lags(p)	chi2	df	Prob > chi2
1	0.036	1	0.8491

H0: no serial correlation

The Durbin Watson test statistic (d = 2.0129) indicates that there is no autocorrelation and these results are confirmed by both the Durbin's alternative and the Breusch - Godfrey LM tests for autocorrelation which both accept the null hypothesis of no serial correlation since their p-values are both statistically insignificant at 5% level of significance.

#### 4.5.4 Multicollinearity test

Variance Inflating Factor (VIF) was used to test for the existence of multicollinearity amongst the explanatory variables used in the model. This test shows how the variance of an estimator is inflated by the presence of multicollinearity that is, as the extent of collinearity increases, the variance of an estimator increases. A VIF of at least 10 is always preferred (Gujarati, 2004). Table 9 gives the output of the multicollinearity test.

**Table 9: Multicollinearity test with VIF**

Variable	VIF	1/VIF
ln_ImD	1.29	0.774545
ln_InTx	1.24	0.808309
ln_SVAT	1.11	0.900585

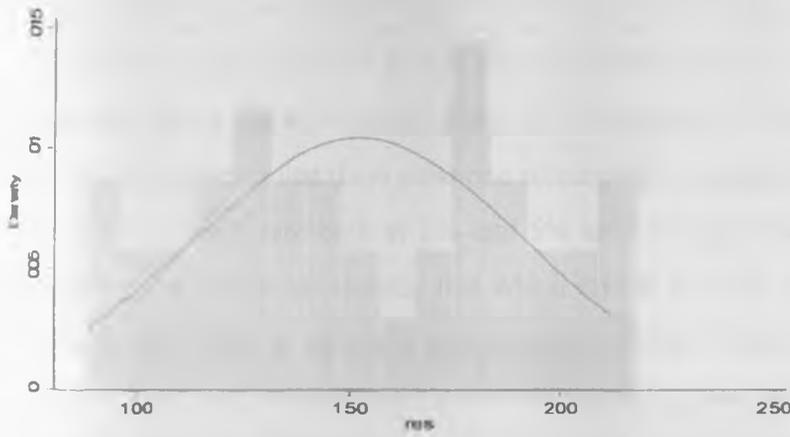
In_ExD	1.02	0.978925
-----		
Mean VIF	1.17	

The vif for all the explanatory variables in the model were low at approximately 1 for all the variable this are far much below the limit of 10 thus it can be concluded that there was no collinearity in the explanatory variables included in the model.

#### 4.5.5 Normality test

A histogram with a normal curve was used to illustrate if the residuals exhibited a normal distribution. The result of the graph plot is illustrated in figure 6.

**Figure 6: histogram with normal curve plot for the residuals**



The graph illustrates that the residuals from the model follow normal distribution hence satisfying the OLS assumption of normal distribution for the residuals.

#### 4.6 COINTEGRATION TEST

The Johansen tests for cointegration which include: trace statistic test and maximum statistic test are used in this study to identify the number of cointegration equations that exist. This also tests for the existence of a long-term relationship between the explained and the explanatory variables. The null hypothesis being tested here is the there is no cointegration between the variables. The results for the Johansen tests are displayed in table 10.

**Table 10: Johansen Tests for Cointegration**

Johansen tests for cointegration

Trend: trend Number of obs = 38  
 Sample: 1973 - 2010 Lags = 2

maximum rank	parms	LL	eigenvalue	trace statistic	5% critical value	1% critical value
0	35	163.84899		90.7689	77.74	85.78
1	44	182.97241	0.63450	52.5221*1*5	54.64	61.21
2	51	193.8528	0.43597	30.7613	34.55	40.49
3	56	202.48698	0.36519	13.4929	18.17	23.46
4	59	207.29473	0.22356	3.8774	3.74	6.40
5	60	209.23344	0.09700			

maximum rank	parms	LL	eigenvalue	max statistic	5% critical value	1% critical value
0	35	163.84899		38.2468	36.41	41.58
1	44	182.97241	0.63450	21.7608	30.33	35.68
2	51	193.8528	0.43597	17.2684	23.78	28.83
3	56	202.48698	0.36519	9.6155	16.87	21.47
4	59	207.29473	0.22356	3.8774	3.74	6.40
5	60	209.23344	0.09700			

\*1\*5 indicate significance at 1% and 5% respectively

The first table gives the trace statistics test for cointegration. The results displayed in the trace statistic column indicate that there exist one cointegration equation since at maximum rank 1, the trace statistic is significant both at 1% and 5% level of significance. These results are further confirmed by the maximum statistic test which rejects the null hypothesis at maximum rank 1 that there doesn't exist at most one cointegration equation. These results therefore indicate that there exist a long term relationship between economic growth proxied by GDP and tax revenue measured by the tax variables; income tax, excise duties, import duties and sale tax/VAT. Therefore, any move to influence either taxation or economic growth will affect either of them.

4.7 GRANGER CAUSALITY TEST

The aim in this test is to establish the direction of causation between economic growth and taxation. The Granger causality wald tests was used and the results are as displayed in table 11.

Table 11: Granger Causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
ln_gdp	ln_InTx	2.9186	2	0.232*
ln_gdp	ln_ImD	8.2966	2	0.016
ln_gdp	ln_ExD	3.4996	2	0.174*
ln_gdp	ln_SVAT	13.252	2	0.001

ln_gdp	ALL	22.379	8	0.004
ln_InTx	ln_gdp	6.0674	2	0.048
ln_InTx	ln_ImD	40.696	2	0.000
ln_InTx	ln_ExD	13.257	2	0.001
ln_InTx	ln_SVAT	8.3932	2	0.015
ln_InTx	ALL	61.57	8	0.000
ln_ImD	ln_gdp	9.1736	2	0.010
ln_ImD	ln_InTx	.3596	2	0.835
ln_ImD	ln_ExD	14.16	2	0.001
ln_ImD	ln_SVAT	9.138	2	0.010
ln_ImD	ALL	46.386	8	0.000
ln_ExD	ln_gdp	.32948	2	0.848*
ln_ExD	ln_InTx	6.2866	2	0.043
ln_ExD	ln_ImD	.13307	2	0.936
ln_ExD	ln_SVAT	.616	2	0.735
ln_ExD	ALL	14.988	8	0.059
ln_SVAT	ln_gdp	1.3157	2	0.518*
ln_SVAT	ln_InTx	.55489	2	0.758
ln_SVAT	ln_ImD	5.0374	2	0.081
ln_SVAT	ln_ExD	.16322	2	0.922
ln_SVAT	ALL	15.125	8	0.057

\* indicate significance at 5% level/rejection of  $H_0$ .

The second row of the output table test the causality between income tax, import duties, export duties and sales tax/VAT and economic growth proxied by GDP. The null hypothesis is that each of the tax variables does not granger cause GDP. The respective p-values indicate that we reject the null hypothesis in the case of income tax and excise duties and accept the null hypothesis in the case of import duties and sale tax/VAT. This therefore implies that income tax and excise duties granger cause GDP while import duties and sales tax/VAT does not granger cause GDP. On the other hand GDP granger cause excise duties and sales tax/VAT but does not granger cause income tax and import duties. These results therefore demonstrate that there exist a unidirectional causation between GDP, income tax and sales tax/VAT. It is also demonstrated that there exist bidirectional causation between GDP and excise duties whereas no causation exist between GDP and import duties.

## 4.8 DISCUSSION OF FINDINGS

The results from the regression analysis reveal that income tax has the highest elasticity on GDP at 49.3% followed by sales tax/VAT at 27.7% then excise duties 11.1% and finally import duties at only 1%. Further, all the variables have a positive relationship with GDP therefore implying that any attempt by the government to increase the tax level will have an effect on economic growth in a positive manner. However, an increase in income tax and sale tax/VAT will relatively have the most impact on economic growth levels as compared to taxes on excise duties and import duties.

The positive relationship between GDP and tax variables is supported by Musgrave and Musgrave (1980). On the contrary however, the results conflict those of Solow (1956) and Johansson *et al* (2008) who concluded that taxes were distortionary on economic growth with Solow further adding that taxes has no impact on long-term economic growth. Lee and Gordon (2005) also came to a conclusion that taxes causes growth but in a negative manner and that corporate taxes were more harmful to growth followed by personal income taxes. In my results though, income taxes which include personal and corporate income taxes are found to cause economic growth in a positive manner and with the highest elasticity of 49.3%. The tax base for income taxes is the highest with an average of 8.2% of the GDP. This makes income taxes an important target for the government fiscal policy to influence economic growth. The government should therefore concentrate on ensuring a favorable economic environment for corporate business to flourish hence increasing employment rate in the economic and eventually boosting economic growth in the long-run as supported also by Clark (1993). Providing incentives for the corporate businesses without increasing the tax level shall be a perfect measure to ensure increase investment rate. Mashkooor (2010) recommended that a country should decrease its reliance on indirect taxation and instead concentrate on direct taxation which is majorly constituted by income taxes both corporate and personal. This was after finding out that direct taxes to GDP ratio granger caused growth in real GDP significantly.

The other important finding is the positive relationship between sales tax/VAT and economic growth with elasticity of 27.7% and a ratio to GDP of 6.2%. This result indicates a substantial tax base in sales tax/VAT. The results further reveal that there exist unidirectional causation

between economic growth and sales tax/VAT where economic growth is found to cause sales tax/VAT. The implication here therefore, is that impressive growth in the economy will significantly boost sales/VAT tax levels. Karingi *et al* (2004) confirms these results in his assertion that VAT capacity and yield are expected to respond to changes taking place in the economy, especially those that influence the consumption pattern. High economic growth rates boosts demand and consumption hence increasing sales on goods and services and eventually translating to an increase in the levels of taxes collected from the sale of goods and services.

Excise duties were found to have a ratio to GDP of 3.6% and a positive elasticity on economic growth at 11.1%. A bi-directional causation also exists between the two variables as per the study findings. What these mean is that, an increase in excise duties will have a positive effect on economic growth and vice-versa. Excise duties in Kenya are imposed under the Customs and Excise Act (Cap 472) and are levied on alcoholic beverages, tobacco products, petroleum products, motor vehicles, carbonated drinks, mineral water, cosmetics, jewellery and cell phone airtime. The largest percentage of the total excise duties is from alcohol, tobacco and petroleum products at over 90% Karingi *et al* (2004). The products taxed under excise duties are harmful products with negative externalities and luxury products consumed by individuals with high income. High tax levels on excise duties would thus help bring income equity and at the same time reduce consumption of those goods like alcohol and tobacco associated with negative externalities. Bolnick and Haughton (2001) hold a similar view that excise taxes form a good revenue source, are cheap to administer and potentially efficient, especially when applied to goods that cause negative externalities or exhibit price inelasticity of demand. When considering the study results, the tax base and ratio to GDP for excise duties is still low and the government can exploit this to increase tax levels to finance budget deficits. Also, a bi-directional causation results indicate that an increase in excise duties levels by say one percent would result to at least 11.1% increase in GDP levels. The same positive effect would be realized in excise duties when there are high levels in economic growth. This is because high growth levels increases per capita income of individuals hence their disposable income. They can therefore afford most of the goods selected for excise duties thus increasing tax level from excise duties.

Import duties are the most important of the trade taxes imposed on imported merchandise and serves to raise the domestic price above the landed international price level by the margin of the

tax. The study results on import duties exhibited the least effects with an average ratio on GDP of 2.5% and an elasticity of only 1%. There doesn't exist causality between GDP and import duties either an indication that import duties are least influencing in fiscal policy decisions by the government. Karingi *et al* (2004) explains this scenario by pointing out that there has been a declining importance of trade taxes on the overall government tax collection because of the emerging trade blocks, such as the East African Community (EAC), the Common Market for Eastern and Southern Africa (COMESA), the Inter – Governmental Authority on Development and liberation. These trade blocks have continued to lower government's revenue from imports as a result of remissions of duties on imported commodities. Import duties, as observed by Boadway and Sato (2009) and supported by Karingi *et al* (2004), are the most efficient compared to VAT because the tax net is much broader since even the informal sector cannot avoid taxation at a country's border point of entry.

## CHAPTER FIVE

### 5.0 CONCLUSION AND POLICY RECOMMENDATIONS

#### 5.1 INTRODUCTION

This section gives a conclusion of the study which is an overview of the study objectives, methodology and the key findings from the study. Consequently, policy recommendations are drawn from the study findings which would feed into future government policy directions and guidelines.

#### 5.2 CONCLUSION

This study sought to investigate whether any relationship exist between taxation and economic growth and further determine causation between the variables with of coming up with fiscal policy recommendations. First, the study used a classical linear regression model based on the OLS estimation method to establish the nature and strength of relationship between taxation and economic growth. Second, a cointegration test was further employed to find out if there exist a long term relationship between economic growth proxied by GDP and taxation measured by tax variable such as, income tax, import duties, excise duties and sale tax/VAT. Finally, granger causality test was used to determine the causation between economic growth and taxation.

The results of the study revealed a positive relationship between economic growth and taxation. All the tax variables showed a positive effect on GDP starting with income tax with the most effect followed by sale tax/VAT, then excise duties and finally import duties giving the least effect. The cointegration revealed that there is at most one cointegrating equation hence giving an indication that there exist a long term relationship between economic growth and taxation. The Granger Causality test further indicated bi-directional relationship between economic growth and excise duties; a unidirectional relationship between income tax and economic growth, and economic growth and sales tax/VAT; however, there existed no causation between economic growth and import duties.

From the foregoing it is concluded that there exist a positive relationship between taxation and economic growth and that economic growth granger cause sales tax/VAT and excise duties whereas income tax and excise duties granger cause economic growth. However, no causality exists between economic growth and import duties.

### **5.3 POLICY RECOMMENDATIONS**

Based on the study findings presented and discussed above, the following policy recommendations emanate that should be adopted by the government to enhance its fiscal policy decisions hence boost the economic growth.

First, the government should adopt a fiscal policy measure that concentrates on shifting tax structure and enlarging the tax base to increase tax levels without increasing the tax burden. This can be through enhancing the tax base on excise duties to ensure equity and reduce consumption of goods with negative externalities on the lives of citizens.

Second, the government can utilize the positive relationship that exists between tax and economic growth to try and efficiently use the taxes it collects to spar growth. This boost per capita incomes hence increasing disposable income that would in turn increase demand and eventually increasing tax levels on sales/VAT and excise duties.

Third, the findings give an implication that the government can change the long-run economic growth levels by generating more revenue from income taxes, sales tax/VAT and excise duties without raising tax rates or creating new taxes. This can achieved through improving the tax collection system, eliminating fraud, evasion and corruption.

### **5.4 LIMITATIONS OF THE STUDY**

A major limitation of the study is the quality and reliability of data caused by inconsistencies between different publications. Tax computation for earlier years was based on calendar year but recently, they are based on financial year. This was overcome by reorganizing all data in financial years. Where data differed, the researcher opted for data from the Kenya National Bureau of Statistics. The other limitation is that there have been alterations in the tax variables

names and their composition however the researcher chose only those tax variables that exhibited constituency over the sample period.

## **5.5 SUGGESTION FOR FUTURE RESEARCH**

Further research is necessary to invalidate these findings since policy options cannot rely on a single study. The researcher recommends further research in the areas of: the welfare impact of taxation as well as the impact of current economic growth on future tax revenues. Future research can also be conducted in the relationship between economic growth and taxation using structural regression models since this over the periods there are some major structural changes that affect the relationship between these variables but were not taken into consideration by the study.

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