

**VAT REFORMS AND REVENUE PRODUCTIVITY IN
KENYA (1990 – 2010)**

**BY
FRANCIS OMONDI**

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DECLARATION

This research proposal is my original work and has not been submitted for any award in any other university.

Signed: Date:

Francis Omondi

Reg. No. X50/62816/2010

This proposal has been submitted with our approval us University Supervisors.

Signed: Date:

Dr. Moses Muriithi

Lecturer, School of Economics

University of Nairobi

Signed: Date:

Dr. Kennedy Osoro

Lecturer, School of Economics

University of Nairobi

DEDICATION

This research paper is lovingly dedicated to my late mother Ms. Doryne Aoko who was a constant source of inspiration during her life time. She gave me the drive and discipline to tackle any task with enthusiasm and determination.

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TABLE OF CONTENTS

DECLARATION.....	ii
DEDICATION	iii
ACKNOWLEDGEMENTS.....	iv
LIST OF FIGURES	vii
LIST OF TABLES	viii
LIST OF ABBREVIATIONS	ix
ABSTRACT.....	xi
CHAPTER ONE: INTRODUCTION.....	1
1.1 Background of the Study	1
1.2 VAT Structure in Kenya	3
1.3 Value Added Tax Reforms in Kenya.....	4
1.4 Statement of the Problem.....	8
1.5 Research Questions.....	10
1.6 Objectives of the Study.....	10
1.7 Significance of the study.....	10
1.8 The Scope of the Study	11
CHAPTER TWO: LITERATURE REVIEW	12
2.1 Introduction.....	12
2.2 Theoretical Literature.....	12
2.3. Empirical Literature Review on VAT Reforms.....	15
2.4 Synthesis of the Literature Review	19
CHAPTER THREE: METHODOLOGY AND ANALYTICAL FRAMEWORK	20
3.1 Introduction.....	20
3.2 Theoretical Framework and Model.....	20
3.2.1 Buoyancy of VAT.....	20
3.2.2 Elasticity of VAT	22
3.3 Estimation Procedure	24

3.4 Definition of variables	25
3.5 Estimation Method.....	26
3.6 Tax Bases and Data Sources	26
CHAPTER FOUR: DATA ANALYSIS, INTERPRETATION AND FINDINGS	27
4.1 Introduction.....	27
4.2 Descriptive statistics	27
4.3 Unit Root Testing	28
4.4 Cointegration analysis.....	33
4.5 Regression results to estimate VAT buoyancy	35
4.6 Regression results to estimate VAT Elasticity.....	37
4.7 Diagnostic Tests	38
4.8 Discussion of the empirical findings.....	38
CHAPTER FIVE: CONCLUSION AND POLICY RECOMMENDATIONS.....	41
5.1 Conclusion	41
5.2 Policy Implications	42
5.3 Limitations of the study and areas of further research.....	43
REFERENCES	44
APPENDICES	48
Appendix I: Raw Data Used	48
Appendix II: Diagnostic Tests.....	50

LIST OF FIGURES

Figure1: VAT to GDP Growth Rate in Kenya, 1991-2010	2
Figure 2: VAT Productivity and Rate in Kenya, 1991 – 2011.....	3
Figure 3: Laffer curve	14

LIST OF TABLES

Table 1.1: VAT Rationalization.....	7
Table 4.1 Normality test results	28
Table 4.2 ADF Unit Root tests at levels.....	29
Table 4.3 ADF Unit Root tests at first difference	29
Table 4.4 ADF Unit Root tests for Private Consumption at second difference	30
Table 4.5 Summary of ADF unit root tests results.....	30
Table 4.6 Philips Perron tests at levels.....	31
Table 4.7 Philips Perron tests at first difference	31
Table 4.8 Philips Perron tests for Private Consumption at second difference	32
Table 4.9 Summary of Philips Perron Unit Root tests results.....	32
Table 4.10: Buoyancy Cointegration regression results.	33
Table 4.11 ADF test for buoyancy residuals	34
Table 4.12: Buoyancy estimates	35
Table 4.13: Elasticity Cointegration regression results.....	36
Table 4.14 ADF test for elasticity residuals	36
Table 4.15 : Elasticity estimates.....	37
Table 4.16: VAT buoyancy and elasticity results	38

LIST OF ABBREVIATIONS

BOP	Balance of Payment
CRS	Constant Rate Structure
DIM	Divisia Index Method
DVT	Dummy Variable Technique
ESD	Electronic Signature Devices
ETR	Electronic Tax Register
GDP	Gross Domestic Product
GoK	Government of Kenya
HTSTD	Historical Time Series Tax Data
IMF	International Monetary Fund
KIPPRA	Kenya Institute for Public Policy Research and Analysis
KRA	Kenya Revenue Authority
LPG	Liquefied Petroleum Gas
MoF	Ministry of Finance
OECD	Organization for Economic Co-operation and Development
PAM	Proportional Adjustment Mechanism
RARMP	Revenue Administration Reform and Modernization Program
SARA	Semi-Autonomous Revenue Authority
TMP	Tax Modernization Program
VAT	Value Added Tax

ABSTRACT

Kenyan government has been faced with constantly increasing development and recurrent expenditure with limited additional sources of revenue. A number of factors have contributed to this increase in government expenditures namely; prolonged drought over the years, high rate of inflation, demands for salary increment, implementation of new constitution among others. Consequently, the government budget deficit is becoming huge and may be unsustainable in future. We therefore carried out this study having identified Kenya's VAT as one of the revenue sources that is not fully utilized to find out whether it can help to generate additional revenue to the government to help in financing the growing budget deficit.

The approach that this study took was to evaluate VAT reforms that have been undertaken on VAT since its introduction in 1990 aimed at boosting its revenue generating capacity. We hoped to identify areas that need further reforms to increase VAT compliance rate which has been relatively low over the years. We established that Kenya's VAT has been subjected to a number of reforms since its introduction for instance rationalization of VAT rates and lowering of VAT ceiling to minimize tax evasion and to increase competitiveness of local products together with other reforms discussed in this paper.

To estimate the revenue productivity of VAT, we used elasticity and buoyancy models. VAT buoyancy was estimated using actual VAT data which did not require to be adjusted for government discretionary tax measures. On the other hand, data used to estimate VAT elasticity had to be adjusted using proportional adjustment method (PAM) to eliminate changes in VAT revenue occasioned by discretionary tax policy measure taken to boost VAT revenue.

The study found Kenya's VAT to be inelastic and non-buoyant, with elasticity and buoyancy coefficients being less than unity. This confirmed that the VAT as a source of revenue is grossly underperforming and there is need for further reforms on VAT to boost its revenue productivity. We therefore proposed a number of policy measures to be undertaken to increase revenue generating capacity of Kenya's VAT.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The magnitude of government budget deficit has for long been viewed as one of likely single most essential statistic measuring the impact of government fiscal policy. According to Ariyo (1997), fiscal deficit has become a cyclical feature of public sector financing worldwide due to the desire of various governments to respond positively to the ever-increasing demands of the populace while at the same time enhancing accelerated economic growth. Chipeta (1998) has observed that often, tax as a source of revenue for many governments have gone short of generating adequate revenue to match growing expenditure thus making them look for alternative ways of financing. Poverty incidences in developing countries have resulted to over-dependence on government provision of public goods like education, health and others leading to huge deficit financing. As noted by Chipeta (1998) this has created a situation of unsustainable external financing.

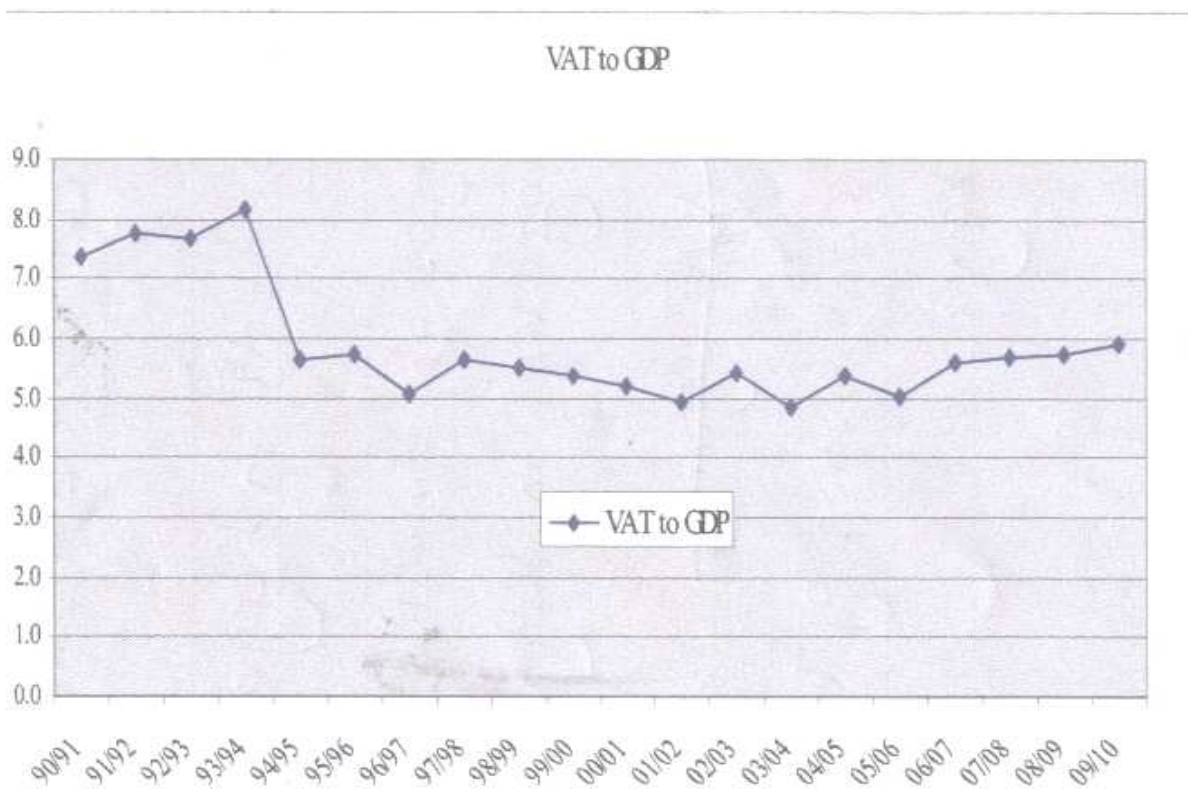
To arrest this problem, many developing countries are making efforts to design systems of tax that are viable, productive and sustainable towards financing multi-government expenditures. According to Mahon (1998) theoretical level, tax reforms are initiated either following an economic crisis or as a response to international pressure. Consequently, tax reform involves the process of changing the way taxes are collected or managed by the government. It also involves the adoption of a Value Added Tax (VAT) or its expansion, elimination of stamps and other minor duties, simplification and broadening of personal or corporate income as well as asset taxes.

In Kenya, the most notable tax reform policy proposals were the Tax Modernization Programme (TMP) that was adopted in 1986 with the aim of enlarging the government revenue base regulating expenditure through strict fiscal controls (GoK, 1986). According to Sessional Paper No 1 of 1986, the TMP was aimed at raising the tax revenue-GDP ratio from 22% in 1986 to 24% by the period 1999/2007.

More recently the focus has expanded to address the capacity and efficiency of the tax administration which led to creation of Kenya Revenue Authority (KRA) as an autonomous institution charged with the responsibility of collecting tax revenue on behalf of the government.

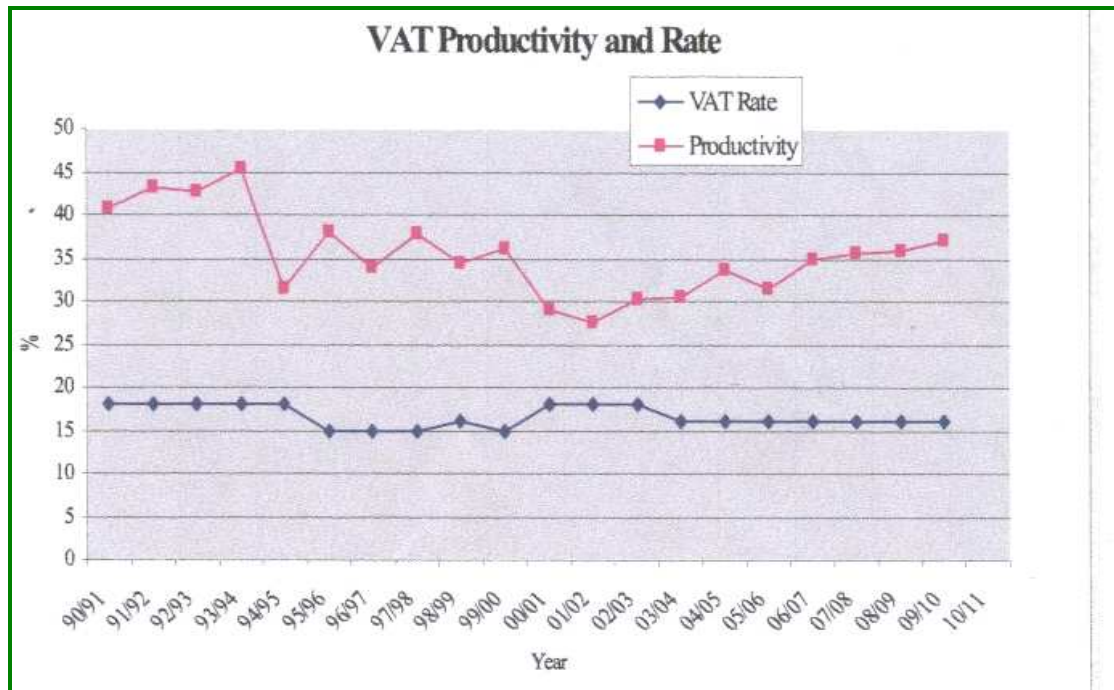
Since 1986 when Tax Modernization Programme was introduced, various changes have been experienced. One of them is the transformation of sales tax to value added tax (VAT) that took place in 1990 through the Value Added Tax Act (Karingi et al., 2005). Since its inception, VAT has grown and contributed to the GDP as shown in figures 1 and 2. However, little is known about the performance of the reforms in terms of raising the revenue mobilization capacity of the value added tax system. It is not known how the reforms have affected value added tax revenue. This study attempts to fill this gap in knowledge.

Figure1: VAT to GDP Growth Rate in Kenya, 1991-2010



Source: Ministry of Finance (2012)

Figure 2: VAT Productivity and Rate in Kenya, 1991 – 2011



Source: Ministry of Finance (2012)

1.2 VAT Structure in Kenya

Kenya adopted a consumption base VAT which is perceived to be economical, neutral and easy to administer. In this case, the burden of tax falls on the final consumers of goods and services as capital goods are exempted from VAT. It is designed to be administered using the invoice-credit method and computed by subtracting taxes due on sales from all taxes previously paid on purchases from other firms. Only registered traders are required to charge VAT with qualification for registration under VAT being an annual sales turnover of five million Kenya shillings (KRA, 2007).

Multiple rate VAT was adopted to make the VAT rate structure a progressive one, taxing basic necessities at a lower rate and luxuries at higher rates, compounded with numerous exemptions. Currently, the rates are three i.e. 16% (standard rate), 12% and 0%. Further, Kenya's VAT is based on "destination principle". Exports are zero-rated and imports are

subjected to VAT. Apart from administration ease, the decision to opt for a destination based VAT is derived from a desire to expand exports market.

In Kenya, supplies of goods and services are either taxable, tax exempt or zero-rated. Exempt relieves the exempt trader's value added from the tax, but all his purchases including capital goods are taxed. Therefore, exemption eliminates the tax on value added in the final stage only. Although the retailer would not charge value added on its sales, the retailer would not be entitled to a credit for tax paid on the purchase of an exempt item. Exemption partially frees users of certain goods and services from VAT. Exempted users in Kenya do not register for VAT and do not file returns. Exemptions from VAT in Kenya include newspapers, journals, helicopters, wood charcoal, airplanes and services include tour operation etc.

However, in the case of zero-rated goods and services, the seller pays no tax on its sale and additionally receives a credit for the tax paid on the purchase of materials and other inputs used. Zero-rating ensures that a product is truly free of VAT. With zero-rating, unlike exemption, only the final sale of the commodity is zero-rated since any tax paid would be credited on the last sale. Commodities that are currently zero rated include bread, fertilizers, rice, wheat flour, processed milk, LPG gas and computers etc. For a broader tax base, exemption is preferred to zero-rating. In addition, the administrative burden of the zero rating procedure can be tedious.

1.3 Value Added Tax Reforms in Kenya

The Value Added Tax (VAT) was introduced in Kenya and replaced the sales tax as of 1st January 1990, and the input credit system was adopted at its introduction (Karingi et al., 2005). At this particular time however, the idea of tax policy simplicity had not steadily taken root in Kenya: the VAT was introduced with a standard rate of 17%, but with 14 other different rates. VAT was made to appear more like a differentiated commodity tax regime. With this multiplicity of rates, it was particularly difficult to rationalize in light of the fact that excise taxes on particular classes of goods were maintained during and also after the transition and implementation of the VAT. As a result, one year into its introduction, the number of rates was reduced to eight and the maximum rate reduced to 100 per cent from 210 per cent.

The introduction of Value Added Tax (VAT) was part of an overall tax reform package which Kenya embarked on in 1986 through the Tax Modernization Programme (TMP) (Muriithi and Moyi 2003). TMP would make the Kenyan fiscal system more progressive, efficient, equitable and more modern. VAT is considered as an effective means to collect revenue as a reformed sales tax of indirect tax system. It is a broad-based and modern tax that covers the value added to each commodity by a firm during all stages of production and distribution and enables efficient collection system (increases efficiency and reduces tax evasion). VAT also plays great role in the revenue mobilization in Kenya. Further steps taken at VAT rationalization included the further reduction of the maximum rate from 100% to 15% by 1997 and the reduction of the rate bands from 15 to 3. The changes that have been made on the VAT rates in Kenya since its introduction to date are shown on table 1.1.

The main purpose of rationalization of VAT rates and lowering of the VAT ceiling was to minimize tax evasion, increase the competitiveness of local products, eradicate misclassification, simplify tax administration, improve compliance and also reduce the requests for exemptions. Despite this, there is still need to introduce further measures to check on VAT evasion which remains rampant and also the VAT compliance rate is still relatively low leading to loss of revenue. According to the Treasury (2011), the current compliance rate stands at about 55 per cent due to distortion and tax leakages caused by exemptions and zero rating.

Tax incentives, in this case exemptions and zero rating of a number of goods and services, are unproductive leading to revenue loss and complication of the VAT system. Kenya's present VAT Act permits exemption to a total of 395 goods and 22 groups of services whereas at the same time permitting zero rated status to a total of 416 supplies of both goods and services. It is therefore clear that by removing some goods and services from the exemption and zero rated brackets, the government would get more revenue from VAT. In addition, reducing the number of zero-rated goods and services will also reduce the backlog of refunds that has posed a great challenge to KRA and also reducing the cost of administration of VAT.

Nada and William (2009) note that in Kenya, the responsibility for paying VAT on certain sales rests not only with the seller but also with the buyer. This is enabled through a system that was introduced towards the end of 2003 in the name of VAT withholding. It initially applied to government agencies that were purchasing goods and services subject to VAT. It was observed that the government, through these agencies, was paying VAT-inclusive prices to suppliers, who were not necessarily remitting the revenue to the KRA. Later on, other purchasers were also compelled to pay the VAT withholding leading about 2000 VAT withholding agents in 2004-05. The agents consisted of purchasers who were required to withhold VAT. Most importantly is that about 40 percent of VAT revenue was collected from these agents the same year (Nada and William, 2009).

Taking tax administration from the Ministry of Finance in 1995 by establishing an autonomous revenue authority, KRA, marked an important reform not only in VAT administration but in the tax administration in general. This made the tax administration, in this case VAT, service-oriented, professional and efficient. VAT is administered by the Domestic Tax Department of KRA. Another significant reform in the administration of VAT was the introduction of Electronic Tax Register (ETR) machine in 2005 to enhance efficiency of administration, reduce evasion and to address the perennial problem of poor record keeping for business transactions (KRA, 2010). Electronic Tax Registers were introduced by KRA to replace the manual paper system of remitting VAT returns that was considered inefficient and straining. ETR system greatly enhanced compliance and by extension VAT revenue collections. Electronic Tax Registers and Electronic Signature Devices (ESDs) offer unique benefits to traders and the Revenue Authority alike by recording transaction data in such a manner that it cannot be deleted. The Government of Kenya on the other hand allowed businesses to offset the cost of the ETR installation against the input VAT as well as training of traders on their use and benefits. The ETR programme is one among many tax administration reform measures that the KRA has undertaken.

Table 1.1: VAT Rationalization

Year	Number of Rates	Rates (%)	Standard rate (%)
1989/90	15		17
1990/91	9	0, 5, 18, 30, 45, 50, 80, 100, 150	18
1991/92	8	0, 5, 18, 25, 35, 50, 75, 100	18
1992/93	6	0, 3, 5, 18, 30, and 50	18
1993/94	4	0, 5, 18, and 40	18
1994/95	4	0, 5, 18 and 30	18
1995/96	4	0, 6, 15 and 25	15
1996/97	3	0, 8, and 15	15
1997/98	3	0, 10, and 17	17
1998/99	4	0, 10, 12 and 16	16
1999/00	4	0, 10, 13 and 15	15
2000/01	4	0, 10, 16 and 18	18
2001/02	4	0, 10, 16 and 18	18
2002/03	4	0, 10, 16 and 18	18
2003/04	3	0, 10, and 16	16
2004/05	3	0, 10, and 16	16
2005/06	3	0, 10, and 16	16
2006/07	3	0, 10, and 16	16
2007/08 to date.	3	0, 12, and 16	16

Source: Various budget statements

The VAT refund system was characterized by weak controls and corruption that led to loss of revenue (Nyamunga, 2001). Administrative changes were undertaken thereafter to streamline the refund system. The improved management that followed has been behind the introduction of tighter verification measures and the elimination of the large backlog of claims (Muriithi and Moyi 2003). In spite of these measures that have been taken by KRA to improve the refund system, there is still delay in processing of refunds and this tend to demoralize tax payers entitled to refund therefore encouraging tax evasion.

In the year 2007, the registration threshold for VAT was reviewed upwards, from a minimum of annual turnover of 3 million to a minimum annual turnover of 5 million Kenya shillings. In addition, certain traders and members of certain professions are required to register independently of their turnover, but this requirement has not been well enforced. The increase in threshold was meant to enhance the administration ease of VAT by excluding small enterprises from the VAT bracket. After registering for VAT, the traders are obliged to collect and remit VAT on their taxable supplies, with an allowance to recover tax paid on their purchase of inputs. Only the registered traders are required to charge VAT.

In recognition of the need to undertake coherent and comprehensive reforms, the KRA adopted a Tax Administration Reform and Modernization Programme whose primary objective was to modernize and integrate its operations in line with international best practice of tax collection. Under this ongoing programme, the former Income Tax and VAT departments were merged to form the domestic taxes department, which also incorporates domestic excise tax operations.

1.4 Statement of the Problem

Value added tax (VAT) has become a primary source of revenue in Kenya since its introduction in 1990, generating about two-thirds of domestic tax revenue on goods and services. It is argued that VAT is an attractive tax because it is a powerful source of revenue that does not significantly distort businesses' and consumers' decisions. Since its introduction in Kenya, VAT has gone through a number of reforms primarily to raise its revenue capacity, reduce value added tax evasion, increase compliance, and for efficiency of the administration by the revenue authority.

Despite all these reforms, there is still a major concern by the treasury as noted in the 2010/11 budget speech, International Monetary Funds (IMF, 2011), scholars (Karingi et al. 2005; Wawire, 2011; Mwakalobo, 2009; Moyi and Ronge, 2006; Nada and William, 2009; and Murithi and Moyi, 2003) among other economic players that VAT is still not generating revenue to its potential capacity. IMF (2011) observed that widening and simplification of the Value Added Tax (VAT) bracket could increase Kenya Revenue Authority (KRA)'s revenue

collection by an estimated Sh40 billion and removal of exemptions will make VAT less complicated. In addition, scrapping some zero rated goods would further increase the VAT revenue. Kenya's present VAT Act permits exemption to a total of 395 goods and 22 groups of services whereas at the same time permitting zero rated status to a total of 416 supplies of both goods and services.

Kenya has proposed significant reforms to its current VAT law in order to simplify compliance and increase revenues. According to the Treasury (2011), the current compliance rate stands at about 55 per cent due to distortion and tax leakages caused by exemptions and zero rating. When the proposed Bill, which has already been tabled in parliament, becomes law, the treasury hopes to achieve 80 to 90 per cent VAT compliance. The proposed Value Added Tax Bill is meant to comply with constitutional requirements and IMF conditions for cash infusion. Since there is a limit on foreign debts and grants with public debt currently at 52.3 percent of GDP and any significant increase in this ratio may make the debts unsustainable for Kenya, therefore mobilising domestic tax revenue is key for more Government spending.

The problem of this study is to evaluate whether the VAT- reform process in Kenya can effectively raise more revenue to handle the fiscal challenges imposed by increasing budget deficit which has increased to over 5 percent of GDP due to a number of factors namely; the revenue receipts have been underperforming, numerous shocks that have wreaked havoc on the economy in recent years e.g 2007 post-election violence and its aftermath, prolonged drought, high rate of inflation, high international oil prices, a weak shilling and food shortage, demands for salary increment, re-adjustment of expenditure from non-priority areas to finance security issues, particularly the Somalia incursion against the Al Shaabab, implementation of the new constitution, and servicing of increased external debt, and the implementation of the Vision 2030 blueprint among others. These factors put a huge demand for additional funding.

1.5 Research Questions

The study will be guided by the following research questions

- i) What are the VAT reforms that have taken place since 1990?
- ii) Is the Kenya's VAT revenue productive?
- iii) What lessons can be learnt from the specific case of Kenya?

1.6 Objectives of the Study

The broad objective of the study is to establish the VAT reforms and revenue productivity in Kenya. As such, the study will be guided by the following specific objectives:

- i) To evaluate reforms that has taken place in VAT since 1990.
- ii) To analyze VAT productivity by use of tax buoyancies and elasticities.
- iii) To come up with policy recommendations emanating from findings in (ii) above.

1.7 Significance of the study

To the academicians, this study will contribute to the already existing literature on the VAT structure and reforms in Kenya. In addition, the study will also stimulate further research in the area of taxation and in particular the rest of the individual taxes in Kenya.

The study will help in creating awareness with regard to VAT reforms process and how it has impacted on revenue productivity in Kenya since its inception. By the analysis of the VAT elasticity and buoyancy in Kenya from 1990 to 2010, the study will assist in establishing whether VAT is elastic. To the government and policy makers, the study will provide the additional information that could be useful in policy formulation and implementation particularly in the area of tax reforms in Kenya so as to improve the tax contribution to revenue productivity. This will eventually enable the government to reduce the fiscal deficit in the future.

1.8 The Scope of the Study

This study focused on the revenue productivity of VAT reforms in Kenya and was limited to the period 1990/91 to 2010/2011 owing to a number of reasons. First, this period was long enough to capture both the pure and total responsiveness of VAT revenues to change in the revenue productivity. Secondly, it was within this period that Kenya's economy grew negatively before assuming a positive growth 2002 after a change in the country's governance. Thirdly, during this period, the government introduced and implemented a host of tax reforms aimed at generating adequate revenue necessary for the provision of public goods. Therefore it is possible in this period, to capture the effects on tax revenues of such events like trade liberalization, privatization, tax modernization programmes and the establishment of KRA.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

A substantial number of studies have attempted to develop theoretical and empirical works to understand the role of tax reforms in solving the problem of chronic budget deficit faced by both developed and developing countries. In addition, a number of studies have examined the various theoretical and empirical aspects of tax reforms that led to rapid adoption of VAT by a number of countries, revenue productivity of VAT, challenges facing VAT reforms and possible solutions. This section reviews the literature, with a particular emphasis on VAT reforms and revenue productivity in Kenya. The section is divided into three main parts corresponding to theoretical and empirical studies on VAT reforms. The final provides a summary of the literature review.

2.2 Theoretical Literature

Classical taxation theory was for a long time of greatest significance. According to this theory, the most important role of taxation was that of providing state revenues. The classical theory was founded by Adam Smith. In his book ‘An Inquiry into the Nature and Causes of the Wealth of Nations’ Adam Smith defined the taxation system, specifying the major circumstances for its foundation and proposing four main taxation principles namely: equity, determination, convenience and thrift of taxation administration. His work was later on advanced by D. Ricardo and J Mills. Proponents of the classical theory of taxation argued that the realization of taxation’s main role of provision of state revenue could only be achieved on the basis of the principles of equity and justice. However, as economic relations became a bit complicated prompting the need for stringent state’s regulation, classical theory views on the role of taxation changed in the course of many decades. Consequently, different taxation theories were developed, which had the most important effect on the taxation policy of the countries with advanced market economy. These were the Keynesian theory of taxation, neo-classical taxation theory and neo-Keynesian theories as discussed below.

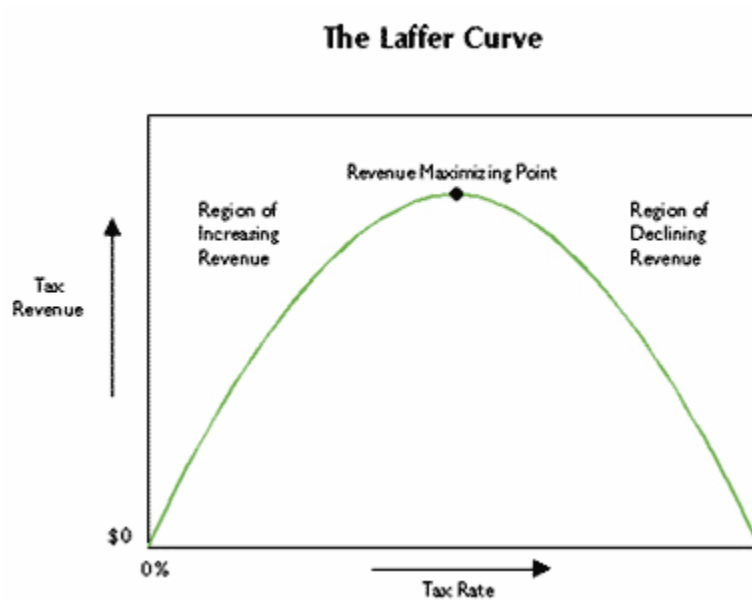
Keynesian taxation theory was introduced by John Keynes in his book “The General Theory of Employment, Interest and Money,” in which he advocated for state interventions in the processes of market economy regulation. Keynes was of the view that fast economic development must be grounded on a market expansion and an accompanying increase in consumption. Therefore, state intervention is attained at the level of effective demand. A major assumption in Keynes theory is that economic growth is correlated to monetary savings only in the situations of full-employment. On the other hand, too much saving hamper economic development as they lead to an inactive form of income and are not invested in production. Subsequently, Keynes proposed that surplus savings must be deducted with the assistance of taxation. The state must therefore intervene with the intention of deducting income savings with the assistance of taxation in order to fund investments and cover state expenses. Keynes further contended that high level progressive taxation is essential and that low tax rates lead to reduced state revenues and as a result contributes to economic instability.

However, Keynes theory was later on challenged by the neo-classical theory, developed by J. Mutt and A Laffere, which is of the view that the state is obliged to eliminate impediments to free market competition since the market can and must regulate itself devoid of external intervention. Consequently, neo-classical theory differs from the Keynesian one and gives a moderately passive role to state regulation of economic processes. Neo-classical theory proposed that a tax policy ought to be established on the following assumptions: taxes must be as small as possible and corporations should be granted significant tax exemptions. If not, a high tax burden would deter economic activity and restraint the investment policies of corporations, this would lead to stagnation in economic development. The theory argues that a controlled taxation policy would let the market to provide freely for fast development and result to substantial expansion of the tax base.

Arthur Laffer advanced neo-classical taxation theory by establishing a quantitative relationship between progressive taxation and budget revenues, and developed the widely known “Laffer curve.” According to Laffer, an increase in the tax burden leads to an increase in state revenues only up to a level, where they start to decrease. The higher the tax rate, the higher the motivation for tax evasion. When the tax rate reaches a certain limit,

entrepreneurship incentives are suppressed, the motivations for production expansion are reduced, taxable income decreases, and as a result, a part of the taxpayers will transfer from the legal to the shadow sector of the economy. Laffer considered that 30% of income is the maximum taxation rate that can be deducted for state budget purposes. Figure 3 is a graph illustrating the ‘Laffer curve.’

Figure 3: Laffer curve



Source: Investopedia.com (2003)

The neo-Keynesian theory of taxation which was developed by Fisher and Caldor advocated for division of taxation objects in accordance with consumption, the final cost of the consumed product is taxed and savings is only taxed as a percentage of deposit. Consequently, the idea of consumption tax emerged, which is believed to promote savings and also fight inflation at the same time. The money meant for the purchase of consumer goods could now be used for investment or savings. The savings can later on be converted to capital investments. Long term savings contribute to future economic growth. Caldor considered that the consumption tax introduced through progressive rates with the use of exemptions and tax allowances for separate types of goods is more just for people with low incomes than a fixed sales tax. Further, compared with income tax, consumption tax has less

distortionary effect on the economy as it does not include savings that are essential for future investments therefore leading to increase in savings.

In the last few decades, substantial tax reforms have been considered by many developing countries especially due to the policy conditionalities of the structural adjustment programs of the World Bank and IMF (Bird and Zolt, 2005, Emran and Stiglitz ,2004 & 2005). The core of the tax reform program constitutes of the following components: a drastic reduction in import tariff and export taxes, and the introduction of VAT to recover the lost trade tax revenue. The literature on tax reform has been growing rapidly, suggesting the theoretical and practical importance of the subject. Much of the literature has been more descriptive than analytical. The techniques applied to evaluating success or failures of tax reforms are not well documented. Normally the analysis of tax reform has tended to focus on evaluating the objectives of those reforms: revenue adequacy, economic efficiency, equity, and simplicity. The need for tax reform arises from the deficiency of the existing tax system in achieving these objectives (McMahon and Berrios, 1991).

2.3. Empirical Literature Review on VAT Reforms

Ole (1975) estimated income elasticity of tax structure in Kenya for the period 1962/63 to 1972/73. Tax revenue was regressed on income without adjusting for unusual observations. The results showed that the tax structure was income inelastic (0.81) for the period studied. The study recommended that the system required urgent reforms to improve its productivity. The results also implied that Kenya's tax structure was not buoyant and therefore the country would require foreign assistance to close the budget deficit.

Bovenberg (1987) and Giesecke and Nhi (2010) have examined the impact of the various VAT systems in a given economy. They discuss the possibility of moving away from a uniform taxation rate by multiplying rates and the possibility to exempt goods. The key variables in the analysis are consumption, sectorial factor reallocation, production, government revenue, and household welfare. Emini (2000) showed that by postulating budget neutrality with a lower level of taxation than the one set down in the finance act, re-establishing VAT neutrality by expanding the tax base enables economic expansion and an increase in household welfare compared to the initial situation. An increase in inequalities

between household categories must nonetheless be noted. When Emini rejects the hypothesis of budget neutrality and re-establishes the VAT at the official rate, he shows that the sudden increase in VAT leads to a strong loss in reallocation, especially for sectors with a weak ex ante tax burden. In this context, household welfare decreases, as inequalities.

According to a report by the World Bank (1990), for tax reforms to be successfully used to mobilize additional revenue, there are some fundamental prerequisites: the growth in tax revenue must approximate the growth in expenditure for macroeconomic stability to hold on its part; and the tax structure must be stable and flexible. This is further asserted by Muriithi and Moyi (2003) whose study found out that stability of a tax structure allows revenue to be predicted with certainty and revenue instability can complicate fiscal management especially if expenditures are inflexible downwards, and the options open to policy makers are limited.

Osoro (1991) observed that increasing expenditure requirements in the 1980s forced developing countries to undertake tax reforms, of which, most of these reforms focused on tax structure rather than on tax administration geared towards generating more revenue from existing tax sources. According to OECD (2010), a growing number of countries that operate a VAT are considering fundamental reforms to increase their revenue raising capacity and to addressing efficiencies of the current system.

Adari (1997) studied the performance of value added tax (VAT) in Kenya that replaced sales tax in 1990. The study analyzed the structure, administration and performance of VAT. The estimated buoyancy and elasticity coefficients were less than one as a result response of vat to GDP was very low. Therefore, revealing the presence of laxity and deficiencies in VAT administration. However, Wawire (2011) argued that the estimation of buoyancy and elasticity coefficients were done in total disregard of the time series properties and without taking care of unusual observations in the data. Therefore, the results were not reliable for planning purposes.

Wawire (2000) estimated both buoyancy and income elasticity of Kenyan tax system. In his analysis he concluded that the tax system had failed to raise necessary

revenues. One of the shortcomings was that he didn't separate tax revenue data by either base or source thus making it impossible, first, to identify the source of either fast revenue growth or lagging revenue growth and secondly in highlighting the component of growth that is amenable to policy manipulation. Tanzi and Zee (2000) in their study noted that trade taxes are a relatively insignificant source of revenue for developed countries (less than 0.3 percent of GDP) while they constitute between 20 and 40 percent of total tax revenue for developing countries. Tanzi and Zee (2000) also argued that in general, the percentage of trade taxes of total tax revenue for developing countries is higher for low tax yield countries (tax revenue as a percentage of GDP in the range of 5-10 percent) than for medium tax yield (tax revenue of 10-20 percent of GDP) or high tax yield countries (tax yield greater than 20 percent of GDP).

Muriithi and Moyi (2003) used the concepts of elasticity and buoyancy to determine whether tax reforms in Kenya generated sufficient revenue. The period of study was split into: pre-reform periods (1973–1985) and the post-reform period (1986–1999). The pre reform period registered the lowest elasticity indexes of 0.276 for the whole tax structure compared with other periods and a buoyancy of 1.023. The post reform period recorded buoyancy and elasticity of 1.661 and 1.495, respectively. The analysis suggests that reforms had a positive impact on the overall tax structure and on the individual tax handles. In fact, the elasticity of indirect taxes was low and that of direct taxes was high, particularly after the reforms. Despite this positive impact, they argued that despite VAT being predominant in the tax structure, reforms failed to make VAT responsive to changes in income.

Gitau (2011) pinpoints buoyancy and elasticity models as the models which measure tax productivity. Tax revenue can rise as a result of change in tax rate to raise more revenue from same base or as a result of growth of base on which the tax is imposed. Consequently, the growth of tax as a result of GDP growth can be divided into two components: the automatic growth as the base on which the tax is charged grows in response to GDP, and the growth resulting from discretionary changes in tax rates and legislations. The combined effect of the two is the buoyancy of a tax.

Karingi et al (2004a) found out that the compliance for VAT and income taxes in Kenya are 55 and 35 percent, respectively. Consequently, (KIPPRA, 2005) argued that this means that it is possible to reduce the tax burden of those currently paying taxes by raising the compliance rate. In other words, it is possible to reduce the VAT rate from the current 16 percent without the government facing any revenue shortfalls by raising the level of compliance. It is evident that the low compliance is mainly an administrative issue related to KRA. The taxpayers face significant compliance costs and these interfere with their willingness to pay taxes. The administrative structure of KRA in itself contributes to this high cost. The tax-by-tax organization of KRA needs a revisit. The international best practice is to have revenue administration that is organized on a functional basis-like audit as one function and not by type of tax. It is, however, worthwhile to note that KRA has now restructured itself to a functional-based organizational structure.

Moyi and Ronge (2006) observed that nominal measures can be deceptive, because they can mask effects of changes in the rate of inflation. In their study of Tax modernization in Kenya, they found out that aggregate tax revenues have shrunk by 0.07% while custom revenues have shrunk by 4.1%. The only taxes that have grown in real terms are VAT and excise tax revenues. These results suggest that inflation has had a potentially adverse effect on tax revenues in Kenya. Analysis shows that except for import tax revenues with a correlation coefficient of -0.346 , all the other tax revenues are highly correlated with inflation. Correlation coefficients were 0.933 for total taxes, 0.891 for income taxes and 0.985 for VAT. There is a low but negative correlation between import taxes and the consumer price index. These authors also established that in terms of individual taxes, VAT had the highest buoyancy index followed by excise duty and income tax. Customs duty was the most rigid tax with the lowest and negative buoyancy index. Thus, for every 1% increase in GDP, customs revenues shrunk by 0.004%. This implies that it is indirect taxes, not direct taxes that are likely to improve the buoyancy of the tax system in Kenya. Tax policy should therefore put more emphasis on indirect taxes especially VAT and excise tax.

2.4 Synthesis of the Literature Review

The literature reviewed clearly confirms that a number of studies have been conducted on the tax system and tax reforms in Kenya (Karingi et al. 2005; Wawire, 2011; Mwakalobo, 2009; Moyi and Ronge, 2006; Nada and William, 2009; and Murithi and Moyi, 2003). All these studies have attempted to establish the contribution of tax reforms to revenue productivity in Kenya. In this study we put emphasis specifically on the VAT reform process from the year 1990, when VAT was introduced in Kenya, to the year 2010, which is a period long enough to give a clear picture of the effect of this reform process on revenue productivity in Kenya.

Consequently, this study focuses on VAT as an individual tax. The study therefore seeks to bridge the gap by attempting to find out the VAT reforms that have taken place in Kenya from the year 1990 to 2010, the contribution of the VAT to the Kenya's GDP during this period, and also evaluate whether the VAT reforms efforts enhanced buoyancy and elasticity of the VAT system in Kenya during the period of our study. We will use elasticity and buoyancy estimates to report revenue productivity. This study will shed light on whether the VAT reform process in Kenya can effectively raise more revenue to handle the fiscal challenges imposed by increasing budget deficit.

CHAPTER THREE

METHODOLOGY AND ANALYTICAL FRAMEWORK

3.1 Introduction

In line with achieving the objectives of the study, this chapter explains both the technique and methodology to be used in this study. This chapter will therefore outline the theoretical framework, model specification, estimation procedure, and data types and sources.

3.2 Theoretical Framework and Model

A number studies have looked at the theoretical linkage between tax reforms and revenue productivity (Osoro, 1991, 1993; OECD, 2010; Rao, 1992; Wildford and Wilford, 1978a; Muriithi and Moyi, 2003 among others). Asher (1989) observed that there are two concepts which are used to measure tax productivity namely elasticity and buoyancy. The relative composition of tax revenue has implications for revenue growth and stability when it is considered that taxes may be primarily mobilized to finance government expenditures, both recurrent and capital. High revenue productivity is usually considered as one of the criteria of a good tax system in developing countries. This productivity is traditionally measured by the concepts of tax buoyancy and tax elasticity.

Similarly for this study, the productivity of the VAT will be determined by applying the concepts of tax buoyancy and elasticity. Amin (2000) noted that assessing tax productivity is important because it not only allows the examination of the responsiveness of the tax system, but also because it affects the system's equity and efficiency effects. The income elasticity of a tax was broken down into tax-to-base and base-to-income elasticities. This implied that the elasticity of a tax was essentially the product of the elasticity relative to the base and the elasticity of the base-to-income. VAT buoyancy and elasticity are used in analyzing VAT revenue productivity.

3.2.1 Buoyancy of VAT

Changes in any individual tax revenue for instance VAT result from discretionary changes in the legal rates and rules governing the tax and the endogenous changes in the base on which the tax is imposed. The base is affected by, among others, variations in the gross domestic

product (GDP). For this reason, the growth in VAT revenue in response to GDP growth can be looked at as a decomposition of two components; the "automatic" growth, and the growth resulting from "discretionary" changes in the tax rates as well as rules. The combined effect is known as the "buoyancy" of the tax (Mansfield, 1972).

The buoyancy of a tax system (in this case VAT) is usually measured by the proportional change in total tax revenue with respect to the proportional change in national income (Twerefou et al., 2007). In other words, the buoyancy of VAT measures the receptiveness of VAT revenue to changes in Income or output with no attempt to control for discretionary changes in tax Policy. Buoyancy of tax (VAT) with respect to base (or GDP) is derived from logarithmic regressions of unadjusted revenue data on the base (or GDP); this is calculated using the double log function as follows:

$$\text{Log}T_t = \alpha + \beta_1 \text{Log}(Y)_t + \varepsilon_t \dots\dots\dots (1)$$

In the case of buoyancy actual and not adjusted tax revenue figures are used.

Where:

T = tax revenue (VAT)

Y = Tax base

α = constant term

β = buoyancy coefficient

ε = natural number

α and β are estimated using the ordinary least square (OLS) method.

Buoyancy coefficient of let's say 1.5 would imply that for every 1% increase in GDP, revenue from the tax had on average grown by 1.5%. The effect of automatic growth alone, after abstracting from discretionary changes an elasticity coefficient of 1.5% would imply that for every 1% increase in GDP, revenue from tax would have grown by 1.5% if the legislation and the rate of VAT had remained unchanged.

3.2.2 Elasticity of VAT

As mentioned above, in the buoyancy of VAT, the growth in VAT revenue in response to GDP growth can be looked at as a decomposition of two components; the "automatic" growth, and the growth resulting from "discretionary" changes in the tax rates as well as rules. The automatic growth in the tax revenue alone, abstracting from discretionary changes, is the elasticity of the tax. High tax elasticity, i.e., a tax elasticity coefficient of one or more, is said to be particularly desirable since it allows growth in expenditure to be financed by raising tax revenue without recourse to the politically unpopular decision to raise tax rates (Mansfield, 1972).

Often, the elasticity of total tax revenue in relation to income has been presented in aggregate models as a single number. It is however more realistic to look at the overall tax elasticity as a weighted average of the sum of the elasticities of individual taxes that respond in diverse ways to changes in income. This implies that an evaluation of the overall tax elasticity must commence with an examination of the individual tax elasticities. To analyze elasticity, it is important to break down the income elasticity of tax into two elements: the elasticity of tax to the base and the elasticity of the base to income.

According to Mansfield (1972);

$$\text{Elasticity of total tax revenue to income: } ET_t Y = \frac{\Delta T_t}{\Delta Y} * \frac{Y}{T_t} \dots\dots\dots (2)$$

$$\text{Elasticity of } k^{\text{th}} \text{ individual tax to income: } ET_k Y = \frac{\Delta T_k}{\Delta Y} * \frac{Y}{T_k} \dots\dots\dots (3)$$

$$\text{Elasticity of } k^{\text{th}} \text{ individual tax to base: } ET_k B_k = \frac{\Delta T_k}{\Delta B_k} * \frac{B_k}{T_k} \dots\dots\dots (4)$$

$$\text{Elasticity of } k^{\text{th}} \text{ individual base to income: } EB_k Y = \frac{\Delta B_k}{\Delta Y} * \frac{Y}{B_k} \dots\dots\dots (5)$$

Where

T_t = total tax revenue

T_k = revenue from k^{th} tax

Y = income (GDP)

B_k = base of k^{th} tax
 Δ = the discrete change in the variable associated with it.

Considering the given definitions of elasticity, it therefore follows that in any given system on n taxes:

$$ET_t Y = \frac{T_1}{T_t} \left[\frac{\Delta T_1}{\Delta Y} \times \frac{Y}{T_1} \right] + \dots + \frac{T_k}{T_t} \left[\frac{\Delta T_k}{\Delta Y_k} \right] + \dots + \frac{T_n}{T_t} \left[\frac{\Delta T_n}{\Delta Y} \times \frac{Y}{T_n} \right] \dots \dots \dots (6)$$

Further, according to Equation 5 above, the elasticity of total tax revenue to income is equal to the weighted sum of individual tax elasticities. The weights are the fractional distributions to total tax by each individual tax. The elasticity of any individual tax may also be decomposed into the product of the elasticity of the tax to its base and the elasticity of the base to income:

$$ET_k Y = \left[\frac{\Delta T}{\Delta B_k} * \frac{B_k}{T_k} \right] \left[\frac{\Delta B_k}{\Delta Y} * \frac{Y}{B_k} \right] \dots \dots \dots (7)$$

Combining equations 6 and 7 above shows that the elasticity of total revenue to income in a system of n taxes depends on the product of the elasticity of tax to base and base to income for each individual tax, weighted by the importance of each tax in the overall tax system.

This is written as:

$$ET_t Y = \frac{T_1}{T_t} \left[\left[\frac{\Delta T_1}{\Delta B_1} * \frac{B_1}{T_1} \right] \left[\frac{\Delta B_1}{\Delta Y} * \frac{Y}{B_1} \right] \right] + \dots \dots \dots + \frac{T_k}{T_t} \left[\left[\frac{\Delta T_k}{\Delta B_k} * \frac{B_k}{T_k} \right] \left[\frac{\Delta B_k}{\Delta Y} * \frac{Y}{B_k} \right] \right] + \dots \dots \dots \dots \dots \dots (8)$$

$$\dots \dots \dots + \frac{T_n}{T_t} \left[\left[\frac{\Delta T_n}{\Delta B_n} * \frac{B_n}{T_n} \right] \left[\frac{\Delta B_n}{\Delta Y} * \frac{Y}{B_n} \right] \right]$$

In general, the decomposition of elasticity is done for two reasons: one, for identification of the source of either fast revenue growth or lagging revenue growth, and secondly, for identification of the component of growth that is amenable to policy manipulation. This model for estimation of elasticities by Mansfield (1972) has been utilized by a number of scholars including; Osoro (1993), Ariyo (1997) and Muriithi and Moyi (2003).

3.3 Estimation Procedure

To estimate the revenue productivity of VAT, this study adopted the tradition model by Prest (1962), Rao (1979), Mansfield (1972), Osoro (1995). Wawire (2000), and Wawire(2006). The model is expressed as follows;

$$T = \delta Y^\beta \varepsilon \dots\dots\dots(9)$$

Where T is VAT revenue, Y is Final consumption of goods and services(base), ε is a stochastic disturbance term, δ and β are the coefficients.

A log-transformation of equation (9) is as follows;

Equation (9) is transformed to allow the estimation of parameters using the OLS method. Therefore, the multiplicative equation is linearized by taking the logarithm of the variables in the empirical model and introduce an error term, ε

$$\text{Log}T = \delta + \beta \text{Log}Y + \varepsilon \dots\dots\dots(10)$$

This equation provides an estimate of tax buoyancy, given by the coefficient β which measures the percentage change in T for a one percentage change in Y

Estimation of income elasticity requires control for discretionary changes in tax policy. It involves adjusting historical tax revenue series to eliminate the effects on tax revenue of all factors other than final consumption of goods and services. This study employed Proportional Adjustment (PA) technique developed by Prest (1962) to adjust the historical time series tax data (HTSTD) to discretionary effects, in this technique, a series of adjusted tax revenue was first obtained by subtracting from the actual tax revenue in each year the budget estimate of the revenue impact of discretionary changes in that year. This series was further adjusted by excluding the continuing impact of each discretionary change on future year's tax revenue, (Mansfield, 1972 and Gillani, 1986).

To estimate the income elasticity of VAT, equation (10) is modified as below;

$$\text{Log}T_t^* = \delta + \beta \text{Log}Y_t + \varepsilon_t \dots\dots\dots(11)$$

β ; Is tax elasticity defined as the responsiveness of revenue yields (T^*) to movements in the base (Y)

$T_t^* = T_t - D_t$ i.e. adjusted HTSTD to discretionary changes (T_t) is the actual tax yield in the t^{th} year and D_t is the budget estimate of the discretionary change(s) in the t^{th} year).

To generate revenue yield based on the structure of a reference year. This study adopted 1990 as the base year, since it is the year VAT was introduced in Kenya, for 1990-2010 analysis. The revenue yield (T_t) for each year in the sample period was converted to the reference year and the adjusted series for the t^{th} year was obtained as follows: $T_t^* = T_t$

$$T_2^* = [T_1^* / T_1] T_2$$

$$T_t^* = [T_{t-1}^* / T_{t-1}] T_t$$

On the other hand, VAT buoyancy with respect to its base (final consumption) was derived from logarithmic regressions of unadjusted revenue data on these bases (final consumption), i.e.:

$$\text{Log} (T_t) = \beta_0 + \beta_1 \text{Log} (B)_t + \varepsilon_t \dots\dots\dots (12)$$

Where

$$\beta_1 = \text{buoyancy ratio}$$

3.4 Definition of variables

Private final consumption on goods and services (Y) was expressed in K£ million where (1K£ = 20 Kenya Shillings). We adopted private final consumption as the VAT base because VAT is levied at the wholesale levels and retails levels. It was the independent variable in our estimation.

Actual VAT revenue (T) was also measured in K£ million where (1K£ = 20 Kenya Shillings). In estimation of VAT buoyancy, actual VAT was the dependent variable. Whereas adjusted VAT (T*), which was derived using Proportional Adjustment Method (PAM), was the dependent variable in VAT elasticity estimation. It was also expressed in K£ million (1K£ = 20 Kenya Shillings).

3.5 Estimation Method

The parameters were estimated using the Ordinary Least Square (OLS) method by the use of Eviews statistical package. Since the study used time series data, a number of tests were conducted. Normality tests carried out to check for normality of the data included Kurtosis tests, Skewness tests and Jarque-Bera tests. In addition, stationarity test was done using Augmented Dickey-Fuller tests which was complemented by Phillips Perron test. The presence of unit root at levels prompted us to difference the data used in our regression to avoid the problem of spurious and inconsistent regression results.

Other tests that were conducted included Ramsey reset test for the regression specification, AR test for autocorrelation residuals, ARCH test for heteroscedastic errors and white test.

3.6 Tax Bases and Data Sources

In this study Private final consumption was used as the VAT base since it is levied at retail and wholesale levels. The study used data from 1990 to 2010 since VAT was introduced in 1990 and has been operational to date. VAT, Private final consumption data was obtained from statistical abstracts, KRA publications and various issues of Economic surveys. The revenue impact of discretionary tax measures was obtained from annual budget speeches produced at the Treasury. Eviews, statistical package, was used in data analysis.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND FINDINGS

4.1 Introduction

In this chapter, the analyses of the empirical results of the study are presented. The chapter begins with the descriptive statistics, which gives the normality tests of the series together with other statistics. Thereafter followed by the regression results and finally the diagnostic tests are highlighted at the end of the chapter.

4.2 Descriptive statistics

It is important to scrutinize whether data displays normality before getting into details of empirical issues. Economic data may be non-normal (skewed) because the data may have a clear floor but not a definite ceiling or because of the presence of outliers. This study used the Jarque-bera statistics test to test the normality of the time series data used. Mean based coefficient of skewness and kurtosis were utilized to check for the normality of the variables used.

Skewness is the tilt in the distribution and is usually estimated to be within the range of -2 and +2 for normally distributed series. Whereas, kurtosis is the peakedness of a distribution and should be within the range of -3 and +3 for a normally distributed data. For normality test, null hypothesis of normality is used against alternative hypothesis of non-normality. In case the probability value is less than Jarque-bera chi-square at 5% level of significance, the null hypothesis is not rejected. Table 4.1 gives the summary of the descriptive statistics used in this study. The normality test shows that actual VAT, adjusted VAT and private final consumptions are normally distributed.

Table 4.1 Normality test results

	Actual VAT	Adjusted VAT	Private consumption
Mean	3.39	2.88	4.46
Median	3.40	2.90	4.58
Maximum	3.94	3.43	4.99
Minimum	2.88	2.37	3.78
Std. Dev.	0.30	0.30	0.37
Skewness	0.18	0.18	-0.40
Kurtosis	2.02	2.02	1.98
Jarque-Bera	0.95	0.95	1.45
Probability	0.62	0.62	0.48
Sum	71.23	60.50	93.86
Sum Sq. Dev.	1.82	1.82	2.80
Observations	21	21	21

4.3 Unit Root Testing

This study uses time series data, therefore it is important to check on the stationarity of the data to avoid problems which may arise due to the presence of unit roots. Working with non-stationary variables leads to spurious regression result from which further inference is meaningless. Augmented Dickey-Fuller (ADF) test complemented by Phillips Peron (PP) tests were therefore employed to ascertain the stationarity status of the variables. There was need to confirm ADF test results with PP unit root test since Pierre (1989) observed that ADF

unit root test could be invalidated by the presence of unusual circumstances. The stationarity test was done solely to determine whether the variables used were dependent on time. The unit root test done used null hypothesis that the variable being tested is time invariant. We tested at three levels of significance namely at 1%, 5% and at 10%. The desirable status to ascertain a stationary variable is excess negativity compared to any of the critical values.

Table 4.2 ADF Unit Root tests at levels

VARIABLES	ADF	CRITICAL	CRITICAL	CRITICAL
	TEST	VALUE 1%	VALUE 5%	VALUE 10%
Actual VAT	0.62	-3.83	-3.03	-2.66
Adjusted VAT	0.62	-3.83	-3.03	-2.66
Private Consumption	-2.15	-3.81	-3.02	-2.65

Table 4.2 above shows Augmented Dickey-Fuller test results for stationarity at levels where all the variables were found to be non-stationary. We therefore carried out further test for unit root after first differencing to confirm whether the variables would be stationary. The results for Augmented Dickey-Fuller test after first differencing are shown in table 4.3.

Table 4.3 ADF Unit Root tests at first difference

VARIABLES	ADF	CRITICAL	CRITICAL	CRITICAL
	TEST	VALUE 1%	VALUE 5%	VALUE 10%
Actual VAT	-6.62	-3.84	-3.03	-2.66
Adjusted VAT	-6.64	-3.83	-3.03	-2.66
Private Consumption	-3.48	-3.83	-3.03	-2.66

Table 4.3 shows the Augmented Dickey-Fuller test results for unit root test after first differencing. Actual VAT and adjusted VAT were found to be stationary after first differencing. However, private final consumption was still non-stationary. Therefore, we did a second differencing for private final consumption and conducted the unit root test further. The results are shown in the table 4.4.

Table 4.4 ADF Unit Root tests for Private Consumption at second difference

VARIABLES	ADF	CRITICAL	CRITICAL	CRITICAL
	TEST	VALUE 1%	VALUE 5%	VALUE 10%
Private Consumption	-8.55	-3.86	-3.04	-2.66

The tests confirmed that private final consumption was stationary after second differencing whereas actual and adjusted VAT were stationary after first differencing. Table 4.5 is a summary of Augmented Dickey Fuller unit root tests results showing the order of integration.

Table 4.5 Summary of ADF unit root tests results

VARIABLES	ADF	CRITICAL	CRITICAL	CRITICAL	ORDER OF
	TEST	VALUE 1%	VALUE 5%	VALUE 10%	INTEGRATION
Actual VAT	-6.62	-3.83	-3.03	-2.66	I(1)
Adjusted VAT	-6.64	-3.83	-3.03	-2.66	I(1)
Private Consumption	-8.55	-3.86	-3.04	-2.66	I(2)

There was need to confirm the above ADF test results by carrying out Phillips Perron unit root test. PP test results are shown in tables 4.6, 4.7, 4.8 and 4.9.

Table 4.6 Philips Perron tests at levels

VARIABLES	PP	CRITICAL	CRITICAL	CRITICAL
	TEST	VALUE 1%	VALUE 5%	VALUE 10%
Actual VAT	0.077	-3.81	-3.02	-2.65
Adjusted VAT	0.07	-3.81	-3.02	-2.65
Private Consumption	-2.05	-3.81	-3.02	-2.65

Table 4.6 above shows Philips Perron test results for stationarity at levels where all the variables were found to be non-stationary. We therefore carried out further test for unit root after first differencing to confirm whether the variables would be stationary. The results for Philips Perron after first differencing are shown in table 4.7.

Table 4.7 Philips Perron tests at first difference

VARIABLES	PP	CRITICAL	CRITICAL	CRITICAL
	TEST	VALUE 1%	VALUE 5%	VALUE 10%
Actual VAT	-6.77	-3.83	-3.03	-2.66
Adjusted VAT	-6.79	-3.83	-3.03	-2.66
Private Consumption	-3.57	-3.83	-3.03	-2.66

Table 4.7 above shows the Philips Perron test results for unit root test after first differencing. Actual VAT and adjusted VAT were found to be stationary after first differencing. However, private final consumption was still non-stationary. Therefore, we did a second differencing

for private final consumption and conducted the Philips Perron unit root test further. The results are shown in the table 4.8.

Table 4.8 Philips Perron tests for Private Consumption at second difference

VARIABLES	PP	CRITICAL	CRITICAL	CRITICAL
	TEST	VALUE 1%	VALUE 5%	VALUE 10%
Private Consumption	-8.77	-3.86	-3.04	-2.66

The Philips Perron tests confirmed that private final consumption was stationary after second differencing whereas actual and adjusted VAT were stationary after first differencing. Table 4.9 is a summary of Philips Perron unit root tests results showing the order of integration.

Table 4.9 Summary of Philips Perron Unit Root tests results

VARIABLES	PP	CRITICAL	CRITICAL	CRITICAL	ORDER OF
	TEST	VALUE 1%	VALUE 5%	VALUE 10%	INTEGRATION
Actual VAT	-6.77	-3.83	-3.03	-2.66	I(1)
Adjusted VAT	-6.79	-3.83	-3.03	-2.66	I(1)
Private Consumption	-8.77	-3.86	-3.04	-2.66	I(2)

The Phillip Perron test results above in table 4.9 confirmed results obtained from Augmented Dickey-Fuller test. Therefore, actual VAT and adjusted VAT were found to be integrated of order one while private final consumption was found to be integrated of order two.

4.4 Cointegration analysis

Having found out the order of integration, there was need to carry out a cointegration analysis to establish whether the variables that were non-stationary at levels are cointegrated. Detrending of non-stationary variables to realize stationarity may result to loss of long run properties. Cointegration suggests that in case there is a long run relationship between two or more non-stationary variables, deviation from this long run path are stationary.

In this study, we tested for cointegration using the Engle-Granger (1987) two step procedure specified in the cointegrating regression as;

$$X_t = a_0 + a_1 z_t + E_t \dots\dots\dots(i)$$

$$E_t = (X_t - a_0 - a_1 z_t) \dots\dots\dots(ii)$$

Equation (ii) above is the residual of equation (i) and it is a I(1) series. The advantage of the Engle-Granger two step procedure is that it prevents the errors in the long run relationship from becoming infinitely large. It has an error correction mechanism (ECM). In this study, our first step was estimation of a static (long run) model using the list squares method. Table 4.10 shows the results of cointegrating regression.

Table 4.10: Buoyancy Cointegration regression results.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PRIVATE_FINAL_CONSUM				
PTN	0.76	0.00	200.91	0.00
R-squared	0.93	Mean dependent var		3.39
Adjusted R-squared	0.93	S.D. dependent var		0.30
S.E. of regression	0.08	Akaike info criterion		-2.22
Sum squared resid	0.12	Schwarz criterion		-2.18
Log likelihood	24.38	Hannan-Quinn criter.		-2.22
Durbin-Watson stat	0.49			

Residuals was then generated from the above regression results of long run equation for non-stationary variables. The stationarity of the residuals was then tested using ADF. Table 4.11 shows the results for stationarity test on residuals.

Table 4.11 ADF test for buoyancy residuals

Null Hypothesis: RESIDUAL has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=4)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.05	0.71
Test critical values:		
1% level	-3.81	
5% level	-3.02	
10% level	-2.65	

*MacKinnon (1996) one-sided p-values.

Results in table 4.11 above shows that the residuals were found to be non-stationary at 1%, 5% and 10% levels of significance. Therefore, the residuals could not become the error correction term (ECM), therefore, an error correction formulation could not be adopted. Since cointegration test results showed that the variables do not have a long run relationship, regressions to estimate VAT buoyancy were therefore done at levels.

4.5 Regression results to estimate VAT buoyancy

Table 4.12: Buoyancy estimates

Dependent Variable: ACTUAL_VAT

Method: Least Squares

Date: 06/15/13 Time: 12:58

Sample: 1990 2010

Included observations: 21

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-0.09	0.21	-0.45	0.66
Private consumption	0.78*	0.05	16.48	0.00
R-squared	0.93	Mean dependent var		3.39
Adjusted R-squared	0.93	S.D. dependent var		0.30
S.E. of regression	0.08	Akaike info criterion		-2.14
Sum squared resid	0.12	Schwarz criterion		-2.04
Log likelihood	24.49	Hannan-Quinn criter.		-2.12
Durbin-Watson stat	0.50			

Note: *significance at 1%

From the regression results shown in table 4.12 above, the coefficient for private consumption was found to have the expected positive sign and statistically significant at 1% level. Private consumption coefficient was found to be 0.7810, therefore a one percentage point increase in the private consumption would approximately result to 0.7810 percent increase in the actual VAT, *ceteris paribus*. On the other hand, R-squared (Coefficient of Determination) was 0.9346, implying that 93.46 percentage changes in actual VAT were explained by private final consumption. VAT buoyancy estimate was done using actual VAT data without controlling for discretionary changes in tax.

Table 4.13: Elasticity Cointegration regression results.

Dependent Variable: Adjusted VAT

Method: Least Squares

Date: 06/17/13 Time: 13:23

Sample: 1990 2010

Included observations: 21

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Private final consumption	0.65	0.00	143.98	0.00
R-squared	0.91	Mean dependent var		2.88
Adjusted R-squared	0.91	S.D. dependent var		0.30
S.E. of regression	0.09	Akaike info criterion		-1.88
Sum squared resid	0.17	Schwarz criterion		-1.84
Log likelihood	20.79	Hannan-Quinn criter.		-1.87
Durbin-Watson stat	0.34			

Residuals was then generated from the above regression results of long run equation for non-stationary variables. The stationarity of the residuals was then tested using ADF. Table 4.14 shows the results for stationarity test on residuals.

Table 4.14 ADF test for elasticity residuals

Null Hypothesis: RESID01 has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=4)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-0.37	0.90
Test critical values:		
1% level	-3.81	
5% level	-3.02	
10% level	-2.65	

*MacKinnon (1996) one-sided p-values.

Results in table 4.14 above shows that the residuals were found to be non-stationary at 1%, 5% and 10% levels of significance. Therefore, the residuals could not become the error correction term (ECM), therefore, an error correction formulation could not be adopted. Since cointegration test results showed that the variables do not have a long run relationship, regressions to estimate VAT elasticity were therefore done at levels.

4.6 Regression results to estimate VAT Elasticity

Table 4.15 : Elasticity estimates

Dependent Variable: Adjusted VAT

Method: Least Squares

Date: 06/17/13 Time: 15:27

Sample: 1990 2010

Included observations: 21

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.60	0.21	-2.85	0.01
Private final consumption	0.78	0.05	16.51	0.00
R-squared	0.93	Mean dependent var		2.88
Adjusted R-squared	0.93	S.D. dependent var		0.30
S.E. of regression	0.08	Akaike info criterion		-2.15
Sum squared resid	0.12	Schwarz criterion		-2.05
Log likelihood	24.54	Hannan-Quinn criter.		-2.12
F-statistic	272.54	Durbin-Watson stat		0.50
Prob(F-statistic)	0.00			

Note: *significance at 1%

From the regression results shown in table 4.15 above, the coefficient for private consumption was found to have the expected positive sign and statistically significant at 1% level. Private consumption coefficient was found to be 0.7807, therefore a one percentage point increase in the private consumption would approximately result to 0.7807 percent increase in the adjusted VAT, *ceteris paribus*. On the other hand, R-squared (Coefficient of Determination) was 0.9348, implying that 93.48 percentage changes in adjusted VAT were explained by private final consumption. VAT elasticity estimate was done using adjusted VAT data which was generated by controlling for discretionary changes in tax.

4.7 Diagnostic Tests

To assess the validity of the above results, a number of diagnostic tests were carried out. To check on the model specification, we carried out Ramsey reset test. White heteroscedasticity test was carried out to establish whether the variance was constant across the observation, result showed that heteroscedasticity was not a major problem. The overtime stability of coefficients was checked using Cusum test, the coefficients used in the study were found to be stable at 5% significance level and therefore could be used for forecasting. Jaque-bera normality test was also done to check on the normality of residuals, this was further supplemented by a histogram normality test. Finally, we also carried out ARCH (Autoregressive conditional heteroscedasticity) test to detect the problem of heteroscedasticity. The results for these tests are included in appendix II.

4.8 Discussion of the empirical findings

To determine VAT revenue productivity in Kenya, we used elasticity and buoyancy models. Estimating VAT buoyancy and elasticity is essential to find out the extent to which VAT revenue responds to changes in private final consumption, which this study used as the base of VAT. VAT bouyancy measures the receptiveness of VAT revenue to changes in Income or output with no attempt to control for discretionary changes in tax policy while on the other hand, VAT elasticity measures the automatic growth in the vat revenue alone, abstracting from discretionary changes. The larger the value of elasticity and buoyancy, the more revenue productive VAT is. VAT is considered to be elastic or buoyant if the elasticity or buoyancy index is greater than one, meaning VAT revenue more than proportionately responds to changes in its base. The results for elasticity and buoyancy estimates for this study are discussed below.

Table 4.16: VAT buoyancy and elasticity results

ELASTICITY	BUOYANCY	DIFFERENCE
0.780725	0.781042	0.000317

Table 4.16 above shows the elasticity and buoyancy result of the study before rounding off the figures to two decimal places. Elasticity of VAT in Kenya for the period 1990 to 2010

was found to be 0.7807. This implies that for every one percent change in private consumption, VAT revenues changes by 0.7807 percent considering changes in economic activities only. From this result, it can be noted that Kenya's VAT is inelastic and therefore, there is need for policy measures to address how this can be improved. Result for buoyancy estimate also shows that Kenya's VAT is also non-buoyant. As buoyancy index was found to be 0.7810 which is less than unity. The buoyancy index is slightly greater than elasticity index, confirming that the growth in VAT revenue for the study period was not just as a result of automatic growth in private final consumption but also as a result of discretionary tax measures taken by the government on VAT rates.

The difference between elasticity index and buoyancy index was found to be 0.000317 which is almost insignificant, meaning that the various discretionary tax measures taken on VAT during the period under study did not make much contribution in improving Kenya's VAT productivity.

The findings of this study are almost similar to those of earlier studies on tax reforms in Kenya and other developing countries. Ole (1975) in his study of income elasticity of tax structure in Kenya for the period 1962/63 to 1972/73 found out that the tax structure was income inelastic (0.81) and also not buoyant for the period studied. The study recommended that the Kenyan tax system required urgent reforms to improve its revenue productivity.

In a study by Adari (1997) on VAT reforms in Kenya, VAT buoyancy was estimated at 0.974 and VAT elasticity was estimated at 0.969, meaning VAT was found to be non-buoyant and inelastic similar to our study. Adari's study covered the period 1990 – 1997. Muriithi and Moyi (2003) in their study of tax reforms in Kenya which covered the period 1973-1999 estimated the elasticity and buoyancy of VAT at 0.36 and .67 respectively. Their study showed that discretionary tax measures contributed a lot to VAT revenue productivity during the period under study.

Similarly, Gitahi (2007) in his study found elasticity and buoyancy of Kenya's VAT to be 0.67 and 1.2 respectively. He concluded that VAT was buoyant as buoyancy index was greater than unity. Whereas Gitau (2010) in his study found VAT elasticity and buoyancy to be 0.57 and 0.79 respectively.

A study by Moyi and Ronge (2006) on Taxation and Tax modernization in Kenya in which they analyzed Kenya's tax buoyancy for the period 1995 to 2005 found out that the overall tax buoyancy was 0.662. They concluded that a decreasing proportion of incremental income was being transferred to the government in the form of taxes as the tax system was less buoyant. These results are similar to the findings of our study which has found VAT to be less buoyant.

A study by Osoro (1993) on the revenue productivity implications of tax reforms in Tanzania for the period 1979 to 1989 found out that the overall elasticity of tax was 0.76 with a buoyancy of 1.06. It was observed in the study that the Tanzanian tax reforms failed to raise tax revenues. The results were blamed on the government for allowing numerous tax exemptions and inefficiency in tax administration. Similarly, the low inelasticity of Kenya's VAT as we have found out in our study can also be attributed to too many exemptions and numerous number of zero-rated goods and services in Kenya.

Tax reforms can actually improve the revenue productivity of a country's tax system as observed in a study by Kusi (1998) on his study of tax reforms and revenue productivity of Ghana for the period 1970 to 1993. The findings of the study showed that the period before the tax reforms were carried (1970 to 1982) tax system was less buoyant and inelastic with the study results showing a buoyancy of 0.72 and elasticity of 0.71. However, the post-reform period of 1983 to 1993, recorded improved buoyancy of 1.29 and elasticity of 1.22. The study concluded that the increased tax buoyancy and elasticity during the post reform period was as a result of tax reforms which contributed significantly to tax revenue productivity.

CHAPTER FIVE

CONCLUSION AND POLICY RECOMMENDATIONS

5.1 Conclusion

A good tax system ought to be flexible enough to ensure more than proportionate increase in tax revenue as the tax base expands or grows so that the government does not resort to discretionary policy to increase tax revenue. Introduction of Value Added Tax (VAT) in Kenya in 1990 was part of an elaborate tax reform process, Tax modernization Programme (TMP), which was aimed at increasing government revenue and hence reducing the government budget deficit. VAT had been perceived to be a powerful source of revenue which was economical, neutral and easy to administer.

The findings of this study which analyzed the VAT reforms and its revenue productivity in Kenya for the period 1990 to 2010 suggest that VAT elasticity and buoyancy are relatively low and there is need for urgent policy measures to improve on VAT revenue productivity. The study established that VAT buoyancy was slightly greater than VAT elasticity for the period under study. This means that the VAT reform process has not yet achieved its goal of ensuring that VAT revenue is flexible and responds to changes in its base as opposed to relying on discretionary actions of government policy.

The low elasticity and buoyancy indexes suggest that the VAT base which grew faster than VAT revenue which in this case is private final consumption grew faster than VAT revenue and also despite the discretionary measures that were taken to change VAT rates, the VAT revenue increase was less than proportionate. This suggests that Kenya's VAT is widely inefficient and this can be attributed to a number of factors namely; rampant tax evasion, tax avoidance, existence of underground economy, too many zero rated products and service, existence of too many products and services that are exempted from VAT, a large informal sector that does not form part of the tax bracket and finally, inefficiency on the part of tax authority in terms of VAT revenue collection.

5.2 Policy Implications

The proposed VAT bill, proposing a raft of amendments to the VAT act, which was tabled in parliament in the year 2012 and passed in August, 2013 ought to be signed into law without further delay. In addition its implementation should be strictly monitored to ensure full implementation. This bill will simplify VAT collection procedures.

To further simplify VAT laws and reduce its complexity and cost of compliance, there is need to broaden VAT tax base by considerably reducing the number of zero-rated and exempted items and services. There should only be minimal exemptions to the standard rate of sixteen percent as many exemptions complicate the existing VAT law and also open avenues for disputes between tax payers and KRA. This will also help to increase VAT revenue further.

There is need for policy change on the process of VAT dispute resolution. This process need to be expedited to increase efficiency. A time limit ought to be introduced on how long the commissioner should take to respond to tax payers on objections to assessments issued within sixty days.

Time limit for deduction of input VAT which is currently 12 months seems to be too long and this promotes inefficiency in the management of the VAT system. There is need to shorten this time period.

Delayed repayment of VAT refunds continues to be a major impediment to KRAs smooth implementation of VAT. This issue needs to be addressed urgently with a lasting solution. As this frustrates and demotivates tax payers and encourage them to evade tax. KRA is currently bogged with backlog of refunds which run into hundreds of millions of the local currency. Reducing the number of zero-rated items will partly solve this problem.

The VAT net should be cast wider to target online business otherwise known as e-commerce to ensure that non-residents who through their online business make taxable supplies to Kenyans are included in the VAT bracket.

Extensive tax payers education should be launched to calm down the hostility that the proposed VAT bill is currently facing from the stakeholder i.e business men and women, members of the civil society, section of members of parliament and the media. The media has

particularly given the bill a lot of negative publicity. There is also need for wide consultation on the bill to ensure that welfare of Kenyan citizens is taken into consideration.

There is need to improve the administrative structure of KRA. This will in turn reduce the low VAT compliance rate. The informal sector is largely untaxed. For example, the jua kali sector, small scale agricultural farmers. The revenue authority should come up with a way of bringing the untaxed informal sector into the VAT tax bracket. Finally there is need for improved VAT audit to detect and identify fraud. This will also the rate of tax evasion and avoidance.

5.3 Limitations of the study and areas of further research

Our study was on VAT which is one of the many taxes levied in Kenya, one unique feature of Kenyan VAT is large number of items and services exempted from VAT. We estimated VAT elasticity to measure its revenue productivity without factoring in the exempted products. Exemptions reduce the VAT base and if this is accurately factored in the elasticity estimate, then the VAT base used will reduce thereby giving a more accurate elasticity index. This was not possible because of lack of accurate data on a yearly basis of the value of total vat exempted items.

Data was the main limitation of this study because even the available data varied depending on the source. Although our data was mainly from government of Kenya publications, we had to find the average where data varied to ensure accuracy and consistency of data used in this study.

Our study, just like the proposed VAT bill, has recommended that the number of zero rated items and exempted goods and services be significantly reduced. This seems not to auger well with various stakeholders citing its impact on the low income members of the society. It is widely believed that this will increase the prices of basic commodities. Therefore, there is need for further research on the regressivity of VAT in Kenya to establish whether allowing exemptions and zero rating of number of items actually make VAT a progressive tax.

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APPENDICES

APPENDIX I

Raw data used for analysis for the period 1990 – 2010 (amount expressed in K£ million where 1K£ = 20 Kenya Shillings).

YEAR	Actual VAT revenue	Private Final Consumption	ADJUSTED VAT
1990	766.07	6082.76	236.22
1991	927.77	6971.85	286.08
1992	1107.14	8487.28	341.39
1993	1449.72	9842.72	447.03
1994	1226.69	12504.88	378.26
1995	1420.19	16112.04	437.93
1996	1492.5	17866.36	460.23
1997	1723.41	22533.22	531.43
1998	1960.24	25662.43	604.52
1999	2047.21	35633.2	631.34
2000	2511.04	37886.35	774.81
2001	2543.58	40613.45	784.85
2002	2806.76	40745.95	866.06
2003	2942.67	43641.05	907.1
2004	3799.78	48096.75	1171.31
2005	3886.6	53230.75	1198.07
2006	4824.85	60983.75	1487.29
2007	5595.23	69180.15	1723.34
2008	6342.7	79182.55	1953.56
2009	7098.54	92479.1	2186.36
2010	8717.1	99174.8	2684.88

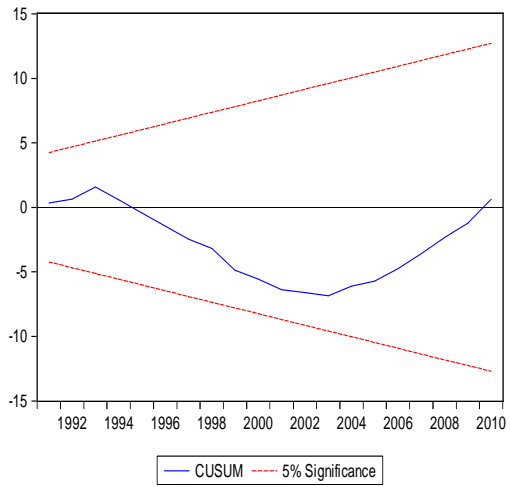
Source: Central Bureau of statistics
Kenya Revenue Authority

Refined data used in analysis (expressed in logs)

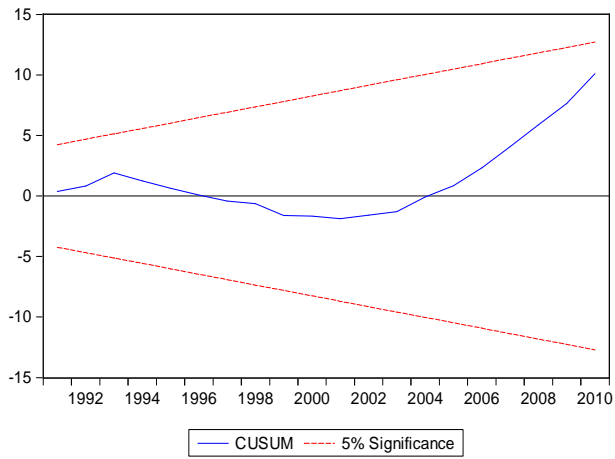
YEAR	Actual VAT revenue	Private Final consumption	ADJUSTED VAT
1990	2.8843	3.7841	2.3733
1991	2.9674	3.8433	2.4565
1992	3.0442	3.9288	2.5333
1993	3.1613	3.9931	2.6503
1994	3.0889	4.0971	2.5778
1995	3.1523	4.2072	2.6414
1996	3.1739	4.2520	2.6630
1997	3.2364	4.3528	2.7254
1998	3.2923	4.4093	2.7814
1999	3.3112	4.5519	2.8003
2000	3.3999	4.5785	2.8892
2001	3.4054	4.6087	2.8948
2002	3.4482	4.6101	2.9375
2003	3.4687	4.6399	2.9577
2004	3.5798	4.6821	3.0687
2005	3.5896	4.7262	3.0785
2006	3.6835	4.7852	3.1724
2007	3.7478	4.8400	3.2364
2008	3.8023	4.8986	3.2908
2009	3.8512	4.9660	3.3397
2010	3.9404	4.9964	3.4289

APPENDIX II DIAGNOSTIC TESTS

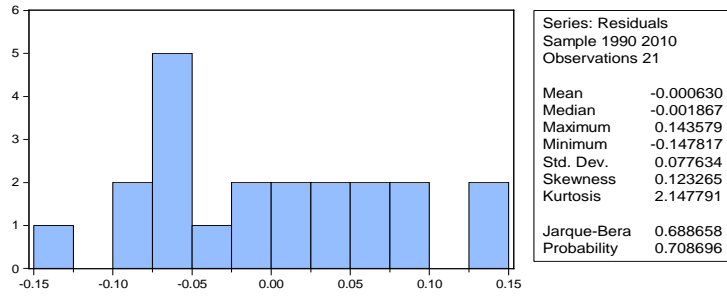
CUSUM TEST-BUOYANCY



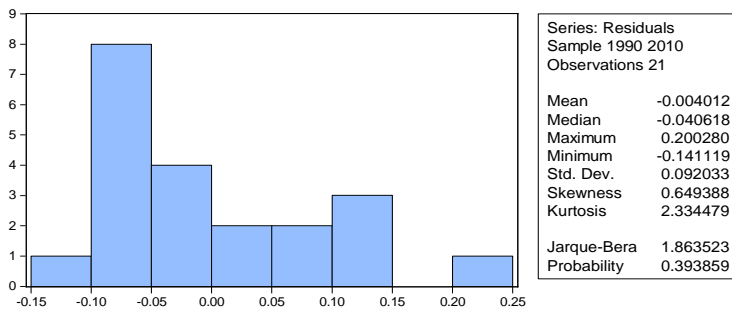
CUSUM TEST – ELASTICITY



HISTOGRAM NORMALITY TEST - BUOYANCY



HISTOGRAM NORMALITY TEST – ELASTICITY



ARCH TEST

Heteroskedasticity Test: ARCH

F-statistic	0.039584	Prob. F(2,16)	0.9613
Obs*R-squared	0.093548	Prob. Chi-Square(2)	0.9543

WHITE HETEROSKEDASTICITY TEST

Heteroskedasticity Test: White

F-statistic	0.149209	Prob. F(2,18)	0.8624
Obs*R-squared	0.342476	Prob. Chi-Square(2)	0.8426
Scaled explained SS	0.164420	Prob.	0.9211

BREUSCH-GODFREY TEST

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.235697	Prob. F(1,19)	0.6329
Obs*R-squared	0.257315	Prob. Chi-Square(1)	0.6120
Scaled explained SS	0.123535	Prob. Chi-Square(1)	0.7252

RAMSEY RESET TEST

Ramsey RESET Test

Equation: UNTITLED

Specification: ACTUAL_VAT C PRIVATE_FINAL_CONSUMPTN

Omitted Variables: Powers of fitted values from 2 to 4

	Value	Df	Probability
F-statistic	28.85492	(3, 16)	0.0000
Likelihood ratio	39.01602	3	0.0000

F-test summary:

	Sum of Sq.	Df	Mean Squares
Test SSR	0.100683	3	0.033561
Restricted SSR	0.119293	19	0.006279
Unrestricted SSR	0.018610	16	0.001163
Unrestricted SSR	0.018610	16	0.001163

LR test summary:

	Value	Df
Restricted LogL	24.49460	19
Unrestricted LogL	44.00261	16