DIRECT TAXES AND ECONOMIC GROWTH IN KENYA

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DECLARATION

I declare that this research proposal is my original work and that to the best of my knowledge; it has not been previously published or submitted for examination in any other University. I also declare that this study contains no material written or published by other people except where due reference has been made and author dully acknowledged.

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DEDICATION

This project paper is dedicated to my beloved Mum and Dad, Mrs. Loinah Masika and Mr. Masika Machimbo and also to my lovely daughter, Abbie.

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First and foremost, my gratitude goes to the almighty God for giving me the strength and wisdom to pursue my studies and especially in doing this research project.

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Lastly am grateful to my friends who made sure that I do not fall on the way.

ABSTRACT

The purpose of this study was to investigate the causal relationship between direct taxes and economic growth in Kenya, in particular to determine the nature of relationship between corporate income, personal income taxes and economic growth. It also aimed at identifying some of the factors affecting economic growth in Kenya such as labour and investment. The study employed Ordinary Least Square (OLS) method in analyzing time series data captured over the period 1970-2012. Granger causality test was then performed to test for causal relationship between direct taxes and economic growth. The empirical results shows that a unit increases in corporate income tax, personal income tax, and labour force would increase economic growth by 0.93, 0.14 and 1957.4 Kenyan million pounds respectively. It also found out that, a unit increase in investment would decrease economic growth by 0.25 Kenyan million pounds. This kind of negative effect on growth arises from investment such as foreign direct investment that receives compensations in terms of tax holidays, rebates and utilization of a given percentage of resources before paying taxes. The study therefore recommends that, the Government, with its move to the East should be more cautious to attract investments that are pro-growth and pro-development. Pro-growth investments in an economy attract more corporate income taxes from corporate profits from such investments and also leads to creation of employment that attracts personal income tax which promotes government expenditure without borrowing.

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LIST OF ABBREVIATIONS

PAYE- Pay As You Earn

VAT-Value Added Tax

KRA-Kenya Revenue Authority

GDP-Gross Domestic Product

TMP-Tax Modernization Programme

OECD- Organization for Economic Co-operation and Development

ADF-Augmented Dickey Fuller

ECM- Error Correction Model

ECT-Error Correction Term

GOK-Government of Kenya

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Tax is a major source of government revenue for most countries in the world. The tax structure is commonly composed of direct and indirect taxes. Direct taxes are assumed to be paid by the factors that produce incomes whereas indirect taxes are assumed to be paid by the house hold that consume taxed items (Obwona and Muwonge, 2002). Direct taxes mainly include corporate tax, income tax (Pay As You Earn (PAYE)), withholding tax, rental income tax and presumptive income tax among others. Indirect taxes are taxes on domestic goods and services like the Value added Tax (VAT), excise taxes on merit goods (e.g. Cigarettes and beer) and tax on imported goods.

Compared to direct taxes, indirect taxes contribute a greater share of overall tax revenues. In the 2009/10 tax year, the highest tax contribution came from VAT at 28%, followed by Personal Income Tax at 22% and Corporate Income Tax at 18% to the total tax revenue of this period (KRA 2010).

Tax is a compulsory payment that citizens of any state should pay to the authorities to allow their governments to provide public goods, deliver merit goods and services such as education and healthcare, promote economic growth and broad-based development, and to stabilize the economy. Indeed, as observed by Musgrave (1997), every country imposes taxes on its citizens and institutions for three strategic objectives: the allocation function, the distributive function and the stabilization function. It is therefore important to state that, tax is an important component that allows the government to promote various development activities, provide for both public and merit goods and services, and at least stabilize the economy through various fiscal policies, of which the tax system is the most significant.

Tax and country's output linkages do exist, and fiscal authorities have relied on this to spur economic growth and development. Two forms of taxes namely direct and indirect taxes have been used to realize this goal. The former forms the backbone of this study. Direct taxes have been in existence in Kenya since pre-independence. However, there have been various reforms to improve productivity of various types of direct taxes. Although direct tax revenue has a direct

relation to economic growth, mixed thoughts exist to this proposition. Some proponents argue that an objective to raise sufficient tax revenues will bolster the much needed economic growth and development. Contrary to this, some argue that tax is a burden on their well earned fortunes, while to others; tax is seen as a necessary evil, to support the state and its activities. Depending on the side one is, this all depends on the benefit one derives from the tax system that is the net of tax payments over the respective benefits earned from the taxes they pay.

Just like many other emerging economies, Kenya has revealed its aim of rapid economic growth and broad-based economic development that would bring a growth rate of at least 10 percent per annum, while pushing the economy up to a middle-income class. These are the broad objectives of the Kenya Vision 2030 (Republic of Kenya, 2007). Broad based economic growth and development is indeed important, but not if the country can generate enough internal revenues which would then deliver on these. Currently, the government relies on donor support in terms of bilateral and multilateral funding to achieve this rapid progress. For example, the ongoing infrastructure development and improvement projects around the country are to the tune of Ksh 200 billion, a fund made possible by the African development bank, in partnership with the government of Kenya. To date, Kenya's tax revenue potential stands at approximately Ksh 900 billion (KRA, 2010), while her expenditures as per the treasury's 2011 budget statement stood at approximately Ksh 1.1 trillion. Effectively then, the country still relies on external funding to support her development agenda. These raises a question as to whether, the repayment of foreign debt, may result to adjustments in economic growth and direct revenues.

Tax revenues account for well over 70 percent of Kenya's total revenue generation, and this clearly indicates that it is in tax that the government's comparative advantage lies in terms of revenue generation capacity. Therefore, any efforts geared towards enhancing the revenue potential of the government will no doubt rest ultimately on her tax system. The government has literally expressed its optimism and great commitment to make the vision 2030 master plan, a reality, and this is a great inspiration to the Kenyan people. Therefore, for its full implementation, massive funding for various projects is a prerequisite and direct taxes would play a critical role.

In this, Kenya is currently one of the countries of the world that has, due to highest tax rates, a narrow tax base and concerns over its unfair distribution of the tax burden, not mentioning the

complex tax codes (KIPPRA, 2006). While substantial tax reforms have already been put in place over the years, there still exists greater scope for improvement, more so direct taxes, to enhance the revenue capacity for the country. Thus improved tax structures in the collection of direct taxes allows for greater revenue generation, while not making the tax system more unfair as is the case currently.

1.1.1 Taxation and Economic Growth

The question of whether or not taxation stimulates growth has dominated theoretical and empirical debate for a long time (Amanja and Morrissey, 2005). Correlation between taxation and economic growth exist as the most important issue in economics since independence. Though the level of taxation affects the level of a country's GDP, theoretical link between these factors and economic growth was not clearly established in the standard neoclassical models (Cushin, 1995).

Governments have become increasingly interested in recent years, using taxes on consumption, such as sales tax and value added tax (VAT) to finance a larger share of their spending. Little attention has been taken to form and implement policies which can widen the base and expand tax brackets of direct taxes to boost revenue collection. The reasons are that increased international tax competition of different tax rates makes it more difficult for governments to collect corporate and personal income taxes from their citizens and a move from taxes on income to taxes on consumption would improve economic efficiency and increase the rate of growth or improve competitiveness and protect employment.

The choice of how much revenue to collect from taxes on consumption rather than taxes on income can therefore be described as a choice of the balance between direct and indirect taxation. It is important to note that there are significant differences in the design and economic effects of different taxes within the general classes of "taxes on consumption" or "taxes on income". Among taxes on income, personal income taxes are generally progressive (the tax rate rises with higher income levels) while most social security contributions are proportional (a fixed percentage of income) or regressive (taking a higher proportion of lower incomes).

It is often claimed that taxes on consumption are better for growth than taxes on income. The main arguments relate to the way different taxes affect savings and labour supply decisions. The

different treatment of savings between the two types of taxes is a key element here, with taxes on income subjecting savings to heavier taxation than taxes on consumption. A shift from taxes on income to taxes on consumption that does not change total tax revenue can be expected to encourage savings, leading to increased investment and growth. This arises because taxes on income often include both income that is saved and the income from savings. In contrast, taxes on consumption exclude savings but include the income from savings when it is spent. But not all taxes on income treat savings in the same way: personal income tax systems sometimes give preferential treatment of savings and social security contributions generally exempt capital income.

Turning to the effect of the different types of taxes on labour supply, a "revenue-neutral" shift from taxes on income, particularly personal income tax to taxes on consumption will not have much effect on the total taxes paid by typical workers and so is unlikely to affect their decisions as to whether or not to work. However, it will reduce their marginal tax rate and thus increase the incentive for them to work additional hours. This is because taxes on income are generally progressive while taxes on consumption are broadly proportional to income and expenditure. The shift towards taxes on consumption will therefore increase hour's worked and thus economic growth.

The efficiency advantages of taxes on consumption are normally associated with a widening of the gap between rich and poor (i.e. the redistributive effect of the tax system). This is clearest in the case of progressive taxes and its effect on labour supply. The difference between the marginal and the average tax rate makes taxes on income discourage labour supply more than taxes on consumption and produces the redistributive effect of taxation. Therefore, if a move towards taxes on consumption would increase incentives to work, it would also increase inequality.

International trade and competitiveness is an issue which has also contributed to a move from direct to indirect taxation (particularly VAT). It is argued that using an increase in VAT to reduce taxes on income improves a country's international competitiveness because of "border tax adjustments" a process that involves refunding the VAT already paid on exports and applying VAT to imports. This would increase economic growth and employment by increasing exports and reducing imports.

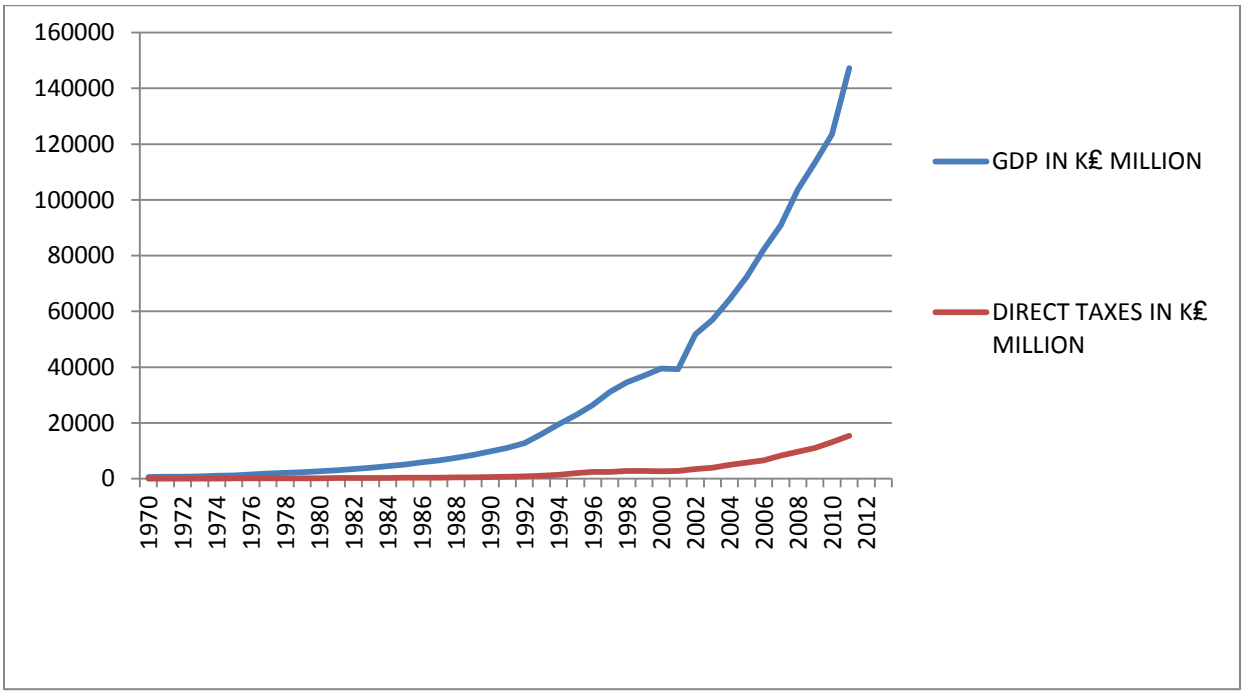
The argument that taxes on consumption promote international competitiveness is made most strongly in the comparison between VAT and corporate tax. Corporate taxes increase the cost of capital and hence the cost of production, thus making it more difficult for the affected firms to compete in foreign markets. In contrast, VAT is refunded on export and so has no effect on the ability of domestic firms to export.

There are clear arguments both for and against the greater use of taxes on consumption. Experience shows that it is important for policy-makers to look further than the simple dichotomy between taxes on consumption and taxes on income to analyse the specific features of each tax in the context of their country. For example, the effect that taxes on consumption have on economic efficiency depends on whether they are broadly uniform or whether they target specific goods, while the effect that taxes on income have on labour supply depends on how progressive they are. This means that each country's decision on how to vary its pattern of taxation involves detailed technical analysis but also a difficult political choice between greater economic growth and greater equality. This study investigates the impact of direct taxes on economic growth (personal income tax and corporate tax) in the context of Kenyan scenario.

Economic growth cannot take place without proper prioritization of development projects as per the ability of the economy to finance them. This means that the governments need funds to carry out planned programs, strategies and objectives that bring about growth. In most sub-Saharan African countries, the main source of revenue is taxation. This suggests that at least there must be a relationship between direct taxes and growth.

A serious issue which is always on policy makers mind is that even though taxes are the main source of revenue to government expenditure, they are at the same time a leakage from the country's financial system. Therefore, they have to form and implement policies which can return back the benefits from such taxes to the economy in terms of service delivery, development and growth financing. Similarly, the leveraging of tax towards growth is a key area of concern among policy analysts. Hence, the link between direct taxes and growth is not farfetched, and the challenge is to identify the link, and make use of its provisions. Over the years there has been an increase in both GDP and direct taxes as shown in Figure 1.1

Figure 1.1: GDP and Direct Taxes Trends, 1970 - 2012.



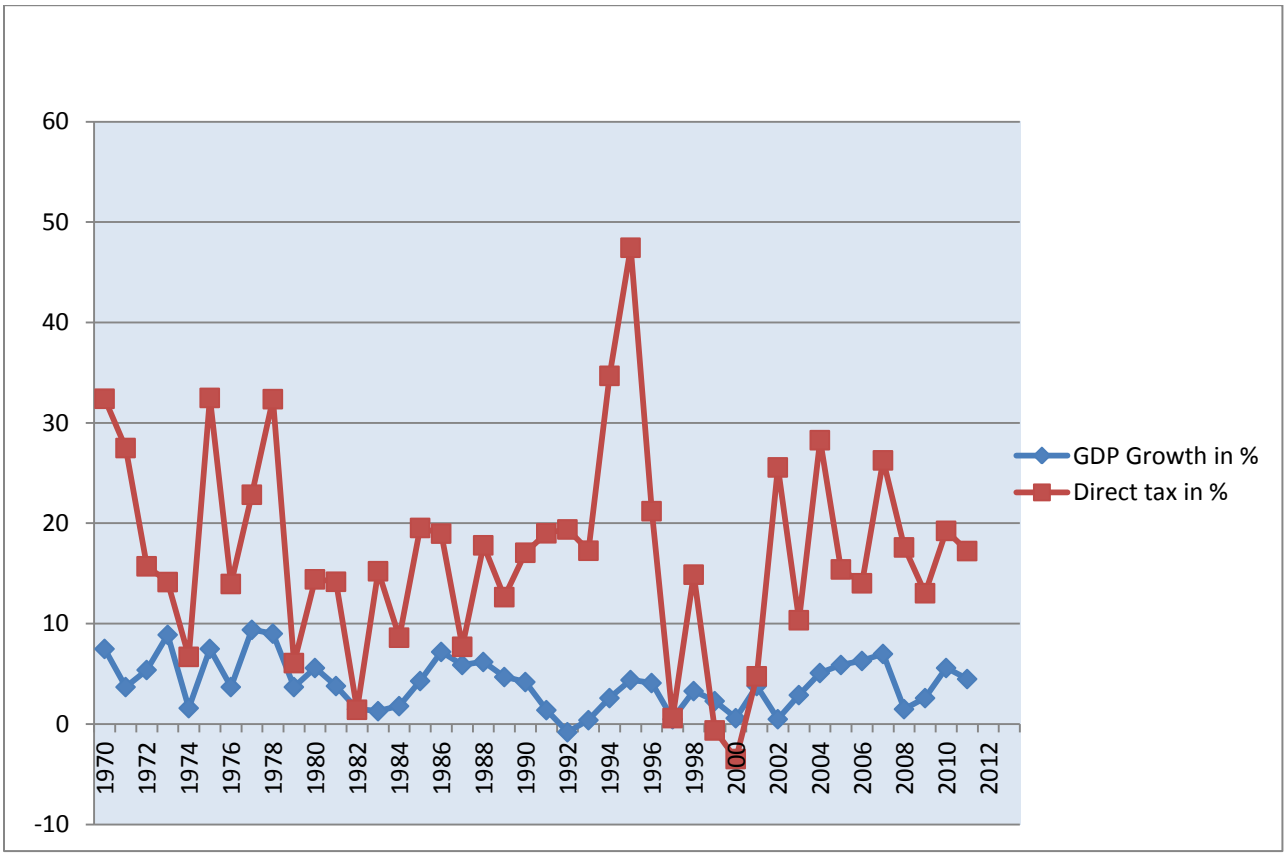
Source: Author 2013, using data from Annual Economic Surveys

The figure shows that there has been a constant increase in direct tax revenue since 1970. However the gap starts to widen after 1978 and even more to 2012. This is due to the shift from direct tax to the use of indirect taxation which was brought about by reforms in the early 1980s.

1.1.2 Trends in Kenya's Economic Growth

After independence, Kenya experienced rapid economic growth which was promoted mainly through public investment, smallholders' agricultural production, and private (mostly foreign) industrial investment. As shown in Figure 1.2 Kenya has had ups and downs in an attempt to create a favourable economy for social welfare and investment destination.

Figure 1.2: Kenya's GDP Growth Rate and Direct Tax Growth Rate, 1970 - 2012.



Source: Author (2013), Using Data from Annual Economic Surveys

Figure 1.2 shows that GDP grew at an annual average growth rate of 6.6% from 1963 to 1973. The highest ever-recorded GDP growth rates in Kenya were 9.4% and 9.02% in 1977 and1978 respectively following the coffee boom while for direct taxes these were 34.7% and 47.46% in 1994 and 1995 respectively. Rates dropped to 3.7% in 1979 for GDP due to oil crisis while for direct taxes they dropped to -3.47% in 2000. In 1980 and 1981, GDP growth averaged 5% due to increase in real investment and due to good performance in the agricultural sector. Between 1982 and 1984 GDP growth rates slowed to less than 2%, partly due to the 1982 attempt to overthrow the government and the severe droughts of 1983 and 1984 which crippled agricultural sector (Republic of Kenya: 1978-1990). It still declined to 0.1% in 1993 and -0.3% in 1992 due to first multiparty elections of 1992, 1991/92 drought, increase in oil prices resulting from the Gulf war, 1992 ethnic clashes and subsequent freeze on donor funding coupled with the collapse of the major agricultural sub sectors. The economic Recovery Strategy for Wealth and Employment Creation, which was implemented by the new regime from 2003 to 2007, was successful in

reversing the economic decline of the past two decades. In 2007, for the first time since the 1970s, the annual rate of real GDP growth reached 7%. while the post 2007 election violence which was accompanied by fuel and food shortages, and onset of the global financial crisis in 2008, resulted in a slump in real GDP growth in 2008, to 1.5%. Kenya's economy posted a real GDP growth of 2.6% in 2009 due to a resurgence of activity in the tourism sector and resilience in the building and construction industry (Republic of Kenya, Economic survey 2010). There was, however, a drop in 2011 to 4.5% due to high rate of inflation and drought.

The first time of tax reforms in Kenya generally corresponds to the Tax Modernisation Programme (TMP) that was launched in 1986 and was under implementation until the new government took over in 2003. The main elements of the policy thrust under the first phase of the TMP included: raising and maintaining revenue as a ratio of GDP to 24% by 1999/2000; (Moyi and Ronge, 2006). During this period VAT was introduced in 1990, and the Kenya Revenue Authority was established in 1995. With respect to income taxes, government reduced the top marginal rates for: personal income tax (PI_t) from 65% in 1986/87 to 45% in 1993 to 35% in 1995/96 – by 1999/00 the top rate was 30%; and corporate income tax from 45% in 1987/88 to 30% in 1999/00. This might have caused the highest ever recorded growth in direct taxes of 34.7% and 47.46% in 1994 and 1996 respectively. TMP and the virtual stagnation in economic growth led to a steady decline in the tax to GDP ratio in early 2000s with -0.62% and -3.47% in 1999 and 2000.

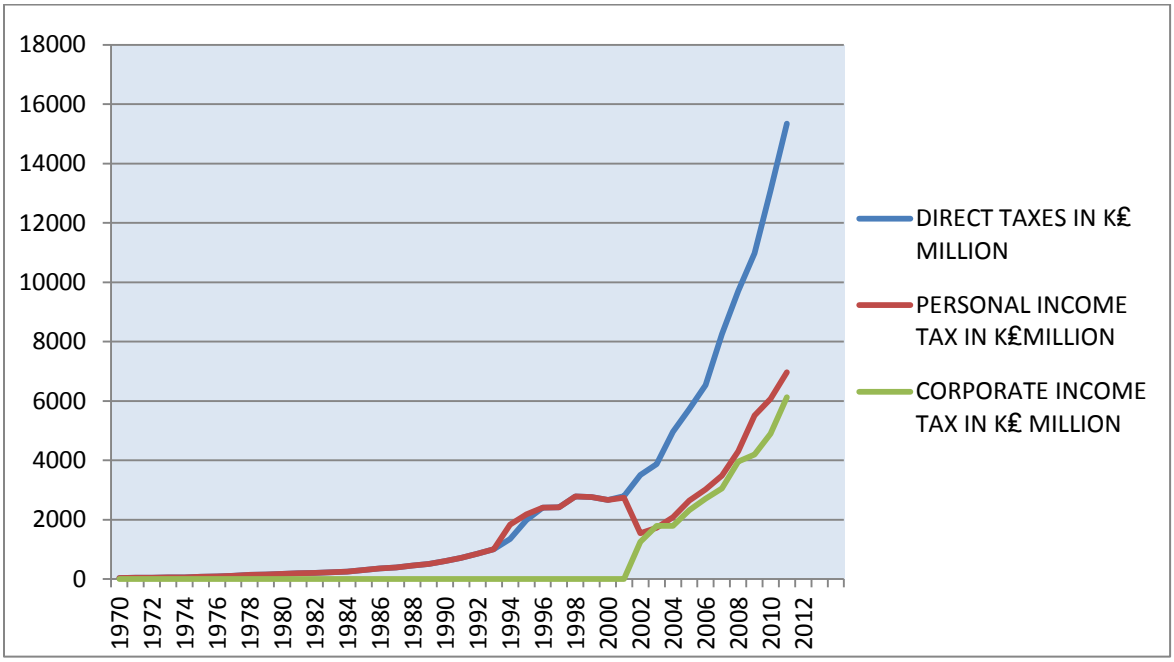
Nevertheless, empirical analysis by Muriithi and Moyi (2003) suggests that tax reforms in Kenya under the TMP have led to improved productivity of direct taxes and as a result comparatively higher ratios for both Personal Income Tax Productivity and Corporate Income Tax Productivity.

1.1.3 Trends in Personal and Corporate Income Tax in Kenya

Income taxes were in existence even before independence but were not structured as they are at present. Companies and individuals filed returns and paid income taxes at the end of the year. At pre-independence, very few native Africans were affected by taxes. The structure and administration of income tax has since changed with time. The current income tax is charged on incomes of individuals from employment, self-employment and profits from business entities, thus, it mainly captures formal sector business profits and employment.

Between 1995 and 2005, tax revenue made up 80% of total government revenue (institute of economic affairs – taxation and tax modernization in Kenya). Compared to direct taxes, indirect taxes contribute a greater share of overall tax revenues. In the 2009/10 tax year, the highest tax contribution came from VAT followed by personal income tax and corporate income tax. Concerning revenue collection from income taxes, personal income tax has been yielding more than corporate tax since the year 1970 as shown by Figure 1.3.

Figure 1.3: Trends in Personal income and Corporate Income Taxes, 1970-2012



Source: Author 2012, using data Obtained from Annual Economic Surveys.

Figure 1.3 shows the relationship between personal income tax and corporate tax revenues for the period 1970-2012. From 1970 to 1984, the variation in revenue collection between personal and corporate taxes is minimal. That is before Tax Modernization Programme (TMP) that was launched in 1986 saw the changes take place in the tax system in Kenya. The changes included intensifying the tax base; rationalizing the tax structure; reducing and rationalizing tax rates and tariffs; reducing trade taxes and increasing them on consumption to support investment; and sealing leakage loopholes (Moyi and Ronge, 2006) after the implementation, income tax system started to increase.

1.1.4 Trend in Personal Income Tax

Income tax was introduced in Kenya in year 1921. A large proportion of tax payers failed to pay, as the Government chose to abolish rather than enforce the law. In 1954, the rates of personal income tax were set at sh.20 for anyone earning less than 60 pounds, for earnings between 60-120 pounds this was set at sh.40 and for earnings over 120 pounds at sh.60.

Personal income tax is a tax on income from individual businesses and wages. At the end of each year, individual owners of businesses lodge income tax returns for their businesses. Income from employment is subject to Pay As You Earn (PAYE). Personal income tax and PAYE are charged at the same graduated scale. The current income tax brackets are: 10 percent on the first Ksh 121,968; 15 percent on the next Ksh 114,912; 20 percent on the next Ksh 114,912; 25 percent on the next Ksh 114,912; and 30 percent on all income over Ksh 466,704 (annually).

1.1.5 Trends in Corporate Taxes

Corporation tax is similar to the individual income tax, only that it is levied on companies and it does not have a graduated rate structure. Resident companies are taxed at a rate of 30% while non-resident companies are taxed at a rate of 37.5%. Enterprises in the export processing zones operating for the first ten years are exempt from paying any corporate tax, which is zero, but for those operating for the subsequent ten years they are taxed at 25% of their profits.

This is a direct tax on business profits made by corporate bodies such as limited companies, trusts, members clubs, societies and associations, and cooperatives. It has its legal base in the Income Tax Act, Cap 470, which defines and details the determination of taxable income and the rates of taxation. The rate differs between resident and non-resident companies, while companies that are listed at the Nairobi Stock Exchange are also taxed at slightly lower rates than others to encourage listing. The corporation tax rates have been amended over time focusing mainly on lowering rates in efforts to combat stiff global competition for investment funds. The rates have been decreasing for local companies from 45% in 1973/74, 42.5% in 1989/90, 40% in 1990/91, 37.5% in 1991/92, 35% in 1992/93, 32.5% in 1997/98, 30% in 1999/2000, and 27% in 2001/03 and to 25% today. For foreign companies this has ranged from 47.5% in 1973/74, to 42.5% in 1989/90 and to 40% in 1997/98. The rate for the resident companies' stands at 30%, non-resident at 37.5% and presumptive income tax regime for 3% for businesses with annual gross turnover not exceeding Ksh 5 million. However, many companies receive investment and tax incentives, and therefore the effective tax rate they pay on their profits is significantly lower and even

reduced to 0% in some cases (the rate for 2010/2011). The share of total tax revenue of corporate tax was 13.3% 2010/2011.

The tax system in terms of the corporate income tax has been reformed towards using tax incentives to encourage investments in Kenya. Tax holidays, repatriation of dividends and extension of favourable investment deductions allowances are critical lynchpins of the income tax system for companies wishing to invest in Kenya, today.

Corporate tax (including withholding tax) contributes about 50% of total income tax revenue and about 16 per cent of total tax revenue (KRA 2012). Given the contribution of corporate tax to total tax revenue, there is need to not only sustain, but also enhance corporate taxes. Initially there was no separation between personal income and corporate income tax in collection.

1.2 Statement of the Problem

Taxation has been identified as a major threat to the growth of small and medium enterprises not only in developing countries like Kenya but also in developed countries (Burke & Jarrat, 2004). For instance, in Kenya, income tax is a direct tax charged on business income, employment income, rent income, pension and investment. Taxation in general increases the cost of operating small and medium enterprises.

To reimburse for the increased costs of operation, prices on goods are raised thus lowering the amounts of sales. The effects of reduced sales are low profits, reduced capital base and slow creation of employment resulting to slow growth (Thuronyi, 2009). At the same time, effective taxation reduces excessive reliance on aid and mineral rents and offers a path away from unsustainable revenue streams for growth. This leads to flourished economic growth for investment both foreign and local that boosts the revenue collection especially from direct taxes. It is within this scenery that the current study is established.

Whether the relationship between direct tax and GDP growth rate is that of causation or correlation is still indistinct. While many others concur on the fact that economic growth determines the tax structure, much has not been done to determine whether direct taxes positively or negatively affect growth, or the other way round. For as long as this link is

unknown to policy makers, designing a tax structure which can enhance growth in the economy will always remain elusive. The aim of this study is not to resolve the raging debate but to add to the fiscal policy - growth literature by examining how the structure of direct taxation affect economic growth and the causal link between individual direct taxes (specifically personal and corporate taxes) with economic growth of a small open developing country, Kenya.

1.3 Research Questions

The research will be guided by the following questions:

i. What is the relationship between corporate income tax and economic growth in Kenya?
ii. What is the relationship between personal income tax and economic growth in Kenya?
iii. How does direct taxes relate to economic growth in Kenya?

1.4 Overall Objective of the Study

The overall objective is to determine the relationship between direct taxes and economic growth

The specific objectives of the study are:

a) To determine the nature of relationship between corporate income and economic growth.
b) To determine the nature of relationship between personal income tax and economic growth.
c) To draw policy implications from the above findings.

1.5 Significance of the Study

First, the study provides important information on direct taxes and economic growth which is beneficial to the government, tax collection agencies such as the Kenya Revenue Authority among other organizations. Secondly, policy makers will benefit in analyzing the nature of relationship between direct taxes and economic growth. Thirdly, other researchers would build on the findings of this study to carry out further research in the same area to expound, improve, update or enrich the findings of this study. Finally, the study will also add to the much needed economic literature on taxation and its growth linkages.

1.6 Scope of the Study

This study covers the period 1970 to 2011. The choice of 1970 to 2012 for analysis is influenced by the fact that it is the time during which Kenya started experiencing fiscal strains with expenditure rising more rapidly than domestic revenues, a phenomenon mainly attributed to

large scale infrastructure investment and other social programs. It is also influenced by the act of the government of passing the bill of VAT (2011) to adjust some items for taxation.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature on taxation, direct taxes and economic growth and attempts to relate this study to available literature. It traces the theoretical development in the economic analysis of the relationship of direct taxes on economic growth in Kenya. It starts with the theoretical literature then empirical literature.

2.2 Theoretical Literature

2.2.1 Theories of Taxation and Economic Growth

a) Solow's Theory of Economic Growth;

According to Solow (1956) model on the theory of economic growth, economic growth takes place as a result of increase in physical and human capital where the law of diminishing returns to scale is applied. In this approach, the output y, of an economy is determined by its labor force and the size and technological output of its capital supply. The relationship between taxation and economic growth can be presented in the following growth model

$$\dot{y} = \propto \dot{k} + \beta \dot{m} + \mu \quad \text{..... (2.1)}$$

Where: $(\dot{y})$ is change in real GDP determined by change in physical capital$(\dot{k})$ and human capital $(\dot{m})$and μ is an error term which measures other factors that may affect national output. α and β measure how changes in physical and human capital affect national output.

This theoretical framework helps to illustrate how real GDP growth is indirectly affected by the influence of a country's tax system on each of the above five factors on the right side of the equation in several ways. First, high tax rates on corporate and individual income can discourage investment, $(\dot{k})$. Besides, high taxes might distort labor supply growth $(\dot{m})$, by discouraging labor force participation, hours of work, or by distorting occupational choice or the acquisition of education, skills, and training. Moreover, tax policy has the potential to discourage productivity growth $(\dot{m})$ by reducing participation in 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 (Harberger, 1962, 1966).

Lastly, 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 α and β, which will tend to retard economic growth, holding constant investment rates in both human and physical capital (Engen and Skinner, 1992).

b) Endogenous Growth Model

According to endogenous growth theory, fiscal policy can affect both the level and growth rate of per capita output Barro (1990) and Barro and Sala- i - Martin (1992, 1995). They employed a Cobb- Douglas- type production function with government provided goods and services (g) as an input to show the positive effect of productive government spending and the adverse effects associated with direct taxes.

The production function, in per capita terms, can be given as follow,

$Y = Ak^{1-\propto}g^{\propto}$ ..... (2.2)

Where Y is per capita output, k is per capita private capital and A is a productivity factor. If the government balances its budget in each period by raising a proportional tax on output at rate (r) and indirect (lump- sum) taxes L, the government budget constraint can be expressed as,

$ng + C = L + tny$ ..... (2.3)

Where n is the number of producers in the economy and C is government consumption, which is assumed unproductive, g is government goods and services, t is period and y is per capita output. Theoretically, a proportional tax on output affects private incentives to invest, but a lump sum tax does no. thus, if there is no investment then economy growth will be negatively affected.

The investigation of the relationship between direct tax and economic growth in Kenya is anchored on the endogenous framework which advanced a dynamic steady growth state. Popularized by King and Robelo (1990), the endogenous growth model contends that government policy, including taxation, can permanently increase per capital output with a high level of innovation. The economic implication of this model is that taxes and government spending can have consistent effect on output in both the short run and the long run.

King and Rebelo (1990) show that in the endogenous growth theories, the stable growth rate of the Solow model is restructured by introduction of technology. Governments pursue reforms in tax and expenditure policies act as incentives to firms to venture into research and development and to invest in capital formation which yield external effects that benefits the rest of the economy. Therefore in the long-run, taxes have unrelenting effects on the economy.

Higher direct taxes reduce personal income and discourage private investment and consumption, thereby impeding economic growth. Moreover, higher direct taxes create incentives for agents to engage in less productive and more lightly taxed activities, leading to lower rates of economic growth (Mendoza et al., 1997; Engen and Skinner, 1996; Myles, 2000).

c) Exogenous Growth Model

Zagler and Durnecker (2003) provide a simple growth model for illustrating how a range of tax instruments can affect economic growth. The central theoretical purpose of exogenous growth theories appears precisely to build a neoclassical model of economic growth. The long run growth rate depends on the growth rate of the labour force and on labour augmenting exogenous technical progress. Thus savings have no effect on the rate of capital accumulation.

The meaning of endogenous growth in the new growth literature is that output grows faster than the exogenous factors alone would allow. The innovation of these contributions relative to the Solovian model is that the rate of technological change, and a fortiori the rate of growth, is no longer taken as given from outside, but envisaged to depend on the behaviour of agents. The fundamental argument for endogenous growth is that accumulation of capital can result to increasing returns, ensuring a long run positive growth rate. Tax policies are deemed to have an implication on decisions to save and accumulate capital and technology and therefore have a bearing on economic growth.

Zilcha and Eldor (2004) argued that corporate tax schedules in most countries are characterized by an asymmetric treatment of profits and losses: profits are taxed at a higher rate than losses are compensated. In such a context, firms pay the statutory corporate tax rate in the event that the risky project is successful, but is only partly compensated in the event that it is unsuccessful. Corporate taxes and tax incentives have the potential to discourage productivity growth by

attenuating research and development (R&D) activities whose spillover effects can potentially enhance the productivity of existing production factors.

Vartia (2008) highlights three specific channels through which taxation affect productivity, namely distortions in factor prices and factor allocation, entrepreneurship and research and development activity. High corporate taxes reduce the firms' incentives to invest in technology and other productivity-enhancing innovations by reducing the potential profits by them thus reducing productivity in the formal sector, hurting the overall long-term economic growth. High corporate taxes reduce incentives for risk taking by firms with negative consequences for productivity.

Ormaechea and Yoo (2012) stated that increasing income taxes while reducing consumption and property taxes is associated with slower growth over the long run. They also found that among income taxes, social security contributions and personal income taxes have a stronger negative association with growth than corporate income taxes; a shift from income taxes to property taxes has a strong positive association with growth; and a reduction in income taxes while increasing value added and sales taxes is also associated with faster growth.

Worlu and Emeka (2012) examined the impact of tax revenue on the economic growth of Nigeria, judging from its impact on infrastructural development from 1980 to 2007. The results showed that tax revenue stimulates economic growth through infrastructural development. The study also revealed that tax revenue had no independent effect on growth through infrastructural development and foreign direct investment, but just allowing the infrastructural development and foreign direct investment to positively respond to increase in output. However, tax revenues can only materialize its full potential on the economy if government can come up with fiscal laws and legislations and strengthen the existing ones in line with macroeconomic objectives, which will check-mate tax offenders in order to minimize corruption, evasion and tax avoidance. These will bring about improvement on the tax administration and accountability and transparency of government officials in the management of tax revenue. Therefore, these will increase the tax revenue base with resultant increase in growth.

The government of Kenya has over the years designed economic policies with an aim of boosting private investment which was robust during the first decade of independence before deteriorating in the other decades. Stephen (2012) investigated the effects of fiscal policy on private investment in Kenya from 1964 to 2010. The results of the study revealed that fiscal policy design and implementation matters to private investment levels in Kenya. The study found that taxes, government expenditure, government debt servicing and fiscal reforms could either promote or deter private investment both in the short-run and in the long-run. The study concludes that appropriate measures ought to be taken while coming up with fiscal policy framework to ensure that as it achieve other objectives of the government; growth of private investment is taken into consideration.

World-wide governments including the Kenyan government incur expenditures to pursue a variety of objectives, one of which is economic growth. Abdinasir (2013) examined the relationship between public expenditure and economic growth in Kenya using a time series data covering the period 1980-2010. The study findings revealed that public spending on agriculture and infrastructure promote economic growth where as the public expenditure on health and education were found to be negatively related to economic growth. This means that to experience growth in economy, the government should fund more the projects that spur growth.

Although the income tax system can influence the economy, there is no guarantee that tax rate cuts or tax reform will raise the long-term economic growth rate (Gale and Samwick, 2014). They explained in their paper on effects of income tax changes on economic growth that, tax rate cuts may encourage individuals to work, save, and invest, but if the tax cuts are not financed by immediate spending cuts they will likely also result in an increased federal budget deficit, which in the long-term will reduce national saving and raise interest rates. Base-broadening measures can eliminate the effect of tax rate cuts on budget deficits, but at the same time they also reduce the impact on labor supply, saving, and investment and thus reduce the direct impact on growth. The results suggested that not all tax changes will have the same impact on growth. Reforms that improve incentives, reduce existing subsidies, avoid windfall gains, and avoid deficit financing will have more auspicious effects on the long-term size of the economy, but may also create trade-offs between equity and efficiency.

2.3 Empirical Literature Review.

Skinner (1988) used data from African countries to conclude that income, corporate, and import taxation led to greater reductions in output growth than average export and sales taxation. Given the same, Dowrick (1992), also found a strong negative effect of personal income taxation, but no impact of corporate taxes, on output growth in a sample of Organization for Economic Co-operation and Development (OECD) countries in (1960-1985).

Koester and Kormendi (1989) find in a cross-country analysis for the 1970s a significant negative effect of the marginal tax rates on the level of real GDP per capita, but not on the rate of growth when the latter is controlled for the initial level of income. They suggest that holding average rates constant, a 10 percentage point decrease in marginal tax rates would increase per capita income in an average industrial country by more than 7 percent.

Slemrod (1995) finds a strong positive correlation between the level of general government tax revenue/GDP ratio and the level of real GDP per capita in time series for the United States (1929to 1992). He finds a positive correlation between the level of tax revenue/GDP ratio and the level of real GDP per capita across countries in particular when developing countries are included in the sample. For OECD countries alone, he finds no obvious positive or negative relationship between the level of tax rates and the level of GDP per capita.

Kneller, Bleaney and Gemmell (1999) focused on 22 OECD countries for the period 1970 to 1995. They used five years average of the annual data to avoid the business cycle effect. They employed static panel econometric techniques to investigate the relationship between fiscal policy and growth. The study found a significant and positive relationship between non-distortionary taxation (indirect tax) and economic growth. They concluded that indirect tax is less harmful to the economy as it does not cut down on return on investment compared to direct tax.

Lovell and Branson (2001) analyzed the impact of tax burden and tax mix on economic growth in New Zealand using data envelopment analysis and a log quadratic equation during the period 1946 - 1995. They found that the trends in tax burden in New Zealand had risen from 23.0 to 35.0% and the ratio of direct taxes to indirect taxes had varied between 0.31 and 0.75. These were found to be negatively affected by economic growth.

Rosen and others (2001) analysed the personal income tax returns of a large number of sole proprietors before and after the tax reform act of 1986 and determined how the substantial reductions in marginal tax rates associated with that law affected the growth of their firms as measured by gross receipts. They found that individual income taxes exerted a statistically and quantitatively significant influence on firm growth rates. The results showed that raising the sole proprietors' tax price by 10%, increased receipts by about 8.4%. This finding is consistent with the view that raising income tax rates discourages growth of small businesses.

Padovano and Galli (2001, 2002), found that the marginal corporate tax rate is negatively correlated with economic growth in a cross-section of 70 countries during 1970–97, while other tax variables, including the average tax rate on labor income, are not significantly associated with economic growth.

Gustavo and others (2013) estimated the effects on growth of taxes, namely personal income tax and corporate income tax. They evaluated the effect of these tax instruments on growth for Argentina, Brazil, Mexico, and Chile using vector autoregressive techniques, and a worldwide sample of developing and developed countries using panel data estimation. They found that, for the most part, personal income tax had a positive effect on economic growth in Latin America. They also found small negative effects of corporate income tax on growth for individual countries, specifically Argentina, Mexico, and Chile. For corporate income tax, their results suggested that, reducing tax evasion and greater reliance on collection may boost economic growth in the region as a whole and especially for natural resource exporting countries.

Arisoy and Unlukaplan (2010) focusing on the Turkish economy, investigated the relationship between direct and indirect tax and economic growth, using data from 1968-2006. Ordinary Least Square technique was adopted and it was found that real output is positively related to indirect tax revenue. They concluded that indirect taxes are significantly and positively correlated with economic growth in Turkey.

Poulson and Kaplan 2008) examined the impact of tax policy on economic growth in the states within the framework of an endogenous growth model. Regression analysis was used to estimate

the impact of taxes on economic growth in the states from 1964 to 2004. The analysis revealed a significant negative impact of higher marginal tax rates on economic growth.

Dahlby and Ferede (2012) examined the impact of the Canadian provincial governments' tax rates on economic growth using panel data covering the period 1977–2006. The findings were that a higher provincial statutory corporate income tax rate is associated with lower private investment and slower economic growth. The empirical estimates suggest that a 1 percentage point cut in the corporate tax rate is related to a 0.1–0.2 percentage point increase in the annual growth rate.

Umoru and Anyiwe (2013), in their research on tax structures and economic growth in Nigeria, empirical results indicated that the policy of direct taxation is significantly and positively correlated with economic growth and that the tax-based revenue profile in Nigeria is skewed towards direct taxes. Thus according to this result among many others, the global transition from direct taxation to indirect taxation lack empirical justification in developing countries such as Kenya. Therefore rather than expand the indirect tax structures, the government should expand the structures of direct taxes in Kenya.

Government continuously operates with revenues below expenditures and taxation is increasingly becoming a sensitive political and economic tool to be relied upon as an instrument for revenue generation and economic growth. Austin and Simwaka (2012), examined the impact of tax policy and donor inflows on economic growth in Malawi from 1970 to 2010 using data envelope analysis (DEA) and transcendental logarithm. The results implicated that income taxes on average contributed 40.0% to total tax revenue while and that a 1.0% decrease in tax burden can raise economic growth by 0.8% in Malawi while a similar reduction in collection of taxes through expenditure can raise growth by 0.6 %. Another finding was that economic growth rises by 0.3 % for a 10.0% rise in foreign grants. The study therefore finds that reduction in tax burden is more potent in influencing economic growth than fine tuning the proportion in which income and consumption taxes are collected in Malawi. Furthermore, a complete reversal in donor funding will reduce economic growth by 3.0%.

Musanga (2007) investigated the relationship between indirect taxes and economic growth in Uganda using data for the period 1987 to 2005. The study adopted the cointegration regression technique. The result of the study revealed that a percentage change in indirect tax would decrease economic growth by 0.53%. The indirect tax variable had a t-value of (-2.588) which means there was a significant but negative relationship between indirect tax and economic growth in Uganda.

The Kenyan government has been committed to a stable macroeconomic environment, characterized by low and stable inflation and sound fiscal policy. However, in the late 1970s to date, the government has continued to experience high, persistent and unsustainable deficits. Despite the fact that economic reform programs adopted in recent years have emphasized demand management through fiscal restraint, fiscal deficit has been phenomenal to Kenya's economy coupled with a dwindling economic growth. Fredrick and others (2013), in their study of the relationship between fiscal deficits and economic growth in Kenya, found a positive relationship between budget deficits and economic growth Kenya. Therefore, policy makers should formulate and implement policies that encourage prudent financial management and enhanced revenue collection by revenue authority so as not crowd-out private sector investment by borrowing domestically.

2.4 Overview of Literature

Solow growth model implies that taxes should have no effect on long-term growth rates by assuming that other factors affecting economic growth are fixed and only physical and human capital are variables. But taxes specifically direct taxes can have long run effect on growth by worsening welfare or upholding it. This can happen if the direct tax structure contributes to the widening the gap between those who have and those who have not. Taxes on income and profit should be well structured in a progressive manner according to the level of incomes and profits to promote equity and thus social welfare.

Vartia (2008), Zilcha and Eldor (2004) , Mendoza et al (1997), Engen and Skinner (1996), and Myles (2000) argued that increases in income taxes while reducing consumption and property taxes is associated with slower growth over the long run. Also high corporate and income taxes reduce incentives for investments and risk takings by firms and individuals. But also it can be argued that low taxes can encourage investment and risk taking only in the short run. This is

because despite favourable conditions from low taxation businesses need also security, infrastructure and other social amenities to prosper. This can only happen if the government has enough resources to fund its expenditure which is taxation.

From the empirical findings high corporate and income taxes negatively affect economic growth. But the question here is, do the states collect enough revenue from taxes in flourished economy or do taxes cause economy to grow?. Empirical finds are only showing how high taxes negatively affect economic growth but not how economic growth can affect the payment of taxes by individuals and corporations. This does not give a clear illustration on how direct tax structure can be determined to boost the welfare, promote equity and economic justice.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides the theoretical and methodological framework used to analyze the data and provide direction in achieving the study objectives. It gives an outline of empirical models to be used and the various tests performed to ascertain the validity of data and robustness of the model. These include stationarity test, cointegration analysis and error correction modeling.

3.2 Research Design

The study builds on existing research studies and methodologies and uses both descriptive and analytical research design. Ordinary Least Square (OLS) method has been employed in analyzing time series data captured over the period under study. Granger casualty test was then used to test causality relationship between direct tax and economic growth.

3.3 Theoretical Framework.

The study adopts Feder's (1982) two sector model as supported by Ram (1986), Koch *et al* (2005) and Unlukaplan (2010) where an economy comprises of the government and the private sectors that consumes labour and capital as indicated below respectively:

$$Govt = f(L_g, K_g) \quad \text{(3.1)}$$

$$Priv = f(L_p, K_p) \quad \text{(3.2)}$$

The labour force and capital inputs consumed by an economy comprises those of the private and public sector as shown.

$$L_E = L_g + L_p \quad \text{(3.3)}$$

$$K_E = K_g + K_p \quad \text{(3.4)}$$

Where: $L_E =$ labour force inputs to the economy to private and public sectors respectively

$K_E =$ capital inputs to the economy supplied to both private and public sectors respectively

Since the government controls the private sector through fiscal policies as postulated by the Keynesian theory, the government is then factored into the production process through government expenditure and taxation. Equation (3.5) then gives the output equation.

$$Y = f\left(L_E, K_{E,}G\right) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3.5)$$

Where: $Y =$ Gross domestic product at market price

$L_E =$ Total labour input in the production of country's output

$K_E =$ Total capital input in the production of country's output

$G =$ Fiscal control of the government in form of direct taxes and expenditure

The equation (3.5) is then differentiated to find the marginal contributions of the factor inputs to growth as given by equation (3.6)

$$\frac{\Delta Y}{Y} = \frac{\Delta L_E}{L_E}(L_E/Y\ ) + \frac{\Delta K_E}{K_E}(K_E/Y\ ) + \ \frac{\Delta G}{G}\ (G/Y) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3.6)$$

Rewriting equation (3.6) yields:

$$\frac{\Delta Y}{Y} = \propto_0 + \propto_1 \frac{\Delta L_E}{L_E} + \propto_2 \frac{\Delta K_E}{K_E} + \propto_3 \frac{\Delta G}{G} + \varepsilon \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3.7)$$

To find out the relationship between direct taxes and growth of output, the study makes an assumption as postulated by Koch *et al* (2005) and Arisoy and Ulukaplan (2010) that the economy is static where government expenditure balances total taxes collected (direct and indirect taxes).

$$Govext = G = T = T_d + T_{id} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3.8)$$

Where: $Govext =$ Government expenditure

$T =$ Total tax revenue that comprises of direct taxes T_d and indirect taxes T_{id}

Substituting equation (3.8) in equation (3.7) yields the equation (3.9) as indicated below:

$$\frac{\Delta Y}{Y} = \propto_0 + \propto_1 \frac{\Delta L_E}{L_E} + \propto_2 \frac{\Delta K_E}{K_E} + \frac{\propto_3 \Delta(T_d + T_{id})}{(T_d + T_{id})} + \varepsilon \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots . (3.9)$$

Levine and Renelt (1992) argue that in order to avoid the problem of multicollinearity, the variables can be transformed or used as ratios. Indirect taxes being lump sum is dropped from equation 3.9.The study employs ratios and only narrows to the direct taxes component which is under investigation.

$$\frac{\Delta Y}{Y} = \propto_0 + \propto_1 \frac{\Delta L_E}{L_E} + \propto_2 \frac{\Delta K_E}{K_E} + \propto_3 \frac{T_d}{T_d} \frac{T_d}{T} + \varepsilon \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots .. (3.10)$$

Rewriting the equation (3.10) into the direct tax components namely personal(PI_t) and corporate taxes(CIP_t) yields:

$$\frac{\Delta Y}{Y} = \propto_0 + \propto_1 \frac{\Delta L_E}{L_E} + \propto_2 \frac{\Delta K_E}{K_E} + \propto_3 \frac{\Delta(PI_t)}{T} + \propto_4 \frac{\Delta CIP_t}{T} + \varepsilon \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (3.11)$$

Where: $\propto_0$ is a constant and $\propto_1, \propto_2, \propto_3, and \propto_4$ are the coefficients of the variables used in the estimation.

The analytical framework shows that apart from direct taxes, other factors such as growth in labour force, growth in capital stock (investment) affect growth of output. The model therefore captures the contribution of personal tax and corporate tax, labour force and investment as crucial factors for the growth of output.

3.4 Model Specification

The model to be estimated derives from the following functional specification as shown by equation (3.12).

$$Eg = f(PI_t, CIP_t, Invest, LF) \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (3.12)$$

Where:

$Eg =$ Economic growth proxied by gross domestic product at market prices

PI_t= Changes in Personal income tax proxied as a ratio to total tax revenue

CIP_t = Changes in Corporate income tax proxied as a ratio to total tax revenue

Invest = changes in capital stock (investment) in relation to total capital in the economy

LF = labour force proxied as a change in labour force in relation to total labourforce.

The estimable form of this function is the equation (3.13).

$$Eg = \propto_0 + \propto_1 CIP_t + \propto_2 PI_t + \propto_3 LF + \propto_4 Invest + \varepsilon \quad \text{..... (3.13)}$$

ε = Error term of the estimates captures sources of error that are not captured by other variables.

3.5 Definition of Variables and the Expected Signs

The corporate tax rate is the rate that is imposed on taxable income of corporations, which is equal to corporate receipts less deductions for labour costs, materials, and depreciation of capital assets. In contrast, the effective corporate tax rate measures the taxes a corporation pays as a percentage of its economic profit.

A personal income tax is levied as a percentage of a person's wages and salaries, with some deductions permitted, along with the net income or loss from businesses and investments.

Personal corporate income taxes can be measured from the data acquired from Kenya National Bureau of Statistics annual surveys and KRA on how taxes paid per return vary with income per return. I then used the ratio of the change in taxes per return to the change in income per return to calculate marginal tax rates. Hence construct appropriately weighted averages of these marginal tax rates for 1970-2012.

Investment: is spending on capital goods by firms and government, which will allow increased production of consumer goods and services in future time periods. The total investment was obtained from special surveys from Kenya Bureau of Statistics. Unfortunately the special survey did not cover that kind of investment from households sector, trade, transportation and other service sectors. Hence I had to do some estimation.

Labour force: is the total number of people employed or seeking employment in a country or region. Typically "working-age persons" is defined as people between the ages of (18-64) years.

In proportion to the size of the population, the size of the labour force was measured by the total population who are actively participating in economic activities.

Explanatory Variables	Coefficients	Expected signs
Corporate income tax	$\propto_1$	Positive or Negative
Personal income tax	$\propto_2$	Negative
Labour force	$\propto_3$	Positive
Investment	$\propto_4$	Positive

3.6 Pre-Estimation Tests

The study utilized time series data and therefore test for stationary and non-stationary of the data used in estimation was done. Augmented Dickey Fuller (ADF) tests were used to test for stationary or order of integration of each series of the variables.

Cointegration analysis tests were conducted in case of non-stationary of the series data to ensure long-run relationships. Residual diagnostic tests on the model results included testing for normality, serial correlation, heteroskedasticity and specification of the error. In addition, the study combined ECM and cointegration to provide tools to quantify both the long-run relationship and the short-run deviations from equilibrium.

3.6.1 Granger Causality Test

The Granger causality test proposed by Granger (1969) and subsequently modified by Toda and Yamamoto (1995) is robust and widely used in econometric studies to establish the direction of causality between or among variables. The test entails using F-statistic framework in restricted and unrestricted models to establish whether lagged information of one variable, the independent variable, provides statistically significant information about another variable, the dependent variable. The Granger causality test is normally preferred to the conventional F-test for determining direction of causality between variables because the conventional F-test is not valid for non-stationary variables and that the conventional F-test does not have a standard distribution (Gujarati, 1995).

The study used granger causality to test how economic growth and direct taxes cause each other in the economy.

3.6.2 Testing for Cointegration

Regression on non-stationary series generates a spurious regression. Engle and Granger (1897) identified a situation where such a regression would not yield spurious relationship by conducting a two step procedure. Therefore, the study used Engel-Granger method to test for cointegration to avoid the situation of spurious regression.

The first step involved testing for unit roots in the residual and cointegrating relationships. The study constructed the null hypothesis that the residuals are non stationary by having unit roots against the alternative of stationary residuals. Then it used Augmented Dickey Fuller method to test for unit roots in the residuals of cointegration relationships.

3.6.3 Constructing an Error Correction Model (ECM)

When the error term became non-stationary, an error correction term was constructed which was used together with the stationary variables in cointegration relationships to construct the error correction model (ECM) which integrates short run and long run dynamics of the model. An ECM takes the following form.

$$\Delta y_t = \propto + \sum_{i=1}^{p} \emptyset_i \, \Delta y_{t=i} + \sum_{i=0}^{p} \delta_i \, \Delta x_{t=i} + \pi ECT_{t=1} + \varepsilon_t$$

Where $ECT_{t=1}$ one period lags of the residual term (disequilibrium) from the long run relationship, ε_t is white noise error term, and $\propto, \emptyset_{i,} \delta_{i,} \pi$, p are parameters. The coefficient (π) of the error term ($ECT_{t=1}$) represents the speed of adjustment to the long run equilibrium i.e. it shows by how much any deviation from the long run relationship is corrected in each period.

3.7 Data Type and Source

The study used time series data for the period 1970 to 2011. Data on corporate and personal income taxes was obtained from Kenya Revenue Authority and Central Bank of Kenya, while that of economic growth, investment and labour force proxied by population was obtained from various economic surveys published by Kenya National Bureau of Statistics.

3.8 Data Analysis

Data was first cleaned, the process by which data was checked for consistency in measurement and outliers removed after confirmation. The data was refined, transformed into ratios and then STATA software was used for analysis. The software is preferred for time series analysis as it can be used to conduct various tests. Second, linear relationships on the explanatory variables were tested using the correlation matrix. Third, autocorrelation between the dependent variables and the residuals were tested using Durbin Watson d- statistic. A statistic of 2.0 shows no serial correlation and the residuals become the error correction term (ECT).

Fourth, unit root tests was carried out to appraise the effect of shock and to avoid spurious regression related to non stationary variables by using Augmented Dickey Fuller test (ADF) statistics. It is advisable to lag the variables once; however the number of lag lengths depends on the test statistic and that for critical values at 1%, 5% and 10%. If the test statistic is less than that at critical values, then the variable is stationary. Lagging is done until this is achieved for all variables otherwise stationary. Fifth, correlation analysis was carried out.

The last step was the unit root test. This involved a two step analysis. The first step entailed estimation of the long rum Ordinary Least Square (OLS) equation of the variables integrated to order (n) in this case n=1. The second step was to run an OLS by including the Error Correction Term.

CHAPTER FOUR

ESTIMATION RESULTS

4.1 Introduction

The chapter provides the study findings and their interpretations. The analysis dwells on the assessment of the link that exists between direct taxes and economic growth. It begins by preliminary data findings by giving the descriptive statistics, to complex time series analysis such as correlation analysis, unit root tests among other tests upon which regression analysis was carried out.

4.2 Descriptive Statistics

The study statistics namely mean, standard deviation, skewness and kurtosis were investigated. Mean is used to locate the center of the relative frequency distribution, kurtosis characterizes the relative peakedness or flatness of a distribution compared with the normal distribution, skewness characterizes the degree of asymmetry of a distribution around its mean while the standard deviation measures the spread of a set of observations. Other statistics include minima and maxima values as shown on Table 4.1

Table 4.1 Descriptive Statistics Results

Variables	GDP	CIP_t	PI_t	LF	Invest.
Mean	669719.3	1160714	1949634	1388.174	6455762
Min	11318	0	29204	644.5	112710
Max	3145679	9381001	1.08e+07	2209.5	3.51e+07
Std.dev	872580.7	2295413	2477033	436.3474	8871089
Skewness	1.48926	2.100997	1.864719	-0.017185	1.73906
Kurtosis	4.184346	6.655988	6.33144	1.892231	5.174567
Observation	43	43	43	43	43

From table 4.1, it is clear that there is high spread of data among variables. From its nature, it was so anticipated since time series data especially those, which include aggregates follows a

random or stochastic process. The GDP had an average value of 669719.3, the least value of 11318, the maximum value of 3145679, the standard deviation of 872580.7, the skewness value of 1.48926 and Kurtosis value of 4.184346. Corporate Income Tax had an average value of 1160714, the least value of 0, the maximum value of 9381001, the standard deviation of 2295413, the skewness value of 2.100997 and Kurtosis value of 6.655988. Personal Income Tax had an average value of 1949634, the least value of 29204, the maximum value of 1.08e+07, the standard deviation of 2477033, the skewness value of 1.864719 and Kurtosis value of 6.33144. Labour Force had an average value of 1388.174, the least value of 644.5, the maximum value of 2209.5, the standard deviation of 436.3474, the skewness value of -0.017185 and Kurtosis value of 1.892231. Investment had an average value of 6455762, the least value of 112710 the maximum value of 3.51e+07, the standard deviation of 8871089, the skewness value of 1.73906 and Kurtosis value of 5.174567.

From table 4.1, data for investment was widely spread than other variables 8,871,089 Kenyan million pounds. This is mainly because of the fluctuations in the investment caused by unfavorable conditions in economy such as corruption, politics among others. It also has a large mean indication of the fact that economy revolve around investment. Personal Income Tax has a large value of the mean because of the large population of tax payers. The range of the data that is the difference between the maximum value and minimum value was huge gap which demonstrates different economic conditions that the Kenyan economy have been going through within the time period used in the study

Analysis of skewness shows that GDP, Corporate Income Tax, Personal Income Tax and Investment are asymmetrical to the right around its mean, while Labour Force is negatively skewed. Consequently, Corporate Income Tax, Personal Income Tax and Investment are highly peaked regressors compared to Labour Force. Furthermore the standard deviation of Corporate Income Tax, Personal Income Tax and Investment are large values which mean that the observation is more spread out than that of Labour Force which is smaller.

4.3 Correlation Matrix Results

The correlation matrix reveals that the correlation coefficient for all the variables are greater than 0.5. Since the correlation matrix is an indicator in testing linear association between the explanatory variables, it follows that there is a high degree of correlation between the regressors;

thus multicollinearity is very likely. All variables are positively correlated. For instance, GDP is highly correlated to all variables which consequently are highly correlated to each other. The correlation matrix is shown by Table 4.2

Table 4.2 Correlation Matrix

	GDP	Corporate Income Tax	Personal Income Tax	Labour Force	Investment.
GDP	1.00				
Corporate Income Tax	0.96	1.00			
Personal Income Tax	0.96	0.93	1.00		
Labour Force	0.86	0.72	0.84	1.00	
Investment	0.99	0.98	0.97	0.83	1.00

Table 4.2 shows that all variables are strongly correlated. Regression analysis on the highly collinear variables would therefore yield spurious results and therefore the multicollinearity problem should be solved.

4.4 Time Series Analysis Results

4.4.1 Stationarity Test results

Non stationary time series data often results into spurious results since their estimates are considered to have non constant mean and variance. In avoiding the effect of shock and a spurious regression caused by non stationary variables, it is important that the variables used be stationary.

As a result, a test for the time series properties of the variables used in the model using Augmented Dickey –Fuller (ADF) test by using correct methods of Akaike's information criteria

(AIC) and Schwartz's Bayesian information criteria (SBIC) of determining lag lengths is carried out.

4.4.2 Determination of Lag Lengths

The study reveals that, the most stable lag lengths for GDP, Corporate Income Tax, Personal Income Tax, Labour Force and Investment for the ADF are 2, 1, 1, 1 and 1 respectively. The results for the lag length selection and probabilities are presented by appendix 2.

4.4.3 ADF Statistic for Unit Root Test

From criteria established above, the number of lags was then used for the ADF stationarity test for variables at order (0) and more. The ADF statistics for all variables indicated that they are not stationary at critical values of 1%, 5% and 10%. The variables were then differenced to the order to which they attained stationarity which was found to be order (2) as shown in the ADF table 4.3.

Table 4.3 Unit Root Test Results.

Variables	No. of lags	Critical Values at 1%	Critical Values at 5%	Critical Values at 10%	ADF	Stationarity	Order of Integration
GDP	2	-3.655	-2.961	-2.613	-6.759	Stationary	2(0)
Corporate Income Tax	1	-3.655	-2.961	-2.613	-7.770	Stationary	2(0)
Personal Income Tax	1	-3.655	-2.961	-2.613	-5.271	Stationary	2(0)
Labour Force	1	-3.655	-2.961	-2.613	-6.783	Stationary	2(0)
Investment	1	-3.655	-2.961	-2.613	-7.207	Stationary	2(0)

The ADF statistic for all the variables is less than the critical values at 1%, 5%, and 10% showing stationarity of variables.

4.5 Cointegration Test Results

Engel-Granger (1987) two step procedure was used to test for cointegration. In the first step, we estimated a long run equation using Ordinary Least Square Method (OLS) with variables in their level. This was to help determine whether there was long term relationship existing for the variables. The second step was to generate residuals from the long run equation and testing for their stationary.

The overall goodness of the fit of the long run model given by Adjusted R-squared = 0.9929 indicates that 99.29% of the variations in economic growth as proxied by GDP is explained by the variables included in the model.

The F-statistic measuring the joint significance of all regressors is 1470.99 with a p-value of 0.0000. Since the F statistic is very significant, it means that the independent variables jointly explain the variations in economic growth in Kenya. The coefficient results for long run equation using OLS method is indicated by Table 4.4.

Table 4.4 Regression Results (Long run Equation)

Variables	Coefficient	t-value	p-value
Corporate Income Tax	-0.0774292	(-1.90)	0.065
Personal Income Tax	-0.0505608*	(-2.43)	0.020
Labour Force	112.1143	(1.46)	0.153
Investment	0.1265526**	(8.27)	0.000
Constant	-114460	(-1.55	0.130
Number of obs. = 43		F(4, 38) =1470.99	
Prob>F = 0.0000		Adj R-squared = 0.9929	

** Coefficient is significant at 1%

* Coefficient is significant at 5%

The coefficient in the long run equation show that the impact of Corporate Income Tax is not statistically significant at 5% level because the p-value is 0.065 which is above 0.05. It has a t-value of (-1.90) which means that there was a negative relationship between Corporate Income Tax and Economic growth in Kenya. The result shows that an increase by one unit in Corporate

Income Tax would reduce the economic growth proxied by GDP by 0.0774292 Kenyan million pounds. This phenomenon indicates that the increase in Corporate Taxes on businesses may be harmful to the economy in the long run. The Kenya Revenue Authority should therefore exercise due care in levying Corporate Taxes and levy tax that does not act as an incentive to doing business.

The coefficient of Personal Income Tax in the long run model indicates that, the effect of Personal Income Tax on growth was found to be negative and significant at level 5% with p-value of 0.020. The t-value was (-2.43) which means that there was a negative relationship between Personal Income Tax and economic growth. The result shows that a unit increase in Personal Income Tax would reduce economic growth proxied by GDP by 0.0505608 Kenyan million pounds. This would be explained by the fact that high taxes on personal incomes may act as an incentive to hard work and if not invested in meaningful development projects in the long run, people may not be motivated to work resulting in negative economic growth.

The coefficient of Labour Force in the long run model implies that, the effect of Labour Force on growth was found to be positive and statistically insignificant because of its p-value being 0.153 above 0.05. The t-value of Labour Force was found to be (1.46) which means that there was a positive relationship between Labour force and economic growth. An increase in labour force by one unit would result to an increase in economic growth as proxied by GDP by 112.1143 Kenyan million pounds.

The coefficient of Investment in the long run model was found to be positive and statistically significant of a p-value of 0.000. The t-value was (8.27) which mean that there was a positive relationship between investment and economic growth. The result shows that a unit increase in investment would result to an increase in economic growth proxied as GDP by 0.1265526 Kenyan million pounds.

Increased labour force is crucial to corporate and industries as this would result to cheap informal and formal manpower. Additionally, investments such foreign direct investment that do not receive compensations in terms of tax holidays, rebates, utilization of a given percentage of resources before paying profits, among other benefits may contribute positively to the economy.

Our next step was to generate residuals from the long run model for modeling the Error Correction Term.

4.6 Residual Test Results

The ADF test on the residuals revealed that they were non stationary at 1%, 5% and 10% as presented by appendix 3, which leads to the conclusion that an Error Correction Term exists for modeling the short run model. The result for lag selection for the residual reveals that it is most stable at lag length 2, the raw with most stars as presented by appendix 4. The residual was then differenced to the order to which it attained stationarity which was found to be order 2(0) as shown by appendix 5.The residuals are stationary at order 2(0) which forms the Error Correction Term (ECT) for the short run Error Correction Model (ECM) as shown by Table 4.5.

4.7 Error Correction Modeling (ECM)

The significant p-value for ECT indicates that neglecting the long run equilibrium of the variables would mis-specify the dynamic short run relationship. The ECT becomes the Error Correction Model in the short run model indicated by Table 4.5.

Table 4.5 Regression Results for Error Correction Model (Short Run Model)

Variables	Coefficient	t-value	p-value
Corporate Income Tax	0.929963**	(4.44)	0.000
Personal Income Tax	0.1448146	(0.57)	0.575
Labour Force	1957.4	(0.70)	0.491
Investment	-0.2475156*	(-2.30)	0.028
Error Term(Residuals)	-0.8822421**	(10.12)	0.000
Constant	84507.47	(1.03)	0.309
Number of obs. = 41		F(5, 35) = 30.44	
Prob > F = 0.0000		Adj R-squared = 0.7863	

** Coefficient is significant at 1%, * Coefficient is significant at 5%.

4.8 Direct Taxation and Economic Growth Estimation

The short run model (table 4.5) gives the model under estimation and empirical model for the study. The dynamic growth model results (Table 4.5) explains the relationship between direct taxes (Personal Income Tax and Corporate Income Tax), Investment, Labour Force and economic growth in Kenya. It was noted that most of the coefficient of variables exhibited the expected signs and were significant at 1%, 5% and 10% levels respectively.

The coefficient of the constant was found positive and insignificant at all level, suggesting that even if all the variables in the model were held constant, growth proxied by GDP would still occur. It showed that 84507.47 Kenyan million pounds of variation in growth rate proxied by GDP was due to other factors not included in the model.

The study findings revealed that the model was powerful. The overall goodness of fit of the short run model given by Adjusted R-squared was 0.7863. This showed that 78.63% of the variations in economic growth as proxied by GDP is explained by the variables included in the model. This is supported by F-statistic measuring the joint significance of all regressors as 0.8130 indicating that 81.30% of the variations in economic growth proxied by in Kenya are

explained by the joint variables and F-Probability of 0.0000 that was significant at 1% level, confirming the overall significance of the model.

The coefficient in the short run model shows that, effect of Corporate Income Tax on economic growth proxied by GDP is statistically significant and exhibited positive sign as was expected. An increase in Corporate Income Tax by one unit would increase economic growth proxied by GDP by 0.929963 Kenyan million pounds. This observation is opposed to Padovano and Galli (2002) findings, that corporate tax is negatively correlated to economic growth. This observation can be explained by the fact that, as growth and development of corporations increase in Kenya more tax is derived by taxing the corporate yielding more revenues for the government in form of Corporate Tax. This was also explained by Dahlby and Ferede (2012) that, high Corporate Income Tax rate is associated with lower private investment and slow economic growth.

Major efforts by the Kenyan government to attract more corporate business and industries in line with the Vision 2030 would bring a positive significant contribution to growth of the economy. As opposed to Skinner (1988), who found that Corporate Income Taxes have no impact on growth as proxied by GDP, King and Robelo (1990) in their investigation explained that, taxation can permanently increase per capita output with high level of innovation. Vartia (2008) explained that, high Corporate Taxes reduce the firms' incentives to invest in technology and other productivity-enhancing innovations by reducing the potential profits by them thus reducing productivity in the formal sector, hurting the overall long-term economic growth as depicted by long run equation in table 4.4.

The Coefficient in short run model indicates that Personal Income Tax is statistically insignificant and had unexpected positive impact on growth as proxied by GDP of an economy. The coefficient of Personal Income Tax in long run model shows that Personal Income Tax had a negative impact on growth proxied by GDP as was expected. A unit increase in Personal Income Tax would increase economic growth by 0.1448146 Kenyan million pounds. Although Skinner (1998) found a strong negative effect of Personal Income Taxation on economic growth, Solow (1956) asserts that economic growth takes place as a result of increase in physical and human capital. Therefore, it means that increase in Personal Income Tax positively affect growth in the short run as expressed by the coefficient in table 4.5.

According to this result Corporate Income Tax has a greater impact to economic growth proxied by GDP than Personal Income Tax. This was also echoed by Ormaechea and Yoo (2012). Moreover, Rosen and others (2001) found that Personal Income Tax exerted a statistically and quantitatively significant influence on firm's growth rate which leads to economic growth. This contribution could be explained by the fact that as more employment opportunities and a conducive environment for doing business is created many people would be employed through formal and self employment thus increasing opportunities for incomes in the long run, raising Personal Income Tax revenue. This would result to increased GDP due to their positive contribution to growth and developments of the economy inform of Personal Income Tax revenues and the overall contribution to economic growth would be positive. Therefore direct taxes are significantly and positively correlated with economic growth in Kenya. This was also affirmed by Arisoy and Unlukaplan (2010) in their research in Turkey.

The coefficient of short run equation shows that, Labour Force is statistically insignificant at 5% level and exhibited the expected positive sign of Labour Force on growth as proxied by GDP. This indicates that the reforms so far undertaken by the government, such as National Youth Service (NYS) reform, Youth Fund, Women Fund, Infrastructural Development, Irrigation Schemes in Arid Areas and economic liberalization to create jobs for youths in the economy, have positively contributed to Kenya's economic growth. A unit increase in labour force would result to increase in GDP by 1957.4 Kenyan million pounds. This confirms the government's effort to create more than a million jobs per year as this would result to growth in GDP. Additionally, this suggests that an economy with high levels of employment would translate to increased incomes to people and healthy workforce, increased individual work efficiencies, and increased incomes and tax base. This was also explained by Solow (1956), that the output of an economy is determined by its Labour Force and the size and technological output of its capital supply. Also by Zagler and Durnecker (2003) who, explained that economic growth rate depends on the growth rate of the Labour Force.

The coefficient of Investment in the short run model was found to have unexpected negative impact on growth as proxied by GDP of an economy at 5% level of significance. The coefficient of investment in the long run model table 4.4 showed that impact of investment was positive statistically significant at 1% level. Therefore, it means that investment in the economy

can affect economic growth positively or negatively, depending on the type of investment. This was also explained by Barro (1990) and Sala-i-Martin (1995), that if there is no investment then economic growth will be negatively affected. King and Rebelo (1990) explained that Governments should pursue reforms in direct taxation and expenditure policies to act as incentives to firms to venture into research and development and to invest into capital formation which yield external effect that benefits the rest of the economy.

Investment might decrease or increase economic growth depending on the type of investment. For instance, investments as foreign direct investment that receives compensations in terms of tax holidays, rebates, utilization of a given percentage of resources before paying profits, among other benefits may contribute negatively to economic growth but with adverse effects in the long run as depicted by the study. Abdinasir (2013) The study findings revealed that public spending on agriculture and infrastructure promote economic growth where as the public expenditure on health and education were found to be negatively related to economic growth.

From the study, an increase in one unit of investment would lead to a statistically significant decrease in economic growth proxied by GDP by 0.2475156 Kenyan million pounds. Gale and Samwick (2014) explained in their model that, tax rate cuts may encourage individuals to work, save, and invest, but if the tax cuts are not financed by immediate spending cuts they will likely also result in an increased federal budget deficit, which in the long-term will reduce national saving and raise interest rates thus reduce the direct positive impact on growth. The government with its move to the East should therefore be more cautious to attract investments that are pro-growth and pro-development.

The coefficient of residual was found to be significant at 1% level and exhibited the expected negative sign. This further confirmed that the model was well specified and also validated the use of the error correction method (ECM). It supported the fact that, there is a causal relationship between direct taxes and economic growth in Kenya and that there was speed of adjustment of about 88% of variables towards their long-run relationship and also suggested that the variables in the model are co-integrated.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND POLICY IMPLICATIONS

5.1 Summary

The study investigated the causal relationship between economic growth and direct taxes, specifically Personal Income and Corporate Income Taxes in Kenya. It also aimed at identifying some of the factors affecting economic growth in Kenya such as labour and investment. The study employed Ordinary Least Square (OLS) method in analyzing time series data captured over the period 1970-2012. Time series properties of the data variables were investigated to ensure that reliable results were obtained. Correlation matrix showed that the variables were highly correlated at level; however, the problem was solved by using the correct lag lengths and differencing of variables. Granger causality test was then performed to test for causal relationship between direct taxes and economic growth. The empirical results shows that a unit increases in Corporate Income Tax, Personal Income Tax, and labour force would increase economic growth as proxied by GDP by 0.93, 0.14 and 1957.4 Kenyan million pounds respectively. The long run model indicated that the variables were significant at 1%, 5% and 10% levels respectively. The speed of adjustment of the short run model to the long run equilibrium was 88% indicating adjustment to the equilibrium every year. It also found out that, a unit increase in investment would decrease economic growth by 0.25 Kenyan million pounds. This kind of negative effect on growth arises from investment such as foreign direct investment that receives compensations in terms of tax holidays, rebates and utilization of a given percentage of resources before paying taxes. The study therefore recommends that, the Government, with its move to the East should be more cautious to attract investments that are pro-growth and pro-development. A pro-growth investment in an economy attract more corporate taxes from corporate profits from such investments and also leads to creation of employment that attracts personal income tax which promotes government expenditure without borrowing.

5.2 Conclusions

There is a link between economic growth and direct taxes especially Personal Income and Corporate Income Taxes in the economy as depicted by the study. This indicates that a flourished economy will attract major investments from both foreigners and locals which will lead to

formation of employment for attraction of personal income tax and corporate profit for corporate tax income. Consequently when there's enough revenue collection in the economy, it reduces the burden of borrowing thereby boosting public expenditure that encourages investment that improves the welfare of the people that encourages them to pay taxes without avoidance.

In the spirit of projecting the Kenyan economy to a middle level economy; implementing vision 2030 has led to expansion of infrastructure and social amenities which has massive expansion and investment that require major funding from both revenue collection and borrowing. From the study, this means that by 2030 Kenya will have stable revenue for it is development projects if the policies of making Kenya a middle income economy would have been implemented. Also by having stable revenue collection, this will reduce the tendency of borrowing and encourage further investment that in the long run results to growth in the economy.

The implementation of Vision 2030 by the Kenyan government among other development policies has been increasing domestic debt. However, growth in GDP from such projects has a positive investment multiplier to other sectors leading to growth in output. This could be a motivation to the Kenyan government that is embarking on attracting investments in Kenya, and other supports that if invested in development projects, could lead to an overall positive contribution to economic growth through corporate income taxes and personal income taxes due to creation of employment from such investments projects.

5.3 Policy Implications

From the study, the government of Kenya should make use of monetary, fiscal and exchange rate policies aimed at harnessing inflow of foreign capital and domestic sources of capital. First, the government should aim at boosting economic growth from increased investments. This is because investment significantly explains economic growth at 5% level as shown in table 4.5. Nevertheless, the results in table 4.5 show that investments negatively impact economic growth. This is because investments such as foreign direct investment that receives compensations in terms of tax holidays, rebates, utilization of a given percentage of resources before paying profits, among other benefits may contribute negatively to economic growth but with adverse effects in the long run as depicted by the study. Thus there is a causal link between economic growth and investment. A growing economy (characterized by accelerating GDP growth rate) indicates a favorable environment for adequate taxation, labour generation, and local sources of

capital and also foreign direct investment. Firms choose to invest in countries that have a higher rate of return. Thus, a steadily growing economy will attract more foreign direct investment. Similarly, investment is needed to spur economic growth, which shows a two-way causality between growth and investment. Sound macro-economic policies should be put in place to revamp depressed economy.

Secondly, the government should expand the tax bracket of Personal Income Tax in order collect more revenue for funding its expenditure instead of borrowing. This is because Personal Income Tax positively impacts economic growth. Minimal borrowing encourages economic growth because huge debts can signal the possibility of a fiscal crisis and future economic policy reversals hence discouraging foreign direct investment inflows.

Thirdly, a combination of both fiscal and monetary policies aimed at raising the aggregate demand such as narrowing of tax base or increasing government expenditure should be pursued. For example a narrow tax base for corporate Income Tax attracts both foreign and local investment which leads to creation of employment. This leads to increased Personal Income taxation because more people would be employed. This will lead to higher absorption of readily available skilled and semi-skilled labour, besides creating a platform for quality labour fermentation via adequate and quality education, and relevant training In addition, the government should enter into trade agreements which favour free trade as opposed to protectionism. With less controls put in place the degree of openness of the economy to international trade will increase hence more foreign capital inflows. This will attract more corporate taxation that contributes to economic growth as corporate Income Tax positively impact economic growth as shown by the Study in table 4.5.

An increase in population as proxied for labour force shows a negative contribution to economic growth as shown in table 4.5. Benefits of increased population such as ready market for produced goods and services; availability of cheap labour among others has a negative significant contribution to economic growth. This pushes the government to channel productive resources that could be used in development projects to provision of public goods and services. Therefore, policies aimed at population control that the government has continued to promote are recommended by this study

5.4 Limitations of the Study.

A major limitation of the study is the problem of data reliability. Different data sources give different data for the same variable.

5.5 Areas for Further Research

Other variables that affect economic growth exist apart from those considered in the model specification such as the rate of population growth, property taxes among others. The study recommends other studies to build on the study findings by incorporating the omitted variables.

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APPENDICES

Appendix 1 Data (original data set) with non- stationary

Year	GDP IN KM£	CIP_t in KM£	PI_t in KM£	LF	Invest
1970	11318	2440	29204	644.5	112710
1971	12745.8	2683	37783	691.2	144200
1972	14236.4	1822	45038	719.8	165110
1973	16297.4	3252	50202	761.6	181460
1974	20342.6	1489	56239	826.3	203760
1975	23343	0	76567	819.1	242540
1976	29072	0	89836	857.5	298040
1977	37197.6	0	142335	902.9	390010
1978	41163.8	0	151072	911.6	514010
1979	45532	0	171850	972.3	540450
1980	52511.6	0	197584	1005.8	622530
1981	60460	0	199674	1024.3	728490
1982	68220	0	223000	1046	668200
1983	76520	0	251147	1093.3	717460
1984	80920	0	300968	1119.7	807150
1985	100740	0	358730	1174.4	880390
1986	117480	0	385735	1220.5	1153220
1987	130460	0	454479	1264.5	1286740
1988	149400	0	512025	1311	1515970
1989	172860	0	599153	1355.6	1657820
1990	195540	0	713078	1413.6	2028000
1991	221360	0	851393	1441.8	2073120
1992	256140	0	998525	1462.1	2188840
1993	320080	0	1838365	1474.9	2825260
1994	400720	0	2175292	1504.4	3780820
1995	445660	0	2404116	1557	4974860
1996	527960	0	2418751	1618.8	5223480
1997	623360	0	2778895	1647.4	5493490
1998	692120	0	2761745	1678.4	5693937
1999	743478.9	0	2992500	1688.7	5648060
2000	796342.9	0	2739805	1695.4	5818426
2001	878730.7	1247001	1545170	1677.1	9259300
2002	962686.1	1787000	1720003	1699.7	8924000
2003	1131783	1789000	2081355	1727.3	8964100
2004	1273975	2319000	2646409	1763.7	10331700
2005	1418071	2707000	3145500	1811.6	13153150
2006	1620732	3057000	3465600	1857.6	15479600
2007	1833511	3999000	4258450	1909.8	17712400
2008	2107589	4666001	5031000	1943.9	20479850
2009	2366984	4898001	6076226	2000.1	23255550
2010	2549825	6399001	7213396	2059.1	25926900
2011	3024782	7650001	8846113	2127.7	30462750
2012	3145679	9381001	10799972	2209.5	35069900

Source: Author 2013, Using Data Obtained from Annual Economic Surveys in Kenya

Appendix 2: Lag Lengths Selection for Variables

Sample: 1974 – 2012 Number of observations = 39					
Variable	Lag	LR	P	AIC	SBIC
GDP	2	24.956*	0.000	24.0862	24.2142*
CIP_t	1	170.46*	0.000	27.9096*	27.9949*
PI_t	1	153.55	0.000	28.458	28.5433
LF	1	229.08*	0.000	8.99813	9.08344
Invest	1	202.82	0.000	29.7561	29.8414*

Appendix 3: Results for the ADF Test on Residuals

Dickey- Fuller test for unit root			Number of obs. = 41	
Interpolated Dickey- Fuller				
Critical	Test Statistic	1%Critical Value	5% Critical Value	10 % Critical value
Z(t)	8.222	-3.641	-2.955	-2.611

Mackinnon approximate p- value for Z(t) = 1.000

Appendix 4: Lag Selection for residuals

Selection-Order Criteria Sample: 1975-2012 Number of obs = 38

Lag	LL	LR	Df	P	FPE	AIC	HQIC	SBIC
0	-569.886				6.6e+11	30.0466	30.062	30.0897
1	-469.922	199.93	1	0.000	3.6e+09	24.838	24.8687	24.9242
2	-456.579	26.685*	1	0.000	1.9e+09*	24.1884*	24.2344*	24.3177*
3	-456.578	0.00242	1	0.961	2.0e+09	24.2409	24.3023	24.4133
4	-456.442	0.27215	1	0.602	2.1+09	24.2864	24.3631	24.5019

Endogenous: residuals Exogenous: constant

Appendix 5: The ADF Test for Unit Root for Differenced Residual (Resid_2)

Augmented Dickey- Fuller test for unit root			Number of obs. = 38	
Interpolated Dickey- Fuller				
Critical	Test Statistic	1%Critical Value	5% Critical Value	10 % Critical value
Z(t)	-6.818	-3.662	-2.964	-2.614

MacKinnon approximate p-value for Z(t) = 0.0000