

## **Revenue Effects of Tax Reforms, Economic Growth and Political Environment in Kenya**

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### **Abstract**

This study investigated the effect of tax reforms, economic growth and political environment on total tax, direct tax and indirect tax revenues using annual data for the period 1964-2016. Various techniques of analysis were employed: descriptive statistics, multi-segment regressions and non-linear regression. Results show that: all taxes responded positively to each of the tax reforms; changes in all taxes were affected by the reforms because GDP was also growing; economic growth has positive significant effect on all the categories of taxes; Government effectiveness has positive impact on indirect taxes; and that even though government control of corruption effect on tax revenues is statistically insignificant, it could promote the revenue generation more than economic growth. These findings have a number of policy implications: the government should put more emphasis on governance in order to promote revenue collection. Government effectiveness and control of corruption would go a long way to enhance tax compliance, reduce tax avoidance and evasion, eliminate illicit flows and reduce illegal collusion between tax payer and tax administrator that may deprive government of due revenues. Secondly, government must work towards designing and implementing in the reforms that make the tax system more buoyant, and link it more to economic growth.

**Key Words:** Tax Revenues; Tax Reforms; Economic Growth; Governance/political environment; Budget Deficit; Public Debt.

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## **1. Introduction**

The revenue generation role of the taxes has been given much attention across the globe since both developing and developed economies have been confronted with growing fiscal deficits which have been attributed to inadequate budgetary resources, wasteful budgetary process, loopholes in budgeting process, tax evasion, excessive government borrowing, weak revenue mobilization and increased public expenditure (Wawire, 2006; Kosimbei, 2009 and IMF, 2013). To arrest the growing fiscal deficit, a number of economies in the world have embarked on tax reforms as an instrument for raising tax productivity (Chipeta, 1998). Further, recent wave of tax reforms has also been attributed to the growing need to substitute dwindling public enterprise profits with tax revenue as the main source of government revenue, adjustment of tax policy to conform with the dynamics of global development strategy and globalization which has led to the need to standardize economic activities to the international standards (Rao, 2005).

Consequently, tax reforms ought to lead to a growth-oriented tax system that endeavor not only to abate economic distortions but also promote drivers to economic growth such as investment, entrepreneurship and innovation (OECD, 2010a). A comparative analysis of different taxes by OECD established that direct (income) taxes were more harmful to economic growth than indirect (consumption) taxes hence concluded that tax burden would be shifted to indirect taxes from direct taxes by a growth-oriented tax reform. Due to distortionary effect of income taxes, tax reforms tend to be biased towards consumption taxes and more so the value added tax (VAT) which a number of scholars have advocated for its adoption because it is believed to have high revenue potential, to be less distortionary, efficient, cost effective and has a broader base (Moyi & Muriithi, 2003; Bird, 2005 and Keen & Lockwood). Therefore, VAT has been adopted in more than 160 countries across the globe, in both developed and developing economies as part of the tax reform process (IBFD, 2014). Kenya Government has been undertaking tax reforms since independence with a view of making the tax system elastic and generating more revenues. Despite these efforts, studies have shown that the tax system is still inelastic and government is still struggling with huge budget deficits. This study investigates the role of the reforms on the tax revenue. The study further investigates the effect of economic growth on tax revenue in Kenya.

The aim of Kenyan government (just like any other government) is to stimulate and guide her economic and social development. The government continues to reach out for the goal of government promoted and directed development. The importance of government revenue in accelerating economic growth and development is crucial (Republic of Kenya 2007; Kenya Revenue Authority 2010). Whatever the prevailing ideology or political situation, Kenya has steadily expanded a host of non-revenue yielding services such as education, health, infrastructure, and social security. This is in recognition of the fact the link between taxation and economic development is a link between a universal desire and a form of government action that is believed to be a means to that end (Toye 1978). The government has increasingly mobilized her own internal resources to provide economic growth (Muriithi and Moyi 2003; Wawire 2000; 2003 and 2006; Maingi 2010; Kenya Revenue Authority 2010).

A number of systems reforms have been undertaken in the areas of budget formulation, public procurement, external audit, revenue collection, budget execution, internal audit, parliamentary

oversight, payroll and pensions, debt and guarantee, external resources, accounting and reporting and the macro-fiscal framework. These reforms have been initiated and implemented by the government in collaboration with Development Partners, including the World Bank, European Commission, Japan International Co-operation Agency (JICA), and Department for International Development (DFID), DANIDA, SIDA, CIDA, GTZ, USAid and Norway.

Despite these efforts, the tax system still fails to raise adequate revenues (is not buoyant or income-elastic) thereby encouraging domestic borrowing and seeking external finance, which are only temporary measures of deficit financing. Moreover, external funds can no longer be relied on due to donor conditions and the increasing interest to channel funds to Eastern Europe after the cold war (Gelb 1993). Furthermore, potential sources for domestic borrowing are few and external grants reduce autonomy and increase political and economic dependence. The alternatives are therefore to raise money through taxation, curtail desired government expenditures, or continuously revise the tax structure. The system also over-dependents on a small number of sources of tax revenue, namely trade taxes, VAT and income tax (Muriithi and Moyi 2003; Wawire 2006; Karingi *et al.* 2005; Moyi and Ronge 2006).

Fiscal statistics reveal that tax revenue meets only about 60 per cent of the government budget, leaving the government with a deficit of about KES 3,660 billion (USD 37 billion). This has forced the government to turn to borrowing (both domestic and external) to bridge the deficit. Kenyan Debt-GDP ratio has risen over the last 10 years from about 29 per cent to about 56 per cent, the level that has been termed as ‘alarming’ by the international monetary fund (IMF) and the World Bank Group (WBG). The debt to GDP ratio is estimated to hit 61 per cent by June 2019. The debt is shared almost equally between the domestic and the external sources. The central bank of Kenya (CBK), African Development Bank (AfDB), IMF and WBG have all recently raised concerns about the sustainability of Kenya’s rising public debt<sup>1</sup>. A part from containing the government’s appetite for borrowing, there is also need to assess if the country’s tax system is elastic and buoyant enough to meet the ever rising government expenditure. The growth in tax revenue has not matched the growth in government expenditure (see table 1.1 and figure 1.1). This is despite the fact that the economy has also grown consistently over the last decade.

The Kenyan economic growth rate fluctuated significantly over the last two decades, reaching a minimum of 0.23 per cent in 2008 and a maximum of 8.4 per cent in 2010 with an average of 4.2 per cent. The fluctuations have been contributed to several factors including political cycles, inconsistency in the tourism sector and fluctuating agricultural output due to unpredictable climatic conditions. The economy is on the upward trajectory as a result of increased investment in infrastructure and strong private consumption. This could however be dampened by reduced private sector lending as a result of the enactment of the Banking (Amendment) Act that caps lending rates. On the other hand, GDP per capita has risen slightly and consistently for over the last decades from about USD 900 in 2006 to about USD 1143 in 2016. Before that, GDP per capita remained relatively constant for a period of over two decades with an average of USD

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<sup>1</sup> Ngenere (2018)

860. With the relatively good growth in the GDP, one is left wondering whether the Kenyan tax system is elastic and buoyant enough.

**Table 1.1: Government Finance Statistics and GDP**

YEAR	GE <sup>2</sup>	TR <sup>3</sup>	GBD <sup>4</sup>	GDP <sup>5</sup>	DD <sup>6</sup>	ED <sup>7</sup>	TPD <sup>8</sup>	TPD-GDP <sup>9</sup>
2007	2619.2	1993.3	625.9	2766	404.6	396.5	801.2	28.9
2008	3197.2	2352.7	844.5	2772	430.6	439.9	870.5	31.4
2009	3685.5	2714.8	970.7	2864	518.3	535.1	1053.4	36.7
2010	4533.8	2998.7	1535.1	3104	660.2	565.4	1225.7	39.4
2011	4936.8	3459.2	1477.6	3294	764.2	722.8	1487.1	45.1
2012	5903.2	3856.6	2046.6	3444	858.8	774.5	1633.3	47.4
2013	6776.7	4649.2	2127.5	3647	1050.6	843.5	1894.1	51.9
2014	6899.1	5461.5	1437.5	3842	1284.3	1085.9	2370.2	51.6
2015	9207.9	6041.9	3166.1	4062	1420.4	1408.6	2829.0	53.6
2016	10368.1	6708.9	3659.2	4299	1815.4	1803.2	3618.7	56.1

*Source: Based on Kenya's National Treasury and CBK Data*

Kenya's debt appears to be gobbled up in recurrent expenditure. The International Budget Partnership Kenya shows that in the 2013/14 year, 78 per cent of the debt went to recurrent expenditure, while in 2014/15, it stood at 63 per cent. The danger with this is that very little funds are channeled towards development, which fosters economic growth. This means that since most of the debt is not being used for development activities, it becomes increasingly difficult to repay the accrued debt. The debt challenge is however not a problem unique to Kenya. The AfDB in the Africa Economic Outlook Report 2018 notes that many countries are grappling with dwindling revenues, rising debt levels and widening budget deficits and urges governments to ensure more fiscal consolidation.

<sup>2</sup> GE – Total government expenditure

<sup>3</sup> TR – Total tax revenue

<sup>4</sup> GBD – Government budget deficit

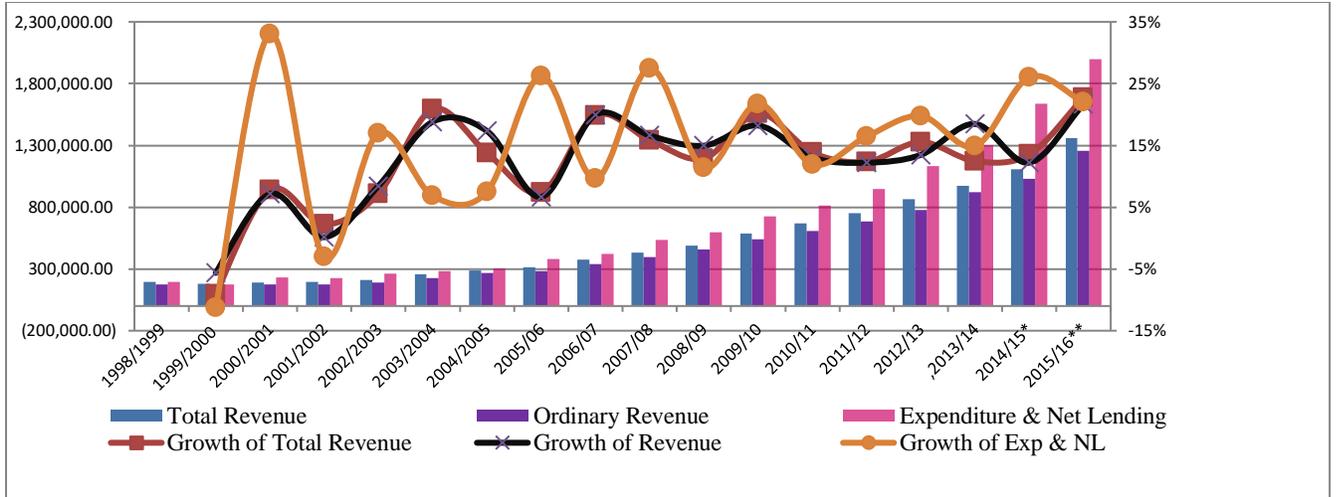
<sup>5</sup> GDP – Gross domestic product

<sup>6</sup> DD – Domestic debt

<sup>7</sup> ED – External debt

<sup>8</sup> TPD – Total public debt

<sup>9</sup> TPD – GDP – Total public debt to gross domestic product ratio, in percentages



**Figure 1.1: Trends in Government Revenue and Expenditure**

*Source: Author's computation based on Kenya's National Treasury and CBK Data*

### 1.1 Tax Reforms in Kenya

The main purposes of undertaking tax reform measures were to: restore buoyancy in the tax revenues; reduce the complexity; and enhance transparency of the tax system (World Bank 1990; KRA 2010). These reforms involved different categories of taxes such as: consumption tax; sales tax; VAT; excise duty; trade taxes; customs duty and income taxes. Other reforms included tax modernization programmes and establishment of Kenya Revenue Authority (KRA).

In the fiscal year 1972/1973, Kenya replaced the consumption tax with sales tax in an attempt to address the economic problems that rose as a result of the international energy crisis. The system targeted specific types of goods to raise additional revenue and also encourage industrialization. Trade tax reforms were introduced in 1974/1975 to support the domestic manufacturing sector through protection from import competition and raising revenue for the government. While the income taxes reforms were mainly to address the issue of redistribution and the efficiency-equity dilemma. For instance, corporate taxes were increased in 1973/74 from 40 per cent to 45 per cent for local companies and from 47.5 to 52 per cent for foreign companies.

Tax Modernization Programmes (TMP) introduced in 1986 began a series of indirect tax reforms to redistribute wealth and create a new, more sustainable tax system with an overall goal to generate more revenue. VAT was introduced in 1990 to replace the sales tax. At first, VAT system was complex with 15 different rates, the highest being at 210 per cent. Between 1990 and 1997, VAT was rationalized by reducing the maximum rates from 150 to 15 per cent and the rate bands from 15 to 3.8. The low rate was increased from 50% to 78% while the standard rate reduced from 18 to 16 per cent. In 1990, Kenya received support from the UNDP and USAID, and later a grant from ADF in 1991 to provide institutional support to strengthen tax institutions in by introducing modern technical, administrative and operational methods and procedures for Income Tax, VAT, and Customs and Excise Departments. Tax Modernization programme was a long term project and during the period, several specific reforms were undertaken simultaneously in these departments. These included organizational reform (for example, the incorporation of the Kenya Revenue Authority), custom reform, VAT and excise tax reforms and the Income tax

reform. Before the reform period, tax administration was under five separate departments (custom duty, excise duty, sales tax, income tax and corporation tax departments) in the Ministry of Finance. Customs duty reforms involved gradual reduction of tariff rate for top commodities from 170 to 25 per cent between 1987 and 1998. At the same time, the rate bands were reduced from 24 to 5. The reforms under this department mainly involved: restricting duty exemptions; reforming the tariff structure; and strengthening the administration of customs duties.

The establishment of Kenya Revenue Authority in 1995 was considered the hallmark of tax reforms in Kenya. KRA was to help deal with several challenges the ministry of finance (now the national treasury) was facing in tax administration. This was followed by integration and digitization of the tax system (modern integrated information technology and the integrated tax management system - ITMS) aimed enhancing efficiency and transparency in tax administration. This was also to help increase tax revenue collection by simplifying the tax system, enhancing compliance and cutting down administration cost. Other objectives included: creating a modern business intelligence unit; strengthening the prosecution unit and implement a KRA-wide enforcement strategy to discourage tax malpractices.

The rest of this study is organized as follows. Section 2 reviews the literature. Section 3 spells out methodology and sources of data. Section 4 presents and discusses empirical results. Section 5 offers conclusion and policy implications.

## **2. Literature Review**

The literature available on Kenyan tax system indicated an inelastic (not buoyant) tax system that required tax reforms to make it elastic and buoyant. For example, Njoroge (1993) studied the revenue productivity of tax reforms in Kenya for the period 1972/73 to 1990/91. In the study, income elasticity of total tax structure was found to be 0.67 for the period 1972 to 1981, which was quite inelastic. This implied that the government received a decreasing share of rising GDP in terms of tax revenues. The elasticity estimates for individual taxes were as follows: sales tax 0.6, import duties 0.45 and income tax 0.93. The buoyancy for the overall tax system for the same period was 1.19, implying that the tax system was quite buoyant. For the period 1982 to 1991, Njoroge found that the overall elasticity was 0.86 while buoyancy was 1.00. The study concluded that from a revenue point of view, the system did not meet its target and therefore required constant review as the structure of the economy changes over time.

Wawire (2000) used aggregate variables to estimate the tax buoyancy and income-elasticity of Kenya's tax system. Based on empirical evidence, the study concluded that the tax system had failed to raise necessary revenues. Hira (2000) found three forms of corruption in the tax system in Kenya: intimidation and coercion at the inspection level; evasion at the point of entry through bribery; and use of areas of discretion in the law to evade tax. The two studies called for more tax reforms to be undertaken.

According to Moyi & Muriithi (2003), tax reforms were to ensure that the tax system is used to correct the budget fiscal deficits. This was to be achieved through tax policies intended to make the yield of individual taxes responsive to changes in income. The expectation was that the predominant taxes in the revenue would be those with highly elastic yields with respect to their

bases. They applied the concepts of elasticity and buoyancy to determine whether tax reforms in Kenya achieved these objectives. Elasticities and buoyancies were computed for the pre-reform period as well as the post-reform period. Evidence suggested that tax reforms had a positive impact on the overall tax structure and on the individual taxes. The elasticity of indirect taxes was found to be low and that of direct taxes was high, after the tax reforms. However, the reforms failed to make VAT responsive to changes in income, despite its dominance in the tax structure. In an attempt to highlight the trends in Kenya's tax ratios, tax effort indices and their implication for further tax reforms, Wawire (2003) concluded that the slowdown in economic growth had resulted in high levels of taxation that did not match delivery of public goods and services, and recommended more targeted reforms for the Kenyan tax system.

According to Karingi, *et al.* (2005), attempts to reform the tax system were initiated under the Tax Modernization Programme in 1980's with an aim of raising more revenue, redistributing wealth and achieving a sustainable tax system. The main reforms in income tax involved widening of tax brackets, lowering of top marginal rates and increasing of tax relief in order to protect low-income earners from the inflation-induced creep. There was a deliberate policy shift towards indirect taxes since they are more favourable to investment and growth than direct taxes. The study found that trade taxes had declined in importance due to adherence to trade regulations under World Trade Organisation (WTO) and regional integration blocks. The challenges of tax reform experiences included: failure of such reforms to consider distribution of tax burdens across the income groups; the growing level of budget deficit which meant that revenue adequacy and public expenditure management were major issues to deal with; and the inherent difficulties encountered in taxing the informal sector and agriculture (Karingi *et al.*, 2005). Several lessons were derived from the study. First, policy reforms need to be assessed carefully, taking into account institutional, technological, demographic and economic changes and objectives. Second, effective tax reform cannot be accomplished without enhanced administrative capacity. Third, an essential precondition for the reform of tax administration is to simplify the tax system in order to ensure that it can be applied effectively where there is a low taxpayer compliance and transition economy.

Moyi and Ronge (2006) reviewed tax revenue performance as well as tax design and administration changes in Kenya during the period 1996 - 2005 in order to identify priorities for further tax reform. The study found that inflation had a negative impact on tax revenues and the tax structure was less buoyant while indirect taxes had the capacity to improve the flexibility of the tax system. The challenges that were noted in the tax system included: inherent difficulties encountered in taxation of agriculture and the informal sector; repeal of tax holidays; high effective protection; high dispersion of tariff rates; detailed and rigid custom rules; poor response of VAT to reforms; and weak capacity to process large volumes of returns and refunds for zero-rated transactions.

The Moyi and Ronge study also found the tax system to be burdensome in terms of time taken to prepare and submit tax returns. The study concluded that reforms were still needed in the following areas: taxation of the informal sector by designing simplified registration processes and giving the sector treatment other than that provided by the current methods and tax code; need for a policy shift towards internationally acceptable investment incentives; tax productivity

should be improved through simplifying the tax structure and reducing the tax rates, reviewing the cumbersome custom procedures and enhancing the tax monitoring function; lowering effective protection of Kenya's products by reducing tariffs with the goal of achieving broad-based uniform tariffs; strengthening tax administration through developing integrated tax payer registration system; simplifying tax laws, forms and procedures; developing frequently updated information systems on registered tax payers; intensifying the use of automatic triggering mechanisms; strengthening the administrative capacity in terms of personnel, computers and audits so as to handle large volumes of returns and refunds; and continuing with harmonisation of the VAT rates; insulating the tax system from the effects of inflation by ensuring that adequate indexing procedures are applied to accurately account for full movements in prices; and building vertical accountability by involving tax payers in the formulation of tax policy and in planning reforms.

Mwakalobo (2009) studied Kenya's tax revenue and tax system performance has responded to changing tax policy. This observation was supported by the increasing trends of buoyancy coefficients of the overall tax system and individual taxes. The study found tax buoyancy to have improved as a result of commencement of the 1987-91 economic reforms. The buoyancy coefficient of sales and excise tax rose from an average of 1.05 in the pre-reform period to 1.10 during the reform period (1987-91). It then decreased slightly to 1.02 in 1992-96 and rose to 1.09 in 1997-2005. The improvement in the tax revenue performance coincides with the period during which the government undertook tax reforms in the mid- 1980s and 1990s. The tax buoyancy for international trade taxes declined a situation the study attributed to the fact that the government reduced the tariff rates as part of her commitment to various international trade agreements.

When the performance of the tax system was compared between the pre-reform and post-reform periods, the results showed that the tax system had become responsive to changes in economic activities following the implementation of tax reform programmes. The tax system became more responsive after the 1987 tax reform. Overall the tax buoyancy improved slightly from 1.05 in the pre-reform period to 1.06 during the post-reform period (Mwakalobo 2009). The improvement was attributed to the tax reform implemented that led to increase in revenue collection from sales, excise and income taxes, reduction in tax exemptions, the inclusion of many other commodities in VAT brackets, and the increase in the tax base.

### **3. Methodology and Data**

This study focuses on four (4) major tax reforms in Kenya: the replacement of consumption tax with sales tax (1972); the tax modernization programme (1986); the introduction of VAT (1990) and the establishment of KRA (1995). Despite the fact that changes in tax amounts may be influenced by many other factors, this study focuses on the effects of the reforms, economic growth and political environment. Political environment is captured by two indicators of governance: government effectiveness and government control of corruption. Based on macroeconomic theories, economic growth is one of the main factors that are likely to affect the amount of tax revenue collected in an economy. Three categories of models are estimated in this study: one based on total tax revenues (TAXR), the other based on tax revenues from direct taxes (DTAXR), and the last one based on tax revenues from indirect taxes (IDTAXR).

Additionally, the study investigated the effect of change in real GDP on the three categories of taxes. This model was further augmented with indicators of governance (government control of corruption and government effectiveness) which are believed to be key drivers of tax administration and compliance, hence likely to affect revenue collection. Government effectiveness reflects the perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. While government control of corruption reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. For each category taxes, three models are specified (one for tax reforms; the other for tax reforms and economic growth; and the last once for growth and governance indicators. The models are specified as follows:

**i. Reforms models**

$$TAXR_t = \alpha_0 + \alpha_1 T_t + \alpha_2 [T_t - T_{1t}] D_{1t} + \alpha_3 [T_t - T_{2t}] D_{2t} + \alpha_4 [T_t - T_{3t}] D_{3t} + \alpha_5 [T_t - T_{4t}] D_{4t} + \varepsilon_t \dots 1$$

$$DTAXR_t = \alpha_0 + \alpha_1 T_t + \alpha_2 [T_t - T_{1t}] D_{1t} + \alpha_3 [T_t - T_{2t}] D_{2t} + \alpha_4 [T_t - T_{3t}] D_{3t} + \alpha_5 [T_t - T_{4t}] D_{4t} + \varepsilon_t \dots 2$$

$$IDTAXR_t = \alpha_0 + \alpha_1 T_t + \alpha_2 [T_t - T_{1t}] D_{1t} + \alpha_3 [T_t - T_{2t}] D_{2t} + \alpha_4 [T_t - T_{3t}] D_{3t} + \alpha_5 [T_t - T_{4t}] D_{4t} + \varepsilon_t \dots 3$$

**ii. Reforms and Growth models**

$$TAXR_t = \alpha_0 + \alpha_1 GDP_t + \alpha_2 [GDP_t - GDP_{1t}] D_{1t} + \alpha_3 [GDP_t - GDP_{2t}] D_{2t} + \alpha_4 [GDP_t - GDP_{3t}] D_{3t} + \alpha_5 [GDP_t - GDP_{4t}] D_{4t} + \varepsilon_t \dots 4$$

$$DTAXR_t = \alpha_0 + \alpha_1 GDP_t + \alpha_2 [GDP_t - GDP_{1t}] D_{1t} + \alpha_3 [GDP_t - GDP_{2t}] D_{2t} + \alpha_4 [GDP_t - GDP_{3t}] D_{3t} + \alpha_5 [GDP_t - GDP_{4t}] D_{4t} + \varepsilon_t \dots 5$$

$$IDTAXR_t = \alpha_0 + \alpha_1 GDP_t + \alpha_2 [GDP_t - GDP_{1t}] D_{1t} + \alpha_3 [GDP_t - GDP_{2t}] D_{2t} + \alpha_4 [GDP_t - GDP_{3t}] D_{3t} + \alpha_5 [GDP_t - GDP_{4t}] D_{4t} + \varepsilon_t \dots 6$$

**iii. Growth and Political Environment Models**

$$TAXR_t = \alpha_0 + \alpha_1 \Delta GDP_t + \alpha_2 GEFF_t + \alpha_3 GCRP_t + \varepsilon_t$$

$$LnTAXR_t = \alpha_0 + \alpha_1 \Delta LnGDP_t + \alpha_2 LnGEFF_t + \alpha_3 LnGCRP_t + \varepsilon_t \dots \dots \dots 7$$

$$DTAXR_t = \alpha_0 + \alpha_1 \Delta GDP_t + \alpha_2 GEFF_t + \alpha_3 GCRP_t + \varepsilon_t$$

$$LnDTAXR_t = \alpha_0 + \alpha_1 \Delta LnGDP_t + \alpha_2 LnGEFF_t + \alpha_3 LnGCRP_t + \varepsilon_t \dots \dots \dots 8$$

$$IDTAXR_t = \alpha_0 + \alpha_1 \Delta GDP_t + \alpha_2 GEFF_t + \alpha_3 GCRP_t + \varepsilon_t$$

$$LnIDTAXR_t = \alpha_0 + \alpha_1 \Delta LnGDP_t + \alpha_2 LnGEFF_t + \alpha_3 LnGCRP_t + \varepsilon_t \dots \dots \dots 9$$

Where:  $TAXR_t$  – Total tax revenue

$DTAXR_t$  – Tax revenue from direct taxes (tax on incomes)

$IDTAXR_t$  – Tax revenue from indirect taxes

$T_t$  – Time (time intervals is defined based the tax reform periods)

$\alpha_i$  – Parameters to be estimated

$T_{1t}$  – Tax reform in the first time

$T_{it}$  – Tax reforms in the  $i^{th}$  time

$D_{1t}$  – Dummy; 1 for tax reform years, 0 for other years

$D_{it}$  – Dummy; 1 for  $i^{th}$  year of tax reform, 0 for other years

$GDP_{1t}$  – Gross domestic product in the year of first tax reform

$GDP_{it}$  – Gross domestic product in the year of the  $i^{th}$  tax reform

$GEFF_t$  – Government effectiveness

$GCRP_t$  – Government control of corruption

$Ln$  – Represents the natural logarithms of the variables

The data for all the variables were obtained from Kenya National Bureau of Statistics (KNBS) economic surveys (various issues), World Bank’s World Development Indicators (WDI) and Worldwide Governance Indicators (WGI), for the periods between 1964 and 2016.

**4. Empirical Results**

Tax variables ( $TAXR$ ;  $DTAXR$  and  $IDTAXR$ ) are converted to real terms using the GDP deflator. GDP is also in real terms. Government effectiveness and government control of corruption are indices ranging from -2.5 to 2.5. In this study, they are transformed to a range of 0 – 5 by adding 5 to the value of each year (they however ranged between 3.8 and 4.7, hence no need to worry about the use of natural logarithms).

#### 4.1 Descriptive Statistics

For the last two decades, Kenya's tax revenue ranged from Ksh. 17,904.16 million to Ksh. 851,650.8 million with a means of Ksh. 497,920.7 million. Over the same period, the real GDP ranged from Ksh. 24,528.78 million to Ksh. 55,394.74 million with an average of Ksh. 35,385.35 million.

**Table 4.1: Descriptive statistics – (1996 – 2016)<sup>10</sup>**

Variable	Mean	Std. Dev.	Min	Max
Total Tax Revenue	497920.7	192425.4	17904.16	851650.8
Direct Tax Revenue	213108.2	108865.2	6432.756	421823.9
Indirect Tax Revenue	284812.5	87453.27	11471.4	429826.9
Gross Domestic Product	35385.35	9794.08	24528.78	55394.74
Govt. Effectiveness	4.471007	0.104627	4.297882	4.705858
Govt. control of Corruption.	3.982714	0.096146	3.841151	4.143807

*Source: Based on KNBS - various issues, WDI 2018 & WGI 2018.*

**Table 4.2: Descriptive statistics for total tax revenue by the time period of the reforms**

Period	Annual Average (Ksh. Million)	Annual Average Increase (Ksh. Million)	Annual Average Increase (Percentage - %)	Minimum (Ksh. Million)	Maximum (Ksh. Million)
1972 - 1985	10291.75	553.13	5.37	5843.37	13587.20
1986 - 1989	16384.58	719.41	4.39	14539.01	17425.17
1990 - 1994	20986.24	1107.31	5.28	18083.25	24053.10
1995 - 2016	476383.9	37615.42	7.90	17904.16	851650.80

*Source: Based on KNBS - various issues & WDI 2018*

Table 4.2 summarizes the changes in tax revenues associated with the four major tax reforms covered in this study. Both durations of the reforms and the average percentage increase in tax revenues within each reform period are different. The largest average percentage increase was within 1995 – 2016 (establishment and functioning of KRA) at 7.90 per cent. It is important to note that establishment of KRA was followed by several other reforms, which could have supplemented the rise in tax revenues.

The main tax reforms in Kenya came with the establishment of KRA in 1995. Table 4.3 shows the changes in total tax revenue and real GDP for the period between 1997 and 2016. During this period, tax revenue rose consistently, with exemption to a few years which could be associated with other factors such as political cycles in Kenya, economic shocks and the global financial crisis. The highest percentage increase in tax revenue was in 2005 at a rate of 29.83 per cent. While GDP growth rate also peaked in 2010 at 8.40 per cent. GDP has however increased throughout the period, though with fluctuating rates.

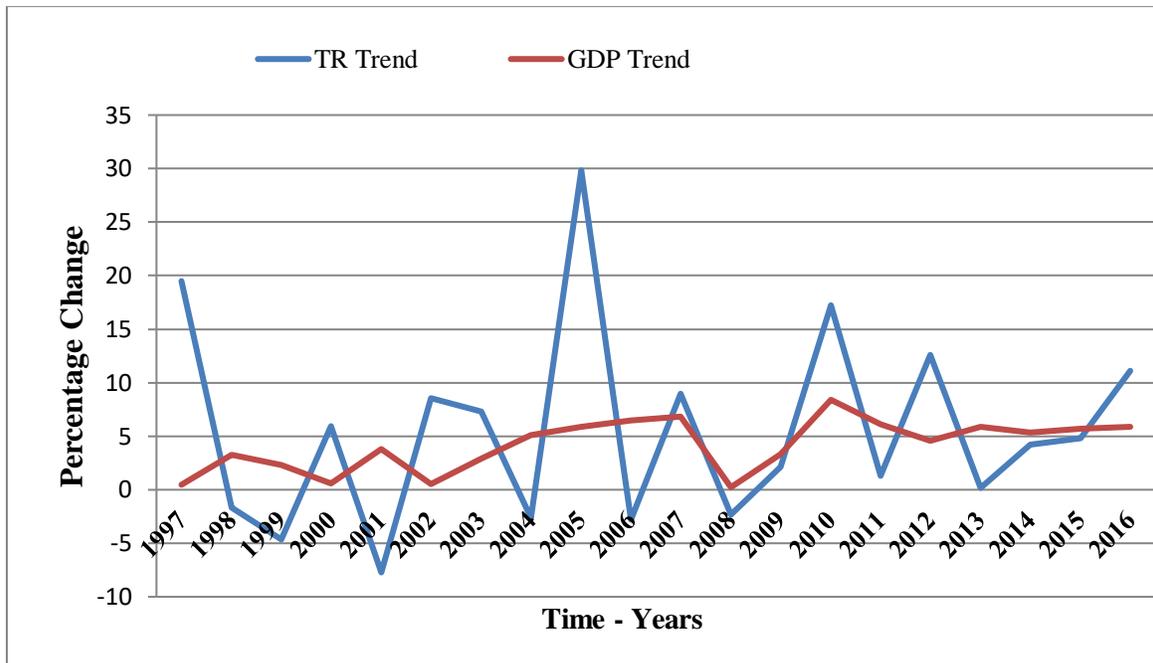
<sup>10</sup> Summary statistics are presented for the period between 1996 and 2016 only since data on government effectiveness and government control of corruption is not available for the earlier periods.

**Table 4.3: Changes in Tax Revenues and Real GDP (1997 – 2016)**

Year	Tax Revenue (Ksh. Million)	GDP (Ksh. Million)	Tax Revenue- Change (Ksh. Million)	GDP Increase (Ksh. Million)	Tax Revenue- Change (Percentage)	GDP Increase (percentage)
1997	367215.4	24645.27	349311.2	116.48	11.51	0.47
1998	361142.9	25456.15	-6072.44	810.88	-1.65	3.29
1999	344269.6	26043.01	-16873.3	586.86	-4.67	2.30
2000	364662.3	26199.19	20392.77	156.17	5.92	0.59
2001	336494.4	27189.49	-28168	990.30	-7.72	3.77
2002	365314.4	27338.18	28819.97	148.68	8.56	0.54
2003	392034.4	28139.87	26720.01	801.68	7.31	2.93
2004	381782.5	29576.21	-10251.8	1436.34	-2.61	5.10
2005	495672.4	31323.18	113889.8	1746.96	29.83	5.90
2006	481730.6	33350.57	-13941.8	2027.39	-2.81	6.47
2007	525062.4	35635.33	43331.84	2284.75	8.99	6.85
2008	512826.6	35718.1	-12235.8	82.77	-2.33	0.23
2009	523633.3	36899.28	10806.77	1181.17	2.10	3.30
2010	613815.6	39999.66	90182.31	3100.38	17.22	8.40
2011	621909.6	42444.28	8093.996	2444.62	1.318	6.11
2012	700223.6	44381.1	78313.95	1936.81	12.59	4.56
2013	701553.3	46990.61	1329.677	2609.50	0.18	5.87
2014	731040.7	49505.47	29487.43	2514.86	4.20	5.35
2015	766394.8	52333.9	35354.11	2828.43	4.83	5.71
2016	851650.8	55394.74	85255.97	3060.83	11.12	5.84

*Source: Based on KNBS - various issues & WDI 2018*

The comparison of tax revenue trend and GDP growth trend is presented in figure 1.2. The growth rates of tax revenue were higher than growth rate of GDP for most of the years. At the same time, tax revenue growth rate fluctuates more rapidly than the GDP growth rate. From the figure, it is difficult to tell whether the growth rate of tax revenue depends on the GDP growth rate, or whether the movements are independent. This question is answered by region analysis in the next sub-section.



**Figure 1.2: Change in Tax Revenue (TR) and GDP (1997 – 2016)**

*Source: Based on KNBS - various issues & WDI 2018*

#### **4.2 Regression Results**

After carrying out all the diagnostic tests, all the models (1 – 9) were subjected to various estimation techniques. The results are presented and discussed in the following sections. Multi-segment regressions were performed on the models/equations using STATA to analyze the effects of tax reforms, economic growth and political environment on total tax revenues, direct tax revenues and indirect tax revenues.

**Table 4.4: Regression results for reforms models**

<i>TOTAL TAX (Equation 1)</i>				
<b>Variable</b>	<b>1972 – 1985</b>	<b>1986 – 1989</b>	<b>1990 – 1994</b>	<b>1995 - 2016</b>
<i>Constant (<math>\alpha_0</math>)</i>	120.96	13.9046	16.2801	119.4232
<i>Coefficient (<math>\alpha_i</math>)</i>	31.215	0.9901	1.568	13.0401
$R^2$	0.7021	0.8743	0.8567	0.8935
<i>DIRECT TAX (Equation 2)</i>				
<b>Variable</b>	<b>1972 – 1985</b>	<b>1986 – 1989</b>	<b>1990 – 1994</b>	<b>1995 - 2016</b>
<i>Constant (<math>\alpha_0</math>)</i>	2.6546	4.1962	4.7001	7.7867
<i>Coefficient (<math>\alpha_i</math>)</i>	0.1207	0.3800	0.9639	17.0496
$R^2$	0.7826	0.9827	0.7999	0.9305
<i>INDIRECT TAX (Equation 3)</i>				
<b>Variable</b>	<b>1972 – 1985</b>	<b>1986 – 1989</b>	<b>1990 – 1994</b>	<b>1995 - 2016</b>
<i>Constant (<math>\alpha_0</math>)</i>	87.8566	9.7132	11.5801	11.6365
<i>Coefficient (<math>\alpha_i</math>)</i>	17.7614	0.6034	0.6047	13.9910
$R^2$	0.6355	0.7631	0.8301	0.7786

*Source: Based on KNBS - various issues & WDI 2018*

The multi-segment regression results for tax reforms (equations 1, 2 and 3) are positive for all the reform periods, and for all the categories of taxes. This implies that all taxes responded positively to each of the tax reforms. But the R-squared is different across the tax reforms and the tax categories, with the highest being 0.9827 for direct taxes in the period 1986 – 1989, followed by 0.9305 for direct taxes in the 1995 – 2016 period, while the lowest being 0.6355 for indirect taxes in the 1972 – 1985. This implies that most of the changes in direct tax revenues in 1986 – 1989 were as a result of the tax modernization programme undertaken by the government in 1986. Similarly, 93.05 per cent of the direct tax increases between 1995 and 2016 were as a result of the establishment of KRA and the subsequent reforms that came with it, while only 63.55 per cent of the changes in indirect tax revenues between 1972 – 1985 could be attributed to the introduction of the replacement of the consumption tax with the sales tax. The regression results for the analysis of the effect of the tax reforms on the tax revenue – GDP relationship are presented in table 4.5.

**Table 4.5: Regression results for reforms and growth models**

<i>TOTAL TAX (Equation 4)</i>				
<b>Variable</b>	<b>1972 – 1985</b>	<b>1986 – 1989</b>	<b>1990 – 1994</b>	<b>1995 - 2016</b>
<i>Constant (<math>\alpha_0</math>)</i>	7306.37	15.87	21110.72	273129.9
<i>Coefficient (<math>\alpha_i</math>)</i>	1.025	0.9412	5.6972	19.6976
<i>R<sup>2</sup></i>	0.9347	0.8940	0.4142	0.8339
<i>DIRECT TAX (Equation 5)</i>				
<b>Variable</b>	<b>1972 – 1985</b>	<b>1986 – 1989</b>	<b>1990 – 1994</b>	<b>1995 - 2016</b>
<i>Constant (<math>\alpha_0</math>)</i>	2932.79	-1870.89	7675.67	87777.53
<i>Coefficient (<math>\alpha_i</math>)</i>	0.2154	0.3637	3.8262	11.2488
<i>R<sup>2</sup></i>	0.8210	0.9836	0.4619	0.9387
<i>INDIRECT TAX (Equation 6)</i>				
<b>Variable</b>	<b>1972 – 1985</b>	<b>1986 – 1989</b>	<b>1990 – 1994</b>	<b>1995 - 2016</b>
<i>Constant (<math>\alpha_0</math>)</i>	4373.57	51.1393	13435.05	185352.4
<i>Coefficient (<math>\alpha_i</math>)</i>	0.8295	0.5775	1.8709	8.4488
<i>R<sup>2</sup></i>	0.9358	0.7910	0.2913	0.6580

*Source: Based on KNBS - various issues & WDI 2018*

Turning to the multi-segment regression results for reforms and growth models (equations 5, 6 and 7), we see that the slopes of the regression lines are all positive for all the tax categories and all the reform periods. This implies that the changes in all the taxes were affected by the tax reforms because GDP was also growing. The tax reforms enhanced the relationship between the tax revenues and GDP. However, it is important to note that some of the R-squared are too low (below 0.7) implying that tax reforms influenced the tax revenue and GDP relationship only up to certain extent. There are other factors (other than the tax reforms) that were responsible for the kind of the relationship that existed between the changes in tax revenues and GDP growth.

The final regression was performed on the full model (equations 7, 8 and 9) to determine the effect of economic growth and political environment on different categories of taxes. All the variables were converted to natural logarithms to take account of any possible nonlinear relationship that could have existed between the variables. The results are presented in Table 4.6.

**Table 4.6: Regression results for growth and political environment models<sup>11</sup>**

Variable	Total Tax (Equation 7)	Direct Tax (Equation 8)	Indirect Tax (Equation 9)
<b>Gross Domestic Product</b>	0.1182* [0.0589]	0.1768* [0.0883]	0.0781* [0.0400]
<b>Government effectiveness</b>	5.3760* [2.9067]	7.3858 [4.3545]	3.6617* [1.9727]
<b>Govt. Control of Corruption</b>	1.2305 [2.6959]	1.3117 [4.0388]	1.1789 [1.8296]
<b>Constant</b>	2.5476 [5.9119]	-1.8737 [8.8569]	4.9256 [4.0123]
<b>R-Squared (R<sup>2</sup>)</b>	0.5457	0.5207	0.5506
<b>Prob &gt; F</b>	0.0097	0.0139	0.0091

*Source: Based on KNBS - various issues & WDI 2018*

The R-squared in these results are relatively low. This is expected since there are other factors that affect tax revenues other than economic growth and governance. The results further reveal that economic growth has the expected positive and significant effect on all the categories of taxes. Both government effectiveness and government control of corruption also gave the expected positive coefficients in all the equations. The coefficients are however insignificant statistically for government control of corruption for all the equations, and for government effectiveness for direct tax (equation 8). 1 per cent rise in GDP leads to about 0.1 per cent rise in all taxes on average (total tax = 0.12%; direct tax = 0.18% and indirect tax = 0.08%). This further implies that the tax system in Kenya is not buoyant. Government effectiveness seems to have more impact on indirect taxes (and therefore total taxes) than GDP growth, but no significant impact on the direct taxes. 1 per cent improvement in governance (as measured by government effectiveness) to about 5.4 per cent increase in total tax revenues, and increase in indirect tax revenues account for about 3.7 per cent of it.

## **5. Conclusion and Policy Implication**

This study investigated the effect of tax reforms, economic growth and political environment on total tax revenues, direct tax revenues and indirect tax revenues using annual data for the period between 1964 and 2016. Various techniques of data analysis were employed, namely: descriptive statistics, multi-segment regressions and non-linear regression. The results show that: This implies that all taxes responded positively to each of the tax reforms; changes in all the taxes were affected by the tax reforms because GDP was also growing (the tax reforms enhanced the relationship between the tax revenues and GDP); economic growth has the expected positive and significant effect on all the categories of taxes; Government effectiveness has positive impact on indirect taxes (and therefore total taxes); and that even though government control of corruption effect on tax revenues is statistically insignificant, it could promote the revenue

<sup>11</sup> Figures in [] are the standard deviations, while \* represents statistical significance.

generation more than economic growth. The study concludes that governance plays more significant role in promotion of tax revenues than many other determinants.

These findings have a number of policy implications: a clear one is that the government should put more emphasis on governance in order to promote revenue collection. Government effectiveness and control of corruption would go a long way to enhance tax compliance, reduce tax avoidance and evasion, eliminate illicit flows and reduce illegal collusion between the tax payer and tax administrator that may deprive the government of some due tax revenues. Secondly, the tax reforms have been instrumental in promoting tax revenues in Kenya, but they have not succeeded in making the tax system buoyant. The increase in GDP leads to less than proportionate increase in tax revenues (for all tax categories). The government must work towards designing and implementing more reforms, but more so the government should invest in the reforms that make the tax system more buoyant, and link it more to the economic growth.

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