Journal of Economics and Development Studies
December 2018, Vol. 6, No. 4, pp. 187-201
ISSN: 2334-2382 (Print), 2334-2390 (Online)

Published by American Research Institute for Policy Development
DOI: 10.15640/jeds.v6n4a16
URL: https://doi.org/10.15640/jeds.v6n4a16

The Trade off between Direct and Indirect Taxes in Kenya. An Empirical Analysis

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Abstract

The correct selection of the composition and level of government taxes has become of crucial importance for the purpose of achieving a broad-based stable path of economic growth across countries. Since 1973 there has been a gradual shift from direct to indirect taxation in Kenya aimed at creating a sustainable tax system that could generate adequate revenue for economic growth. The level of revenue from indirect taxes has risen steadily in the period 1973-2010; however, this was coupled with a dwindling economic growth. It has been recently questioned whether alterations in the existing tax mix could promote economic growth. This study therefore attempted to establish the relationship between direct and indirect tax on economic growth. The motivation for this study was primarily premised on the paucity of empirical literature on the dynamics of the trade- off between direct and indirect tax and economic growth in developing economies, and the inconsistency of empirics on the issue in the developed economies. Three approaches were used to accomplish the study objectives namely regression analysis, Cointegration test and Error correction modeling. The regression analysis reported a negative relationship between direct tax and economic growth and a positive relationship between indirect taxes and economic growth. On the other hand, causality runs from tax revenue to economic growth. The empirical results indicate that direct taxes have a negative relationship with economic growth while indirect taxes are positively correlated with economic growth in Kenya supporting the predictions of the endogenous growth models. Thus according to this result among many other, the global transition from direct taxation to indirect taxation has empirical justification in Kenya. It therefore recommended that the government should rely more on indirect tax than direct tax due to its growth prospect and its less distortionary nature.

1.0 Introduction

Taxation has become legally accepted all over the world as one of the most suitable means of generating revenue to finance government expenditure which continue to grow. The correct selection of the composition and level of government taxes has become of crucial importance for the purpose of achieving a broad-based stable path of economic growth across countries. The government decisions about how to finance its spending is of central importance. According to Karran (1985), the tax revenue raised by the government depends, to a large extent, on the state of the economy. Therefore, the relationship between tax revenue and economic growth is an issue of great importance. According to Martinez-Vacquez et al (2009).With the coexistence of direct and indirect forms of taxation explained in the theoretical optimal tax literature, the big question that has remained largely unanswered is that of the economic consequences of the different mixes of direct and indirect taxes. The development of endogenous growth theory has opened an avenue through which the effects of taxation on economic growth can be explored. The endogenous growth models classify taxation instruments into distortionary taxation, which discourages to invest in physical/human capital and non-distortionary taxation which does not affect the above incentives (Benos, 2009).

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Any tax policy that distorts the capital accumulation will permanently reduce growth rate, i.e. direct taxes, On the other hand, indirect taxes only distort intertemporal consumption choice while leaving capital accumulation and growth unchanged. According to these reflections, at the theoretical level, the predictions indicate that not only the level of taxes but also the tax composition matters for growth.

Despite far reaching reforms implemented in revenue collection in Kenya, the government is more often than not faced with expenditure needs that outstrip the resource envelopes, and usually have limited options to raise additional resources domestically (Kago, 2014). Moreover, external funds could no longer be relied on due to donor conditions, the payment and servicing costs of external debts are too high and not manageable (Gelb, 1993). Furthermore, potential sources for external grants reduce autonomy and increase political and economic dependence. The only favorable option involves determining the most appropriate strategy to internally fund such government expenditure.

Tax policy and administration in Kenya has gone through various phases of reform over the years. From independence in 1963 until the early 1980s, public spending in Kenya was financed through a somewhat uncoordinated set of taxes and fees inherited from British rule and supplemented by foreign aid inflows (Eissa et al 2009). Kenya tax policy geared towards shifting from direct to indirect taxation.

Table 1.1.Tax structure in Kenya as a percentage of GDP and GDP growth rate from 1963-2010

Type of tax	1963/4-1972/3	1973/4-1982/3	1982/3-1992/3	1992/3-2002/3	2002/3-2010/1
Tax revenue	12.1	18.3	20.4	23.6	20.7
Direct tax	5.1	6.6	6.8	8.4	8.2
Indirect tax	6.5	11.3	12.4	13.2	10.6
GDP growth rate (%)	6.6	5.2	4.2	2.3	4.3

Source: Karingi and Wanjala (2005), Amanja and Morrissey (2005), Economic surveys.

The performance of Kenya's economy during the first decade of independence in 1963 was impressive because the growth of real GDP averaged 6.6% per year over the period 1963 –1972. Kenya experienced its first major fiscal crisis occasioned by the international oil shock in early 1970s, and this motivated the government to shift the tax policy towards greater reliance on indirect taxes as opposed to direct taxes. The aim was to create a sustainable tax system that could generate adequate revenue for economic growth. Consequently, the level of revenue from indirect taxes has risen steadily in the period 1973-2010. This includes an increase from an average of 6.5 per cent of GDP in the period 1963-1972 to an average of 12.1 per cent in the period 1973-2010; however, this was coupled with a dwindling economic growth. It has been recently questioned whether alterations in the existing tax mix could promote economic growth**.**

The choice between direct and indirect taxation is one of the "oldest issues of taxation policy" (Atkinson (1977)). It has elicited serious debate in terms of economic benefits and limitations that characterized each. Most studies have reached substantially different conclusions on the relative impact of direct and indirect taxes on economic growth. Indeed, the results of most studies are saddled with inconsistencies, while some researchers like Arisoy and Unlukaplan (2010), Ormaechea and Yoo (2012), Mura (2015), Phiri (2016) and Bizgan (2018) reported a negative relationship between direct tax and economic growth and a significant positive relationship between indirect taxes and economic growth. Others such as Musanga (2007), Sameti and Rafie (2010), and Ebiringa (2012) indicate that indirect taxes are growth impeding while direct taxes are growth enhancing, while some studies reported that the taxes cannot predict economic growth (Harberger 1964; Madsen and Damania, 1986, Skinner 1987, Ehiagimusoe 2013).

In studies specific to Kenya, Kinyua (2012) and Gacanja (2012) both found a positive and significant relationship between total tax revenue and economic growth while Onduru (2003 found that indirect taxes impact negatively on economic growth. The empirical studies on the subject matter for developing countries are relatively few and have reported contradictory results. The few were carried out in Pakistan, Iran, India, South Africa, Nigeria and Uganda. The global transition from direct taxation to indirect taxation seems to lack empirical justification in Kenya.

The need for a paradigm shift from direct to indirect taxation in the face of various forms of resistance perpetuated within the direct taxes bracket, the inconsistency in existing empirics and the wide knowledge gap occasioned by the paucity of empirical literature on Kenya has made this issue open for further research in the country. This fact informed the basis of this study. Based on the dominant view in the endogenous growth literature anchored on the idea that direct taxation harms economic growth while indirect taxation does not, this study examined the effect of direct-indirect tax composition on economic growth for the Kenyan economy for the period of 1973-2010 and assessed whether the choice between direct and indirect taxes is linked to the growth rate of the economy or not.

Kenya's case, a study of taxation is not only useful in devising strategies for attaining the country's economic growth target as stipulated in the national policy documents such as Kenya Vision 2030 and development plans, but also enable the government to have a better structure of tax system in order to promote more pro-growth friendly structures of taxation. The choice of a tax structure to be adopted will be hinged upon a clear understanding of the effect of direct and indirect tax revenue on economic growth.

2.0 Review of Theoritical and Empirical Studies

The theoretical underpinning for this study is basically the endogenous growth theory. The advent of the class of growth models developed by Romer (1986), Lucas (1988), Barro (1990) and Rebelo (1991), which in essence constitute a new, endogenous growth theory, has resulted in significant changes on the role of government in growth. The meaning of endogenous growth in the new literature on growth is that output grows faster than the exogenous factors alone would make it grow. In this model, government spending and tax policies can have a long- term or permanent growth effects. More significantly, as Dar and Amir Khalkhali (2002) report, a major implication of endogenous growth models is that government policy can have wide-ranging implications for a country's long-term growth performance. The three main fiscal instruments namely taxation, expenditure, and the aggregate budgetary balance affect long-term growth through their effects on the efficiency of resource use, the rate of factor accumulation and the pace of technological progress.

In endogenous growth models, not only the level of taxes but also the tax composition matters. The endogenous growth models classify taxation instruments into distortionary taxation, which discourages to invest in physical/human capital and non-distortionary taxation which does not affect the above incentives (Benos, 2009). Any tax policy that distorts the capital accumulation will permanently reduce growth rate, i.e. direct taxes like personal income taxes and corporate income taxes. On the other hand, indirect taxes only distort intertemporal consumption choice while leaving capital accumulation and growth unchanged. According to these reflections, at the theoretical level, the predictions indicate that the tax composition matter for growth.

An attempt to establish a linkage between taxation and economic growth was made by Marsden (1983), the author found that taxation indeed affected growth in output indirectly via the product, labour and capital markets. Through its impact on domestic savings and foreign investment, taxation affects capital accumulation. Taxation may cause capital to shift from one sector to the other or from one country to other, this movement impacts on output negatively. However, they also did little to explain why various economies have different tax structures. Skinner & Engen (1992) improving upon the work of Mardsen (1983) collected data for 107 countries for fifteen years period from 1970 to 1985. Using a GEM of fiscal policy and output growth, they found out that the discretionary effect of taxation impacts negatively on economic growth. Although the model by Skinner &Engen (1992) had wide coverage in terms of data, it addressed the issue of taxation in general but failed to scrutinize the impact of individual sets of taxes on growth of an economy.

Skinner (1987) analyzed the effect of taxation in sub-Saharan Africa over the period 1965 -1982. Using Two Stage Instrumental Variable (2SIV) techniques, they found that indirect taxes have no significant effect on economic growth, while taxes levied on personal and corporate incomes reduce economic growth. The latter result was also obtained by Ehigiamusoe (2013) when they examined the nexus between the tax system and economic growth in Nigeria from 1980 to 2011. Using correlation method, their results revealed that indirect taxes has no significant impact on economic growth.

Mendoza *et al* (1997) analyzed qualitative and quantitative effects of changes in tax structures on economic growth and investment in 18 OECD countries covering the period 1965-1991, using Ordinary Least Square technique, they observed a positive correlation between consumption taxes and economic growth and a negative correlation between income taxes and economic growth. In relation to this, Angelopoulos (2006) examined the growth implications of the composition of government expenditure, and the various types of taxes used to finance it, in a panel of 23 OECD economies over 1970-2000.Their econometric results confirmed that a negative correlation exist between income tax and economic growth and a significant positive relationship between consumption taxes and economic growth.

Bleaney and Gemmell (1999) employed static panel econometric technique to investigate the relationship between fiscal policy and growth on 22 OECD countries for the period 1970 to 1995. The result of the study found a significant and positive relationship between indirect tax and economic growth. They concluded that indirect tax is less harmful to the economy as it does not cut down on return on investment compared to direct tax. Standing on the same premise, Ormaechea and Yoo (2012) replicated the Bleaney and Gemmell (1999) study using a data set of 69 countries over the period 1970-2009, They observed that that increasing income taxes while reducing consumption and property taxes is associated with slower growth over the long term. In the disaggregation of consumption taxes, however, they also found a robust and positive association between indirect tax and economic growth. While they consistently found these results to hold in high and middle income countries, they did not find strong evidence on the significance of shifts in the tax composition and economic growth in the case of low-income countries.

Poulson and Kaplan (2008) focused on the impact of state income taxes on economic growth in the United States from 1964 to 2004. Their findings suggest that all taxes have a significant negative effect on economic growth, but the impact of income tax is more than that of other taxes. States with more regressive tax system have higher growth rates than those with more progressive tax systems. Gustavo,Vazquez and Vulovic (2013) examined the effects of taxation policy on economic growth in a sample of 19 Latin American countries over 1990-2009. They used two empirical approaches; VAR analysis for Argentina, Brazil, Chile, and Mexico, and panel data analysis for the Latin American region alone. The regression results using the worldwide sample indicate that at higher levels of taxation, personal income tax could have significant negative effects on economic growth and greater reliance on indirect tax has significant positive effects on growth in Latin America in general.

Focusing on the Turkish economy, Arisoy and Unlukaplan (2010) adopted ordinary least square to investigate the relationship between direct and indirect tax and economic growth. Using data from 1968-2006, they found that real output is positively related to indirect tax revenue. They concluded that indirect taxes are significantly and positively correlated with economic growth in Turkey. Closely related results were found by Scarlet (2011) in a study carried out to explore the impact of taxation on economic growth in Jamaica, they indicated that increasing revenue from indirect taxes is more conducive to economic growth in the long run and increasing the share of taxes from direct taxes has the greatest harm on per capita GDP over time. Still on the tax – economic growth nexus, Braşoveanu & Braşoveanu (2008) have analyzed the correlation between fiscal policy and economic growth related to Romania over the period of 1990-2007. The study had classified taxes according to their effects on private agents and viewed them as distortionary revenues, non-distortionary revenues and other revenues. It was revealed a negative effect between non-distortionary taxes, distortionary taxes and economic growth.

In Nigeria, Anyanwu (1997) investigated the effects of taxes on Economic Growth during the period 1981-1996. Using simple linear regression technique; the result revealed that indirect tax positively and significantly affect GDP just like companies' income tax. Ebiringa (2012) examined the empirical forms of tax on the economic growth for the period 1985-2011. They reported a negative and significant relationship between indirect tax and GDP while company income tax had a positive and significant relationship with GDP. Umoru and Anyiwe (2013), in their research on tax structures and economic growth in Nigeria indicated that the policy of direct taxation is significantly and positively correlated with economic growth and that the tax-based revenue profile in Nigeria is skewed towards direct taxes. More recently, Acti and Abigail (2016) investigated the impact of taxation on economic growth of Nigeria using data from 1994 to 2012. Their regression result shows there is no significant relationship between Company Income Tax, Value Added Tax and Gross Domestic Product, but there is a significant relationship between Petroleum Profit Tax, Custom, Excise Duties and Gross Domestic Product.

Lee and Gordon (2005) explored the relationship between taxation and economic growth using both cross-sectional and time series data for 1970-1997. The findings suggest the negative effect of corporation income tax on economic growth. Value added tax, customs and excise duties are not significantly associated with economic growth. Musanga (2007) investigated the relationship between indirect taxes and economic growth in Uganda using data for the period 1987 to 2005. The study adopted the cointegration regression technique, the result of the study revealed that a percentage change in indirect tax would decrease economic growth by 0.53%. The indirect tax variable had a t-value of (-2.588) which means there was a significant but negative relationship between indirect tax and economic growth in Uganda.

Mura (2015) applied an empirical model to direct and indirect taxes as a percentage of total tax revenue on economic growth of six countries across Eastern Europe over the period of 1995-2012. The empirical results suggested that direct taxes are significantly correlated negatively with economic growth while indirect taxes generate a positive influence on the dependent variable represented by the economic growth. In the same vein, Phiri (2016) used a smooth transition regression to investigated the effects of direct and indirect taxes on economic growth for South Africa from 1990-2015, their findings suggest an optimal tax of 10.27 percent on the indirect tax-growth ratio, of which below this rate indirect taxes are positively related with economic growth whereas direct taxes are negatively related with economic growth.

Bazgan (2018) used an econometric Vector Autoregressive model (VAR) to study the impact of direct taxes and indirect taxes on the economic growth in Romania over the period 2009 -2017.The econometric model used three endogenous variables, namely the level of direct taxes as percent of the Gross Domestic Product (% GDP), the level of indirect taxes as percent of the Gross Domestic Product (% GDP) and the economic growth rate over the analyzed period of time. According to their econometric model, it was proved that a positive change in the structure of indirect taxes will have a strong positive influence on the economic growth over a medium-term period. On the other hand, economic growth will be negatively influenced in the next period of time after implementing a positive change in the structure of direct taxes, then returning to a positive influence over a medium term period and maintaining that influence in the future time periods.

In Kenya, Kinyua (2012) applied the concepts of elasticity and buoyancy to examine the relationship between tax revenue and economic growth in Kenya for the period 2002 to 2012. The study found a significant relationship between total tax revenue and economic growth in Kenya in the period 2002 to 2012. Import duties were not responsive to changes in national income while discretionary tax measures implemented during the period failed to increase total tax revenue. However, the estimation of buoyancy and elasticity coefficient were done in total disregard of the time series properties and the period taken was only eleven years, subjecting this alone to a regression model did not make statistical sense**.** Therefore, the results were not reliable for planning purposes. In the present study the long annual time series together with the developments in time series econometrics will enable us to establish a reliable relationship between indirect taxes and economic growth.

Gachanja (2012) did a study on economic growth and taxes in Kenya, using time series data for the period 1971-2010. The study reveals a positive relationship between the economic growth and taxes. All the taxes (income tax, import duty, excise duty, sales tax and VAT) show a positive correlation to GDP, with income tax having the highest effect. Onduru (2003) analyzed the impact of indirect taxes on economic growth in Kenya for a period of thirty-one years (1972-2002), by interacting indirect taxes with certain key macroeconomic variables namely; population size, investment, volume of trade and external debt, the study found that indirect taxes cause distortions in the market decisions and consequently impact negatively on economic growth.

Research Methodology

3.1 Model specification

The model which is in line with the work of Akhor (2016), in their analysis of the impact of tax structure on economic growth of Nigeria was found relevant to lead this study. The model was modified to incorporate custom and excise duty separately to enable assessment of their impact separately. If we substitute these variables into Akhor's model

$$GDP=F(CD,ED,IT,VAT) \quad \text{.....(3.4)}$$

The model in its econometric format becomes:

$$GDP = a_0 + a_1 CD_t + a_2 ED_t + a_3 IT_t + a_4 VAT_t + \mu_t \quad \text{..... (3.5)}$$

Where:

GDP = gross domestic product IT = income tax
VAT = value added tax. CD=customs duty
ED=excise duty

where; μ_i is the Error term or other variables that could have lent further explanation to the explained variables but are not included in the model. In consonance with economic theory, it is expected that the level of value added tax, customs duty, income tax and excise duty to a large extent, determine the level of economic growth of a country. All things being equal, a *priori* intercept and the slope of the coefficients are expected to have positive signs. Thus, the *a priori* expectation may be denoted mathematically as: $a_0\ a_1\ a_2\ a_3\ a_4 > 0$. The numerical values of the parameters were estimated by the use of ordinary least square techniques based on econometric computation. To determine the relevant hypothesis, estimates were evaluated for statistical significance based on the relevant statistics of regression output, the explanatory power of the model as a measure of goodness of fit is then decided.

3.2 Data Description and sources

Annual time series data from 1973-2010 was used for the analysis. The data on five economic variables was used namely the gross domestic product, income tax revenue, value added tax revenue, customs duty revenue and excise duty revenue. The data was obtained from relevant government departments, Kenya Revenue Authority (KRA), Kenya National Bureau of Statistics (KNBS), Ministry of National Treasury, official published documents of the government of Kenya; such as statistical abstract and Economics surveys. Other sources include the World Bank and International Monetary Fund publications and reports. Data was also obtained from internet and library sources.

3.3 Data Analysis and presentation

A combination of cointegration and error correction modeling through regression was adopted in this research. The choice of these econometric techniques is based on their ability to ascertain stationary and test for causality among the variables. The analysis of data was conducted using Eviews statistical package Version 7.0. The descriptive and inferential statistics was used in addition in order to build strong conclusions about the impact of indirect tax revenue on economic growth. The study used tables and figures for data presentation.

3.4 Diagnostic Tests

Time series diagnostic tests were carried out to ensure that the model satisfies the classical linear regression model assumptions. The data was subjected to diagnostic tests notably normality of the disturbance term and functional form misspecification, Stationary, serial correlation, multicolinearity and heteroscedasticity. These tests are meant to verify whether the data are normally distributed, stationary and have no mutual correlation among the independent variables and thereafter used it in regressions without fear of getting spurious results.

Results and Discussion

4.1 Unit root test

The meaning of stationary is that both Mean and Variance are constant for all time (t), the same holds for the Cov(Yt, Ys), thus the correlation between any two different values depends on different time series for both values of (Y) (for **T≠S**). Non stationary of variables is a major limitation of time series data. When time series data is non-stationary and used for analysis, it may give spurious results which cannot be used for any meaningful inferences, since estimates obtained from such data will possess non constant mean and variance (Muthui *et al* 2013). Moreover, if the data is not stationary, the value of R-squared is high and this makes it difficult to determine the relationship between the variables. Because this study used time series data, it was important to establish the stationary of the data. The variables are therefore tested for unit root and in its presence differencing is done to alleviate the problem. However, this leads to loss of some fundamental long run information hence biased solutions and this is corrected through Augmented Dickey Fuller Test.

Table 4.1 (**Appendix II**) shows the unit root test for stationary using Augmented Dickey-Fuller. The result shows that all the variables (GDP, customs duty, excise duty, income tax and value added tax revenue) are stationary at first difference. Since the t-statistics are greater than the critical values at 1% and 5% level of significance in absolute term. We therefore conclude that all variables are not characterized by unit root problem and accept the hypothesis that says customs duty(CD), excise duty(ED),income tax(IT), value added tax(VAT), and Gross Domestic Product(GDP) have no unit root problem.

4.2 Diagnostic test

Time series data is associated with several problems which require investigation to avoid spurious results upon application of the OLS method of estimation. Primarily, the OLS method assumes serial uncorrelation, correct model specification, homoscedastic error term and absence of correlation between the error terms and the regressors. If these assumptions are violated, the estimated parameters would not meet the statistical threshold. Tests carried out on the data included the normality test, stationarity (unit root) test, multicollinearity test, serial correlation test and heteroscedasticity test.

4.2.1. Testing for Multicolinearity

Multicolinearity among the independent variables implies that they are perfectly correlated. If the explanatory variables in the model are perfectly linearly correlated, the parameters of the model become indeterminate and the method of OLS breaks down (Mukras, 1993). This violation is not a problem of the model or the disturbance term and therefore does not affect the BLUE properties of the OLS estimates (Musaga, 2007).In any practical context, the correlation between explanatory variables will be non-zero, although this will generally be relatively benign in the sense that a small degree of association between explanatory variables will almost always occur but will not cause too much loss of precision. However, a problem occurs when the explanatory variables are very highly correlated with each other (Dakito, 2011).

Table 4.3 **(Appendix III)** shows multicolinearity test between independent variables. The VIF is less than 10, meaning that the variables are poorly correlated with each other. Therefore, there is no Multicollinearity among the independent variables. So it is appropriate to use the independent variables (customs duty, excise duty, income tax and VAT) simultaneously in order to run the regression model since there is no multicolinearity problem.

4.2.2 Test for Serial Correlation

4.2.2 (a) Durbin Watson Test for Autocorrelation

Table 4.6 (**Appendix IV**) shows Durbin Watson Test for autocorrelation. The statistic ranges between 1 and 4. A value of 2 indicates that there is no autocorrelation. With Durbin-Watson statistics of 1.954836, it shows that there is no autocorrelation and therefore the model gives a good description of the variables.

4.2.2 (b) Breusch-Godfrey Test for Autocorrelation

Serial correlation is usually as a result of model mis-specification or genuine autocorrelation of the model error term. In the presence of serial correlation, ordinary least squares estimators are no longer Best Linear Unbiased Estimators (BLUE). Moreover, the R^2 may be overestimated, standard errors underestimated and t-statistics overestimated (Musaga, 2007) There was therefore further need to test for serial correlation.

Table 4.4 (**Appendix III**) shows the Breusch-Godfrey LM Test for autocorrelation is used to test for serial correlation among the error terms in the model, a violation of which would make emanating results have invalid statistical significance inferences. The null hypothesis states no serial correlation against the alternative hypothesis of serial correlation ($p<0.05$). The results indicate the p-value is 0.6651 which is greater than the critical p-value (0.05) hence accept the null hypothesis of no serial correlation. This shows the nonexistence of serial correlation.

4.2.3. Heteroscedasticity test

Table 4.5 **(Appendix III)** shows the Harvey test of heteroskedasticity. The Probability Chi-Square value for observed R-squared is 0.3997 (39.97%) which is more than 5 percent meaning that the null hypothesis that there is no heteroscendasticity in the model is accepted. This shows that there is no evidence for the presence of heteroskedasticity since the p-values are considerably in excess of 0.05.

Appendix VI shows a histogram-normality test (Jarque-Bera test) which is a test of the distribution of the error term and it uses the first four moments of the distribution namely mean, standard deviation, skewness and kurtosis. The results of the Jarque-Bera test had probability values 0.133575 greater than 0.05, hence the normality assumptions of the regression residuals for all the estimated equations were not rejected. The regression residuals therefore followed a normal distribution, which meant that the OLS estimates obtained were efficient and consistent.

4.3 Regression model results discussion

From the regression results in Table 4.6 **(Appendix IV)**, the R^2 (0.6270) of the regression showed that the independent variables explain about 62.7% of the variations in the dependent variable. It implies that: customs duty, excise duty, income tax and value added tax explained about 62.7% percent systematic variations in output growth over the observed years in the Kenyan economy while the remaining 37.3% percent variation is explained by other determining variables outside the model.

The empirical result of the estimated model show that the probability value of F- statistics (0.000002) is less than the 5 per cent critical level. We therefore accept the alternative hypothesis that the explanatory variables which includes, Customs Duty (CD) Excise Duty (ED), income tax (IT), and Value Added Tax (VAT) are effective determinant factors of the economic growth (GDP). As a result the model was perfectly specified and there is statistical evidence to show that customs duty, excise duty, income tax and value added tax can jointly influence economic growth. The Durbin Watson statistic (1.954836) illustrates the absence of auto correlation.

The regression gives a short-term model of the form:

$$GDP = 0.0679 + 0.1228\,CD + 0.3709\,ED - 0.0252\,IT + 0.0356\,VAT + \mu \quad (4.1)$$
$$\qquad\qquad (3.044) \qquad (5.968) \quad (-0.3653) \quad (0.5171).$$

The main objective of the study was to find out the effect of direct and indirect tax revenue on economic growth in Kenya from 1973 to 2010. Analysis of research results has shown that:-

Customs duty has a positive and significant effect on economic growth in Kenya. Regression analysis results in Table 4.6 **(Appendix IV**) demonstrate this kind of relationship. It shows that if there is a 1% increase in customs duty revenue would increase economic growth by 0.1228%. Customs duty would increase the revenue base of government and make funds available for development purposes that will accelerate economic growth. From the findings, it can be concluded that customs duty has a significant positive effect on economic growth.

Excise duty has a positive and significant effect on economic growth in Kenya. Regression analysis results in Table 4.6 **(Appendix IV**) demonstrate this kind of relationship. It shows that if there is a 1% increase in excise duty revenue would increase economic growth by 0.3709%. Excise duty can potentially raise a great deal of revenue with little distorting effect. This provides a predictable and stable flow of revenue to finance development objectives that will accelerate economic growth. From the findings, it can be concluded that excise duty has a significant positive effect on economic growth.

Income tax has a negative and insignificant effect on economic growth in Kenya. Regression analysis results in Table 4.6 **(Appendix IV**) demonstrate this kind of relationship. It shows that if there is a 1% increase in income tax revenue would decrease economic growth by 0.0252% income tax distorts the capital accumulation will permanently reduce growth. From the findings, it can be concluded that income tax has a negative effect on economic growth. Value added tax has a positive and insignificant effect on economic growth in Kenya. Regression analysis results in Table 4.6 **(Appendix IV**) demonstrate this kind of relationship. It shows that if there is a 1% increase in value added tax, revenue would increase economic growth by 0.0356%. From the findings, it can be concluded that value added tax has a positive effect on economic growth. This study shows that the effect of value added tax on the economy is not large enough to influence the economic growth

4.4 Cointegration Tests

The use of cointegration technique permits the combination of the long-run and short-run information in the same model and overcame the problems of losing information that might occur from attempts to address non-stationary series through differencing (Adam, 1998). In this study, we employ Johansen Cointegration test. Therefore, by employing Johansen Cointegration test we make use of Trace statistics and Max-Eigen value from the model respectively by comparing their values with the critical values at 5% level. If the values of the Trace/Max-Eigen values are greater than the critical values, then, we conclude that there will be long-run equilibrium relationship. Otherwise, the regression residual is not co-integrated.

Table 4.7 (**APPENDIX V**), reports the Johansen's cointegration results. Both Trace test and Maximum Eigen value tests indicate three cointegrating equations at the 0.05 level because the hypotheses at None, At most 1, At most 2, are rejected because they have significant probability values of less than 0.05. The result of the Johansen's cointegration test shows the existence of a cointegrating equation. This means that the estimated parameters of the regression equation are the long-run coefficients that link economic growth and tax revenues. This shows that there exists a long run equilibrium relationship between GDP and the fundamentals used in the model, this implies that the two variables move together.

4.6 Error Correction Model

Economic agents normally take time to adjust to information flow and act accordingly. Granted, the short run relationships are vital and offer a potential problem of spurious correlation in the trends. This problem is resolved by making the variables stationary through differencing. This unfortunately leads to loss of data in the long-run and is corrected by adoption of a dynamic model known as Error Correction Model. The Error Correction Model term captures the long-run relationship and majorly attempts to correct deviations from the long-run equilibrium. This coefficient represents the speed of adjustment or the disequilibrium amount transmitted to the growth rate each period. The lagged dependent variable introduced as an explanatory variable in the model to capture dynamics in the short run model and the regression results are presented in Table 4.6**.**

Table 4.8 **(APPENDIX VI)** reports error correction model results **(-1)** which is the one period lagged residual of the cointegrated equation and a probability value of 0.0000 which is less than 0.05 therefore it is significant meaning that there is long run directional causality from tax revenue to economic growth. The coefficient of the Error Correction Term is **-1.0218119** which is a negative has a significant probability value of 0.00000.This means that there is a long run relationship between the tax revenue and economic growth and that all the tax components; customs duty, excise duty, income tax and VAT jointly correct for disequilibrium in GDP at the speed of 1.028119 annually. The value for R^2 shows the explanatory variables in the model collectively account for 78.67% of the variations in GDP growth. The adjusted R^2 value is 75.12% and indicates the explanations of the variations after correcting for the degrees of freedom. The F-statistic p-value of 0.0002 indicates that the estimated parameters are jointly significant and different from zero.

Summary, Conclusions and Recommendations

This study investigated the relationship between direct versus indirect tax and economic growth in Kenya. The motivation for this study was primarily premised on the paucity and inconsistency of empirical literature on the direct versus indirect tax – growth dynamics in developing economies. The objective was achieved by running a regression with economic growth as the dependent variable and the independent variables were income tax, value added tax, custom duty and excise duty. A combination of Johansen co integration and error correction modeling was adopted for the data analysis.

Empirical results of the study reported a negative relationship between direct tax and economic growth and a positive relationship between indirect taxes and economic growth in a time series data of Kenya's Economy, thereby supporting the predictions of the endogenous growth models, This outcome is in tandem with the result of studies by Mendoza *et al* (1997), Bleaney and Gammel (1999), Arisoy and Unlukaplan (2010), Ormaechea and Yoo (2012), Mura (2015), Phiri (2016) and Bizgan (2018) among others, all of whom reported a negative relationship between direct tax and economic growth and a positive relationship between indirect taxes and economic growth.

However, this finding is inconsistent with the findings of Koch, Schoeman and Van-Tonder (2005), Musanga (2007), Sameti and Rafie (2010), and Ebiringa (2012) who opined that indirect taxes are growth impeding while direct taxes are growth enhancing. The results of Johansen's cointegration test indicate a long-run stable relationship between tax revenue and economic growth. Error Correction Model indicates that there is a short and long run causality from tax revenue and economic growth and that all the tax components jointly correct for disequilibrium in Gross Domestic Product at the speed of 1.028119 annually.

The research closes the knowledge gap induced by inconsistency in existing empirics' on the growth effects of indirect taxation which most often has resulted in situations where results of researches done in developed economies are generalized to developing countries. The study is country specific and it utilized time series data and thereby overcomes the cross-country analysis that undermines variable differentials, productivity differentials as reflected in different production functions and above all, country differentials. Previous empirical studies adopted cross-country with cross section data analysis to relate measures of direct and indirect tax revenue and economic growth undermining the fact that cross-sectional studies can only obtain pooled estimates that fail to disentangle results for any specific country. Since the parameters are heterogeneous across subsets of units and errors might be non-random across temporal units.

5.1 Recommendations

The results indicate that indirect taxes provide a predictable and stable flow of revenue to finance development objectives that will accelerate economic growth. The government should rely more on indirect taxes than direct tax due to its growth prospect and its less distortionary nature, and also utilize the positive relationship between the tax variables and economic growth to realize efficient government investment expenditure that spurs economic growth. In light of the findings outlined above, the following recommendations are made:

The study recommends that, the government should maximize revenue collection through proper documentation and registration of companies in the country. The revenue collection agencies should be equipped with the appropriate infrastructure and technology to effectively modernize the tax system in Kenya. This would ease tax assessment, payment, monitoring and back-duty audit. There should be constant training and re-training of tax administrators through seminars and conferences to keep them abreast of the modern trends in tax administration.

The study recommended that the tax authorities should establish good relationship with the professional associations involved in tax matters in order to reduce tax malpractices perpetrated by tax payers with the connivance and often active support of external auditors and tax consultants. It may also be necessary to re-visit and review some custom tax laws and regulations that are repugnant to the performance of the tax system, so as to block and discourage the loopholes that are being exploited by taxpayers to either evade or avoid tax payments. Constant review of existing tax laws will keep the act in pace with the economic reality.

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APPENDICES

Appendix I

Table 4.1 Descriptive Statistics Of Gross Domestic Product, Custom Duty, Excise Duty, Income Tax And Value Added Tax.

Var	Max	Min	Median	Mean	Std.dev	Jarque-Bera	Prob	Skewness	Kurtosis
GDP	2551160	17566	244351	622783.6	719336.6	9.710	0.0078	1.216	3.471
CD	46072	796	80999.5	15164.32	13356.24	3.369	0.1855	0.540	2.020
ED	80567	463	7655	21004.61	24770.66	6.907	0.0316	1.040	2.812
IT	272264	1176	18499.5	50551.24	66173.38	30.99	0	1.783	5.619
VAT	145707	694	23594	39178.82	40980.4	5.908	0.0521	0.9635	2.867

Source: Authors computation.

Appendix II

Table 4.2 Unit Root Test At First Difference

Variable	ADF	1%	5%	Decision
CD	-5.544682	-3.626784	-2.945842	Reject H_0
ED	-5.624120	-3.626784	-2.945842	Reject H_0
GDP	-4.349471	-3.626784	-2.945842	Reject H_0
VAT	-5.627301	-3.626784	-2.945842	Reject H_0
IT	-4.96784	-4.23497	-3.54033	Reject H_0

Source: Computation using E-views econometric software, version 7.

Appendix III: Diagnostic Tests

Table 4.3 Variance Inflation Factors.

Variance Inflation Factors			
Date: 09/25/16 Time: 22:41			
Sample: 1974 2010			
Included observations: 36			
	Coefficient	Uncentered	Centered
Variable	Variance	VIF	VIF
C	3.92E-05	1.001297	NA
D(CD)	0.000729	1.259000	1.258958
D(ED)	0.001710	1.059275	1.058904
D(IT)	0.002341	1.188650	1.188482
D(VAT)	0.002250	1.407744	1.407646
U(-1)	0.027970	1.020291	1.019554

Source: Computation using Eviews econometric software, version 7.

Where CD=Customs Duty, ED=Excise Duty, IT=Income Tax and VAT=Value Added Tax.

Table 4.4 Serial Correlation Results

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.338161	Prob. F(2,30)	0.7158
Obs*R-squared	0.815741	Prob. Chi-Square(2)	0.6651

Source: Computation using Eviews econometric software, version 7

Table 4.5 Heteroscedasticity Test

Heteroskedasticity Test: Harvey

F-statistic	0.982374	Prob. F(4,32)	0.4310
Obs*R-squared	4.046574	Prob. Chi-Square(4)	0.3997
Scaled explained SS	5.379728	Prob. Chi-Square(4)	0.2505

Source: Computation using Eviews econometric software, version 7.

Appendix IV

Table 4.6 Regression Model Results

Dependent Variable: GDP
Method: Least Squares
Date: 05/29/14 Time: 11:06
Sample: 1974 2010
Included observations: 37

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.067919	0.014007	4.848889	0.0000
CD	0.122787	0.040333	3.044323	0.0046
ED	0.370923	0.062153	5.967917	0.0000
IT	-0.025155	0.068856	-0.365327	0.7173
VAT	0.035601	0.068842	0.517138	0.6086

R-squared	0.627002	Mean dependent var	0.134550
Adjusted R-squared	0.580377	S.D. dependent var	0.062702
S.E. of regression	0.040617	Akaike info criterion	-3.444173
Sum squared resid	0.052792	Schwarz criterion	-3.226482
Log likelihood	68.71721	Hannan-Quinn criter.	-3.367427
F-statistic	13.44783	Durbin-Watson stat	1.954836
Prob(F-statistic)	0.000002		

Source: Computation using Eviews econometric software, version 7

Appendix V

Table 4.7 Cointegration Test Results

Date: 06/30/15 Time: 08:48				
Sample (adjusted): 1977 2010				
Included observations: 34 after adjustments				
Trend assumption: Linear deterministic trend				
Series: GDP CD ED IT VAT				
Lags interval (in first differences): 1 to 2				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.803382	123.3298	69.81889	0.0000
At most 1 *	0.590193	68.02905	47.85613	0.0002
At most 2 *	0.525285	37.69870	29.79707	0.0050
At most 3	0.200771	12.36730	15.49471	0.1402
At most 4 *	0.130325	4.747624	3.841466	0.0293
Trace test indicates 3 cointegratingeqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.803382	55.30072	33.87687	0.0000
At most 1 *	0.590193	30.33035	27.58434	0.0216
At most 2 *	0.525285	25.33140	21.13162	0.0121
At most 3	0.200771	7.619677	14.26460	0.4187
At most 4 *	0.130325	4.747624	3.841466	0.0293
Max-eigenvalue test indicates 3 cointegratingeqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):				

Source: Computation using Eviews econometric software, version 7

Appendix VI

Table 4.8 Error Correction Model

Dependent Variable: D(GDP)
Method: Least Squares
Date: 08/08/15 Time: 08:55
Sample (adjusted): 1975 2010
Included observations: 36 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.001232	0.006264	-0.196625	0.8454
D(CD)	0.068626	0.027000	2.541725	0.0164
D(ED)	0.346363	0.041358	8.374727	0.0000
D(IT)	-0.087403	0.048386	-1.806354	0.0809
D(VAT)	0.080937	0.047437	1.706205	0.0983
U(-1)	**-1.028119**	0.167241	-6.147519	0.0000

R-squared	0.786713	Mean dependent var	-0.003142
Adjusted R-squared	0.751166	S.D. dependent var	0.075290
S.E. of regression	0.037557	Akaike info criterion	-3.574902
Sum squared resid	0.042316	Schwarz criterion	-3.310982
Log likelihood	70.34823	Hannan-Quinn criter.	-3.482786
F-statistic	22.13115	Durbin-Watson stat	1.931441
Prob(F-statistic)	0.000000		

Source: Computation using Eviews econometric software, version 7.

Appendix VII

Figure 4.1 Histogram-Normality Test Results