# The Nexus Between Government Expenditure and Taxation

## Dr. Angela Mucece Kithinji

## University of Nairobi, School of Business

akithinji@uonbi.ac.ke

## Abstract

Fiscal policy plays an important part in achieving macroeconomic balance. For instance, in Kenya, the aspect of macroeconomic imbalance and the risk associated with it come as a result of increase in shares of public expenditure and fiscal deficits in the country's GDP. However, such imbalance has existed and has been expanding despite the fact that the Kenyan transition has significantly improved fiscal (tax) system in recent years hence, creating a legal and institutional basis for sound fiscal policies. This study therefore sought to establish the nexus between government expenditure and tax revenue. It employed use of longitudinal research design and collected secondary data for a period of sixteen years ranging from 2002 – 2017. The study analyzed data through use of descriptive and inferential statistics where test of association was done by use of Pearson correlation and test of effects between variables through use of regression analysis. The study established that government expenditure does not significantly affect taxation alone. However, when controlled by government revenue composition, government expenditure seem to significantly influence taxation in Kenya. It can therefore be recommended that apart from spending more to increase economic activities from which to generate tax revenue by Government, Government should also put in place policies that should go hand in hand in increasing tax revenue relative to total government revenue.

**Key Words:** *Government Expenditure, Tax Revenue, Government Revenue Composition, Fiscal Policies*

## Introduction

Fiscal and monetary policies are important components mainly used by government in managing the economy. Fiscal policy is applicable to government expenditure while tax revenue is said to

influence the country's economic activities. The two main instruments in fiscal policy are government spending and taxation (Doh-Nani & Awunyo-Vitor, 2012). Therefore, a change in the level and in the composition of taxation as well as government expenditure, influences the aggregate demand and economic activity level together with resource allocation patterns including income distribution. Fiscal policy can also be used to bring the economy to the potential level if policymakers understand the relationship between government expenditure and government revenue (Narayan & Narayan, 2006).

Baharumsiiah and Lau (2010) states that budget sustainability refers to the government's ability to maintain given spending, taxation, and borrowing patterns and to modify policies to satisfy its long run budget constraints. In other words, budget sustainability is the ability of the government to maintain a given policy stance. Thus, government has an important role in budget sustainability. Government acquisition of goods and services for current use to directly satisfy individual or collective needs of the members of the community is classified as government final consumption expenditure (Yashobanta & Behera, 2012). Government acquisition of goods and services intended to create future benefits, such as infrastructure investment or research spending, is classed as government investment (gross fixed capital formation) (Takumah, 2014).

In market economies, public corporations should act commercially and whenever possible, should aim at making profits. For that reason, they must have self-sufficiency in management and be given a corporate structure (Aisha & Khatoon, 2010). Thus, their expenditures and revenues cannot be submitted to the same scrutiny and approval mechanisms as the national budget, which should cover only the enterprises' financial transactions with the government and not their transactions with the rest of the economy. According to Comprehensive Public Expenditure Review Report (2017), world real GDP expanded to 3.7 per cent, which was the highest growth rate since the 2008 global financial crisis. Sub-Saharan Africa growth grew from 1.5 per cent in 2016 to 2.8 per cent in 2017 spurred by improved capital market access, and recovery in the growth of larger commodity exporters such as Angola, Nigeria and South Africa. The East African Community (EAC) region Growth declined from 6.1 per cent in 2015 to stabilize at 5.4 per cent in 2016 and 2017. The Kenyan economy recorded a decline in growth to 4.9 per cent in 2017 from 5.9 per cent in 2016 Among the factors explaining the decline in growth were the slowdown in the growth of the manufacturing sector and the reduction in the share of Kenya's manufactured exports in the regional market.

Government acquisition of goods and services intended to create future benefits, such as infrastructure investment or research spending, is called gross fixed capital formation, or government investment, which usually is the largest part of the government. Acquisition of goods and services is made through production by the government (using the government's labor force, fixed assets and purchased goods and services for intermediate consumption) or through purchases of goods and services from market producers (Wolde-Rufael, 2008). Government revenue is revenue received by a government. It is an important tool of the fiscal policy of the government and is the opposite factor of government spending. Revenues earned by the government are received from sources such as taxes levied on the incomes and wealth accumulation of individuals and corporations and on the goods and services produced, exported and imported from the country, non-taxable sources such as government-owned corporations' incomes, central bank revenue and capital receipts in the form of external loans and debts from international financial institutions (Lau, Tiong & Ling, 2009).

Keynes (1930) was one of the first economists to advocate government deficit spending as part of the fiscal policy response to an economic contraction. In Keynesian economics, increased government spending is thought to raise aggregate demand and increase consumption, which in turn leads to increased production. Keynesian economists argue that the Great Depression was ended by government spending programs such as the New Deal and military spending during World War II. Classical economists, on the other hand, believe that increased government spending exacerbates an economic contraction by shifting resources from the private sector, which they consider productive, to the public sector, which they consider unproductive. The scope of the budget depends on the field of activities of the government, but must also be in a form to allow government policies to be appropriately scrutinized by the legislature and the public (Kia, 2008).

Tax revenue is the income that is gained by governments through taxation. Just as there are different types of tax, the form in which tax revenue is collected also differs; furthermore, the agency that collects the tax may not be part of central government, but may be an alternative third-party licensed to collect tax which they themselves will use (Ewing, et. al., 2006). The mission of revenue administration is to provide prudent and innovative revenue, investment and risk management and to regulate the use of government capital (Aregbeyen & Insah, 2013). According to Garcia (2012), there are four core responsibilities for the revenue administrator,

which are; firstly, to regulate capital expenditures; secondly, to administer tax and revenue programs fairly and efficiently; third, to manage and invest financial assets prudently, and four, to manage risk associated with loss of public assets.

In Kenyan context, the Kenya Revenue Authority (KRA) is the government entity that is charged with the responsibility of collecting government revenues and giving the revenues to the treasury. The effect of a change in taxation level on total tax revenue depends on the good being investigated, and in particular on its price elasticity of demand. Where goods have a low elasticity of demand (they are price inelastic), an increase in tax or duty will lead to a small decrease in demand not enough to offset the higher tax raised from each unit (Kiminyei, 2018). Comprehensive Public Expenditure Review (2017) report further indicated that lending rates increased from16.99 per cent to 18.3 per cent during the period between 2013 and 2015. However, lending rates declined to 13.69 per cent in 2016 and 13.64 per cent in 2017 respectively, mainly due to interest rate capping that was implemented in September 2016. The interest rate capping led to the narrowing of interest rates spread over the review period with the anticipated increase in lending to finance capital projects expected to generate taxable investment income and other tax generating activities. Imports as a percentage of GDP averaged 28.4 per cent between 2013 and 2017 while exports as a percentage of GDP averaged 16.5 during the same period. The higher imports were expected to bring more income in form of import duty to the country. The Kenyan Shilling remained generally stable against most foreign currencies between 2013 and 2017 which was expected to encourage foreign direct investment. Relatively lower oil prices, strong remittance inflows, a rebound in tourism and government borrowing in foreign currency continued to support a stable exchange rate with a moderate appreciation of the shilling against the US dollar over the period. The vibrant domestic economy as well as the foreign economy was expected to lead to an economy with high tax revenues by way of income tax, corporate tax, Value Added Tax (VAT), import duty, excise tax as well as other taxes.
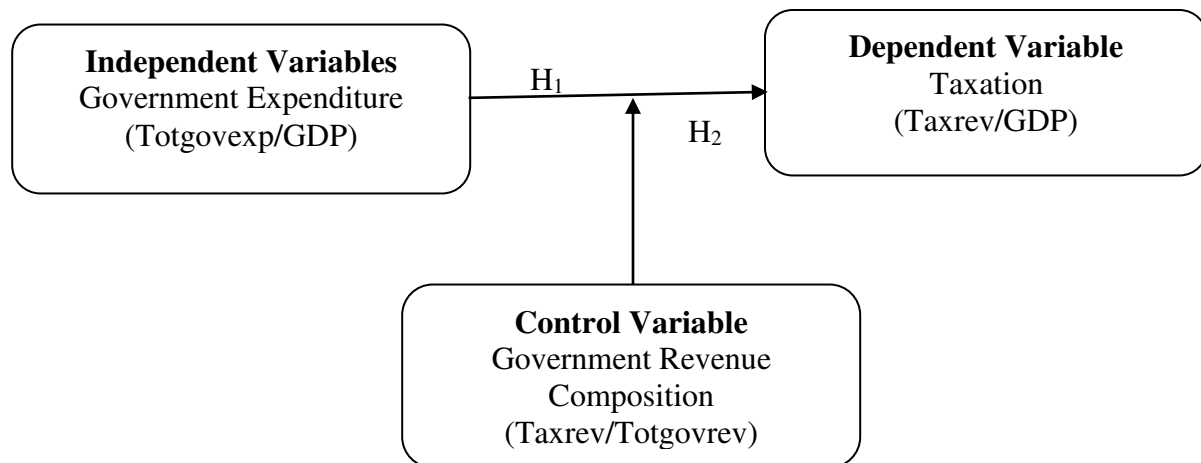
**Statement Problem**

In the field of public finances, the issue of potential links between government expenditure and government revenue has intensely attracted the attention of policy makers (Garcia, 2012). Fiscal policy plays an important part in achieving macroeconomic balance. For instance, in Kenya, the aspect of

macroeconomic imbalance and the risk associated with it come as a result of increase in shares of public expenditure and fiscal deficits in the country's GDP. Such imbalance has exists and has been expanding despite the fact that the Kenyan transition has significantly improved fiscal (tax) system in recent years hence, creating a legal and institutional basis for sound fiscal policies (Ghartey, 2012). Essentially government should also continue focusing on consolidation of medium-term plans and effective monetary policy to curb domestic demand (Comprehensive Public Expenditure Review, 2017).

Examining the empirical relationship between government expenditures and tax revenues is a crucial step in understanding the future path of the budget deficit. Takumah (2014), examined the causal relation between the variables in Ghana (from 1986 – 2012) and the authors results confirmed that fiscal synchronization hypothesis both in the long and in the short run exists. Yashobanta and Behera (2012), investigated the causal relations between the government revenues and the government expenditures in India (from 1970 – 2008) with VECM model ,and discovered that the causal relation is bidirectional in the long run. Within the public finance literature, it is often assumed that a government determines both revenues and expenditures in ways that maximize the social welfare of the society. However, the tax-and-spend argument proposes that changes in government revenues lead to changes in government expenditures.

Until now, the empirical evidence on the tax-spend debate has focused almost exclusively on two conventional econometric techniques. Depending on the co-integrating properties between revenues and expenditures, these techniques are based on either variations of the unrestricted vector auto regression (UVAR) or the vector auto regression error correction model (ECM). A necessary condition for the establishment of an effective fiscal policy is to understand and establish appropriate links between government revenues and government expenditures. Therefore, the study seeks to establish the nexus between government expenditure and taxation in Kenya. The study shall be based on the conceptual framework as stated:

**Figure 1: Conceptual Framework**

| Independent Variables<br>Government Expenditure<br>(Totgovexp/GDP) | $H_1$ | Dependent Variable<br>Taxation<br>(Taxrev/GDP) |
| --- | --- | --- |

$H_2$

Control Variable
Government Revenue
Composition
(Taxrev/Totgovrev)

The study conceptualized the variables under study, where government expenditure is the independent variable while taxation is presumed to be the dependent variable. The study has hypothesized that availability of revenue collected is determined by estimation of budget to be spent by government and this can be controlled by government revenue composition.

*$H_o$: Government expenditure does not influence taxation*

*$H_0$: Government expenditure and government revenue composition jointly, do not influence taxation*

**Methodology**

This study employed the use of longitudinal research design. This helped in investigating the linkage between government expenditure and tax revenue in Kenya within a time frame ranging from 2002 – 2017. This study was quantitative in nature which relied on secondary data for a period of sixteen years. The collected data was coded and processed with aid of a Statistical Package for Social Sciences (SPSS) version 23. The study analysed data through use of descriptive statistics which was presented in form of tables and graphs, test of association done by use of Pearson correlation and test of effects between variables through use of regression analysis. In the first regression model, the study tested the effect between government expenditure which was then taken to be independent variable and tax revenue as the dependent variable. Government expenditure was measured as a ratio of Total Government Expenditure

divided by Gross Domestic Product. On the other hand, taxation was a ratio of tax revenue divided by Gross Domestic Product. To test the first hypothesis, the following model was used:

$$TR_t = \beta_0 + \beta_1 GE_t + \mathcal{E} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.1$$

Where the *TR* represents tax revenue, *GE* is government expenditure, $\beta_0$ is a constant of the regression coefficient, $\beta_1$ is the regression coefficient, *t* is the number of years under study, while $\mathcal{E}$ is the error term.

The second regression model included a control variable which in this case was government revenue composition calculated as a ratio of Tax Revenue divided by Total Government Revenue. Therefore, in testing the second hypothesis, the model used is as indicated below:

$$TR_t = \beta_0 + \beta_1 GE_t + \beta_2 GRC_t + \mathcal{E} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.2$$

Where *TR, GE, $\beta_0$, $\beta_1$, t* and $\mathcal{E}$ are as explained in equation 1. *GRC* is a representation of government revenue composition while $\beta_2$ denotes a coefficient value for government revenue composition.

**Research Findings**

**Descriptive Statistics**

Tax revenue as a ratio to GDP ranged between 0.18 and 0.25 indicating a minimum of 18% and a maximum of 25%. The mean of tax revenue to GDP ratio was 0.2063with a standard deviation of 0.02156. Tax revenue to GDP ratio observations were skewed to the right with a skewness factor of 0.375 and a negative kurtosis of -0.876. The kurtosis value of -0.876 falls within the range of -1.96 and 1.96 meaning that the data observations are normally distributed.

| | N | Minimum | Maximum | Mean | Std. Deviation | Skewness | | Kurtosis | |
|---|---|---|---|---|---|---|---|---|---|
| | Statistic | Statistic | Statistic | Statistic | Statistic | Statistic | Std. Error | Statistic | Std. Error |
| Taxrev/ GDP | 16 | .18 | .25 | .2063 | .02156 | .375 | .564 | -.876 | 1.091 |
| Totgovexp/ GDP | 16 | .28 | .40 | .3425 | .02720 | -.165 | .564 | 1.345 | 1.091 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Taxrev/ Totgovrev | 16 | .84 | .96 | .9212 | .03442 | -1.141 | .564 | .871 | 1.091 |

Total Government expenditure to GDP had a minimum value of 0.28 and a maximum value of 0.40. The mean of this ratio was 0.3425 with a variation of 0.02720. The data observations of total government expenditure to GDP ratio was skewed to the left as denoted by the skewness value of -0.165. The data had positive kurtosis of 1.345 which is greater than -1.96 but less than 1.96 implying that the data observations are normally distributed. Tax revenue to total government revenue ratio ranged between 0.84 and 0.96 with a mean of 0.9212 and a standard deviation of 0.03442. The data observations were skewed to the left as denoted by the value of -1.141. The kurtosis value of 0.871 is an indication that the data observations are normally distributed.

**Table 1: Government Expenditure and Tax Revenue**

| Year | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Taxrev/ Totgovrev* | 0.93 | 0.87 | 0.93 | 0.94 | 0.93 | 0.92 | 0.96 | 0.94 | 0.96 | 0.96 | 0.87 | 0.94 | 0.92 | 0.92 | 0.84 | 0.91 |
| *Taxrev/ GDP* | 0.20 | 0.21 | 0.22 | 0.22 | 0.23 | 0.22 | 0.22 | 0.23 | 0.25 | 0.19 | 0.18 | 0.19 | 0.19 | 0.18 | 0.18 | 0.19 |
| *Totgovexp/ GDP* | 0.32 | 0.33 | 0.33 | 0.35 | 0.40 | 0.36 | 0.33 | 0.33 | 0.37 | 0.28 | 0.36 | 0.32 | 0.36 | 0.33 | 0.35 | 0.36 |

The data indicates that tax revenue constituted the greatest proportion of government revenue averaging 92% of total government revenue. Tax revenue to GDP ratio averaged 21% while total government expenditure to GDP ratio was 34%.

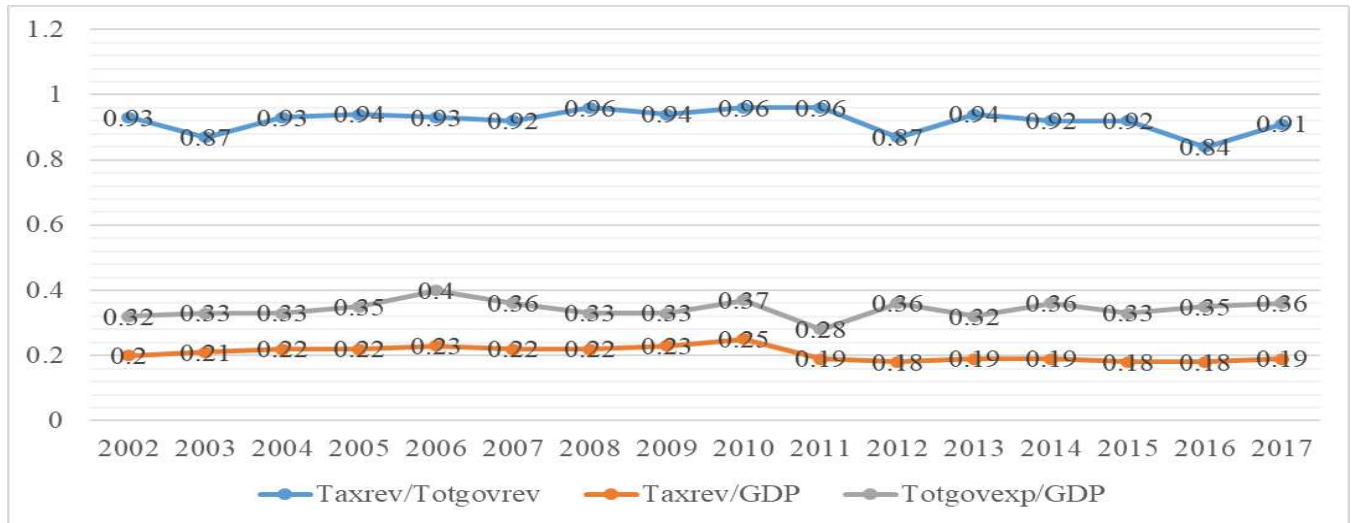**Figure 2: Government Expenditure and Tax Revenue**

Figure 2 indicates that tax revenue to total government revenue was 84% and 96% during the study period of the year 2002 to 2017. This ratio experienced minimum fluctuations with variation of 3.4%. Total Government revenue to GDP experienced minimal fluctuations between 2002 to 2017 with a standard deviation of 2.16% while total government expenditure to GDP ratio had minimal fluctuations of 2.72%. All the three study variables portrayed stable observations during the study period.

**Inferential Statistics**

**Test of Association (Correlations)**

|  |  | Taxrev/GDP | Totgovexp/GDP | Taxrev/Totgovrev |
|---|---|---|---|---|
| Taxrev/GDP | Pearson Correlation | 1 | .324 | .519[*] |
|  | Sig. (2-tailed) |  | .221 | .040 |
|  | N | 16 | 16 | 16 |
| Totgovexp/GDP | Pearson Correlation | .324 | 1 | -.231 |
|  | Sig. (2-tailed) | .221 |  | .389 |
|  | N | 16 | 16 | 16 |
| Taxrev/Totgovrev | Pearson Correlation | .519[*] | -.231 | 1 |
|  | Sig. (2-tailed) | .040 | .389 |  |

| | N | 16 | 16 | 16 |
|---|---|---|---|---|

The relationship between tax revenue and total government expenditure was found to be insignificant given a correlation value of 0.324 a $p$ – value of 0.221. The relationship between the total government expenditure and tax revenue was found to be 51.9% when tax revenue was measured using tax revenue divided by total government revenue instead of by GDP, the relationship was found to be relatively strong at since the $p$ – value provided was 0.040.

**The Effect of Government Expenditure on Taxation**

The effect between predictor variables and dependent variable was estimated through use of a regression model. Thus, the effect between government expenditure on taxation followed the following model:

$$TR_t = \beta_0 + \beta_1 GE_t + \mathcal{E} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.1$$

Where the *TR* represents tax revenue, *GE* is government expenditure, $\beta_0$ is a constant of the regression coefficient, $\beta_1$ is the regression coefficient, $t$ is the number of years under study, while $\mathcal{E}$ is the error term.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .324[a] | .105 | .041 | .02112 |

a. Predictors: (Constant), Government Expenditure

The regression model's results of 0.324 indicates that the relationship between government revenue and government expenditure is at 32.4%. The regression summary model further indicates an $R^2$ of 0.105 an indication that total tax revenue can be explained by 10.5% of Government expenditure.

**ANOVA[a]**

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| 1  Regression | .001 | 1 | .001 | 1.641 | .221[b] |
| Residual | .006 | 14 | .000 | | |
| Total | .007 | 15 | | | |

a. Dependent Variable: Taxation

b. Predictors: (Constant), Government Expenditure

The model's ANOVA produced an $F-$ value of 1.641 and the $p-$ value of 0.221. This is an implication that there exist weak relationship between taxation and government expenditure. This could imply that the research should fail to reject the null hypothesis that government expenditure does not influence tax revenue since the error we make by doing so is greater than the recommended 5%.

**Coefficients[a]**

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | 95.0% Confidence Interval for B | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | | | Lower Bound | Upper Bound |
| 1  (Constant) | .118 | .069 | | 1.718 | .108 | -.029 | .266 |
| Government Expenditure | .257 | .200 | .324 | 1.281 | .221 | -.173 | .687 |

a. Dependent Variable: Tax Revenue

The regression coefficient results a constant value of 0.118. The effect of government expenditure on taxation is not significant given a coefficient value of 0.257 ($t = 1.281$) and a weak value of >0.05.

**The Control Effect of Government Revenue Composition on the Relationship Between Government Expenditure and Taxation**

The second regression model estimated the control effect of government revenue composition on the relationship between government expenditure and taxation. This was tested through use of the model indicated below:

$$TR_t = \beta_0 + \beta_1 GE_t + \beta_2 GRC_t + \mathcal{E} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.2$$

Where *TR, GE, $\beta_0$, $\beta_1$, t* and *$\mathcal{E}$* are as explained in equation 1. *GRC* is a representation of government revenue composition while *$\beta_2$* denotes a coefficient value for government revenue composition.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .691[a] | .477 | .397 | .01675 |

a. Predictors: (Constant), Tax Revenue Composition, Government Expenditure

Tax revenue as a proportion of total government revenue is used as a control variable on the relationship between government expenditure and tax revenue. The explanatory power of model with control variable increased from 10.5% to 47.7%. This can be interpreted to mean that with the introduction of tax revenue composition, all the predictor variables were able to explain 47.7% of the tax revenue.

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | .003 | 2 | .002 | 5.933 | .015[b] |
| | Residual | .004 | 13 | .000 | | |
| | Total | .007 | 15 | | | |

12

a. Dependent Variable: Tax Revenue

b. Predictors: (Constant), Tax Revenue Composition, Government Expenditure

Tax revenue composition in the relationship the strength of the relationship between tax revenue and government expenditure becomes significant as indicated by an $F$ – value of 5.933 and a $p$ – value of 0.015. It is therefore an indication that the study should reject the null hypothesis that government expenditure and government revenue composition jointly, do not influence taxation.

**Coefficients[a]**

| Model | Unstandardized Coefficients | | Standardized Coefficients | | | 95.0% Confidence Interval for B | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | t | Sig. | Lower Bound | Upper Bound |
| 1    (Constant) | -.283 | .143 | | -1.982 | .069 | -.591 | .025 |
| Government Expenditure | .372 | .163 | .469 | 2.275 | .040 | .019 | .725 |
| Tax      Revenue Composition | .393 | .129 | .627 | 3.043 | .009 | .114 | .672 |

a. Dependent Variable: Tax revenue

The coefficients' findings show that an increase in government expenditure has ability of leading to increase in tax revenue by 37.2% ($t = 2.275$) $p$ - value of 0.4 denotes that the relationship of $X_1$ is significant. The aspect of tax revenue composition was also produced a significant relationship towards tax revenue since it has a coefficient value of 0.393 ($t$ – 3.043) and a $p$ – value of 0.009. Therefore, there is a significant positive effect of total government revenue on tax revenue as a proportion of GDP. Furthermore, there is significant positive effect of total government expenditure on tax revenue in Kenya.

**Conclusions and Recommendations**

The study concludes that government expenditure does not have a significant relationship on tax revenue alone. However, when controlled with government revenue composition they can affect taxation positively. This would have implication that the government of Kenya comes up with expenditure budgets in advance before collecting taxes. The findings show that the government makes decision to spend money for instance, initiating various development projects, and even procurement of goods and services before raising taxes. They therefore follow a spend-collect revenue theory which can lead overspending beyond its limits.

It can be recommended that government should put in place policies that should go hand in hand in increasing total government revenue. When making policies on taxation government should also put in place policies to influence the composition of total government revenue as total government revenue tends to influence taxation. Essentially, the more the revenue that Government intends to raise the higher the taxation that Government is likely to impose.

**References**

Aisha, Z. & Khatoon, S. (2010). Government Expenditure and Tax Revenue Causality and Co-integration: The Experience of Pakistan 1972 – 2007, *Pakistan Development Review.*

Aregbeyen, O. & Insah, B. (2013). A dynamic analysis of the link between public expenditure and public revenue in Nigeria and Ghana. *Journal of Economics and Sustainable Development* 4: 18 – 29.

Baharumsiiah, A.Z. & Lau, E. (2010), Mean Reversion of the Fiscal Conduct in 24 Developing Countries. *The Manchester School.* 78(4), 302 – 325.

Doh-Nani, R. & Awunyo-Vitor, O. (2012). The Causal Link between Government Expenditure and Government Revenue in Ghana, *Asian Economic and Financial Review*, 2(2), 382 – 388.

Ewing, B. T., Payne, J. E., Thompson, M. A. & Al-Zoubi, O. M. (Jul., 2006). Government Expenditures and Revenues: Evidence from Asymmetric Modeling. *Southern Economic Journal*, 73(1), 190 – 200

Garcia, J. M. (2012). The revenues-expenditure nexus: A panel data analysis of Spain's regions. *International Journal of Academic Research in Economics and Management Sciences* 1: 24 – 38.

Ghartey, E. E. (2012). Co-integration and causal relationship between taxes and spending for Kenya, Nigeria and South Africa. *International Economic Journal,* 24: 267 – 282.

Kenya Comprehensive Public Expenditure Review (2017). From Evidence to Policy. *The national treasury and planning state department for planning monitoring and evaluation department*, Republic of Kenya

Kia, A. (2008). Fiscal Sustainability in Emerging Countries: Evidence from Iran and Turkey, *Journal of Policy Modeling,* 30(6), 957 – 972.

Kiminyei, F. K. (2018). The Nexus between Tax Revenue and Government Expenditure in Kenya. *International Journal of Economics & Management Sciences,* 7(5): 1 – 6

Lau, E., Tiong, M. H., & Ling, J. (2009). Fiscal Sustainability: An Empirical Investigation in Kenya, *International Journal of Economics and Management,* 3(1), 62 – 72.

Narayan, P. K., & Narayan, S. (2006). Government Revenue and Government Expenditure Nexus: Evidence from Developing Countries, *Applied Economics Letter,* 38(3), 285 – 291.

Takumah, W. (2014). The dynamic causal relationship between government revenue and government expenditure nexus in Ghana. *Munich Personal RePEc Archive* Paper No. 58579.

Wolde-Rufael, Y., (2008). The Revenue-Expenditure Nexus: The Experience of 13 African Countries', *African Development Review,* 20(2), 273 – 283.

Yashobanta, Y., P. & Behera, S., R. (2012). Causal link between central government revenue and expenditure: Evidence for India. *Munich Personal RePEc Archive* Paper No. 43072.