IOSR Journal of Mathematics (IOSR-JM)
e-ISSN: 2278-5728, p-ISSN: 2319-765X. Volume 16, Issue 1 Ser. II (Jan – Feb 2020), PP 01-05
www.iosrjournals.org

Impact of Increased Taxation and Foreign Borrowing on Kenyan Economic Growth

Caleb Okeyo Oyala
(Department of Mathematics and Statistics, Maseno University, P.O Box 333,Maseno,Kenya.

Abstract: *Taxation and foreign borrowing are major sources of revenue in Kenyan economy. The government uses revenues from these sources to finance its project such as construction of roads and railways (SGR) and provision of services such as National Youth Service (NYS) to the youths and payment of wages to its employees and creating enabled environment for businesses among others. However, increased tax rates and foreign debt may pose a negative impact on the economic development of a state if the revenues from these sources are not put into fiscal uses.This study examines the impact of taxation as well as foreign borrowing on economic growth in Kenya. The study used a time series data for the period (1995-2018) to analyse and evaluate the impact. The study employed a multiple linear regression model with foreign borrowing and taxation as the independent variables and Gross Domestic Product (GDP), which is an indicator of economic growth, as the dependent variable. The technique of Least Squares was employed to estimate the parameters of the multiple linear regression model.. Secondary data used were collected from the Kenya National Bureau of Statistics (KNBS) and the Kenya Revenue Authority (KRA) . The purposive sampling technique was applied for creating the sampling frame. The descriptive statistics was appled for analysis and interpretation of the results..This study explored the significance of Taxes and Foreign debt as captured by log of GDP. From the results, if all factors were kept constant, GDP as an indicator for economic growth in Kenya would be KSh -3.61 billion. The coefficient of Taxes is positive and significant. This implies that holding Foreign debt constant, 1% increase in Taxes results to 20.29% increase in GDP of Kenya. The coefficient of Foreign debt is negative and insignificant. This implies that holding Taxes constant, 1% increase in Foreign debt results to a 1.58% decrease in GDP of Kenya.*

Date of Submission: 26-12-2019 Date of Acceptance: 11-01-2020

I. Introduction

Taxation involves a method by which the government funds their consumption by forcing charges on their residents and corporate elements. Such expenditure incorporates infrastructural administrations provisions, for example, power, schools, emergency clinics, great roads just as guarantee to an ascent in per capita pay and end of poverty.As indicated by (Attiya Waris, 2012) "A verifiable examination of the Kenyan tax assessment framework," tax collection in Kenya began route before the colonial time and was first presented by the Arabs who touched base at the Kenyan coast around 1498. After autonomy, Kenya had income tax, corporation charge, exchange expenses and excise-charges. Later value added tax was introduced. In 1970/71 the finance ministry changed the policy of cautionary spending and began on expansionary policy which led to introduction of sales tax in 1973. In 1973, there was an oil crisis leading to debt problem which led to introduction 20% withholding tax on non-resident entrepreneurs, capital allowance restricted to rural investment, a new tax on the sale of property, taxes on shares, the sale of the land and a custom tariff of 10% on a range of previously duty free goods.Another oil emergency happened in 1979/80 prompting decreased accessibility of household credit and lower returns from agriculture and trade causing a drop-in income. The legislature reacted by expanding sales charges from 10% to 15%, excise obligations from half to 59%, while individual salary was diminished from 36% to 29%.On first July 1995, The Kenya Income Expert (KRA) was built up by a Demonstration of Parliament, part 469 of the laws of Kenya. The authority is charged with gathering revenue in the interest of the Administration of Kenya. On the other hand, foreign borrowing alludes to the measure of cash a nation owes another nation. As indicated by (Patenio and Tan-Cruz, 2007) a pubic dept is an obligation owed to both interior and external parties by an administration of independent nation. External public dept is obligation owed to foreign creditors which are multilateral leasers, for example, African Improvement Bank, World Bank, Global Money funds and bilateral lenders who are basically legislatures of different nations and business banks. As indicated by (Rusike, 2007) the impacts of foreign debts accumulation on business ventures and financial development of a nation are constantly addressed by policymakers and academicians. There is no agreement on the role of foreign debts on development. It has both positive and negative impacts. Various specialists are in view that foreign obligation will have ideal impact on economic development since it expands capital inflow. At

the point when utilized for development related consumption external debt can quicken the pace of economic development. It gives remote cash-flow to industrial advancement as well as administrative ability, technology, specialized aptitude just as access to foreign business sectors for the preparation of a country's human and material assets (Reinhart et al, 2002).

Nonetheless, late experience has graphically delineated that borrowing has potential hindrances. It tends to be squandered on wasteful investments. It can enable an administration to defer fundamental economic changes. Also, debt accumulation can make an economy progressively powerless against financial related weights from the world economy. At the point when external dept gathers past a specific farthest point, it contrasts economic development by hampering investment. Driving clarification for this negative relationship is the supposed dept overhang. Dept overhang hypothesis expresses that abnormal amounts of in-debts debilitate investment and contrarily influence development as future tax incomes go to reimburse obligation (Baum et al, 2013)The debt burden has, for decades, remained a recurrent and discordant note in the discourse on the crisis and contradictions of Africa's development. This is, however, not entirely surprising given its magnitude and the consequences for Africa. The collective debt burden of the continent represents a massive betrayal of Africa's huge resource base, both human and material, and the failure of policy measures targeted at the management of those resources. To be sure, hopes and expectations were high in the decade of the 1960s, when most African countries attained political independence.Kenya is weighed down by swelling public debt and faces the possibility of a debt crisis, with China being the highest lender owning more than 70% of Kenya's bilateral debt the debt burden has, for decades, remained a recurrent and discordant note in the discourse on the crisis and contradictions of Africa's development.

II. Material And Methods

Study Design: The study utilized the secondary data sourced from KRA and KNBS which are bodies in charge of tax collection and data storage in Kenya respectively.From 1998-2017 financial periods

Samplling technique: Purposive sampling methods were used do identify sampling units from the variables.

Model formulation and verification: The regression model was of the form: $\boldsymbol{Y} = \boldsymbol{X\beta} + \boldsymbol{\epsilon} where\ \ E(\boldsymbol{\epsilon}) = 0$;$Var(\epsilon) = \sigma^2 I_n^2$Where $\boldsymbol{Y}$is an n × 1 vector of the dependent variables (GDP) economic growth indicator,$\boldsymbol{X}$ is an n × k matrix of independent variables (taxes and foreign debt), $\boldsymbol{\beta}$is a k × 1 vector of constants and $\boldsymbol{\epsilon}$ is an n × 1 vector of error terms.The paramers were estimated in general form and the results were as follows.

$\hat{\beta}_{OLS} = (\boldsymbol{X}'\boldsymbol{X})^{-1}\boldsymbol{X}'\boldsymbol{Y}$ with covariance matrix: $Var(\widehat{\boldsymbol{\beta}}_{\boldsymbol{OLS}}) = \boldsymbol{\sigma^2}(\boldsymbol{X}'\boldsymbol{X})^{-1}\boldsymbol{XY}$.The significance of parameterswere tested by t distribution. And the hypotheses were

$H_{0:}\beta_j=0$ against

$H_{1:}$ at least one $\beta_j \neq 0$; j=0,1,2.

We use the test statistic

$$t_{cal} = \frac{\hat{\beta}_j}{\sqrt{var(\hat{\beta}_j)}}$$

The critical value is given by

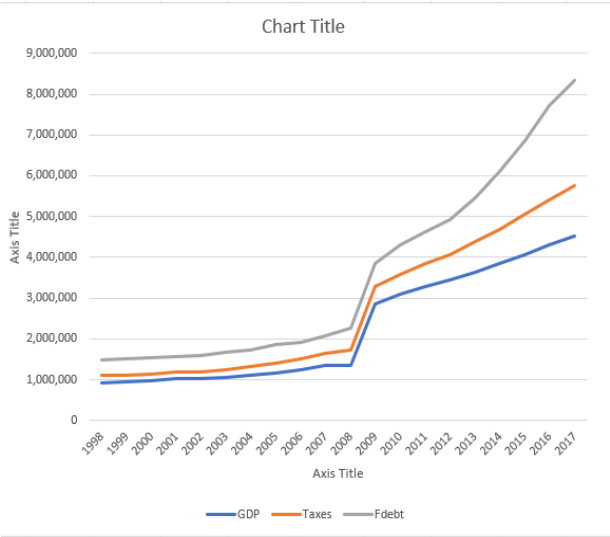
$t_{n-k-1,1-\alpha/2}$ (from t table).

We reject null hypothesis if t_{cal} > critical valueat α level of significance

Serial correlation In time series data, the errors from a regression model are unlikely to be independent. In this situation the error covariance matrix has the structure:

$$\Sigma = \sigma^2 \begin{bmatrix} 1 & e_1 & \cdots & e_{n-1} \\ e_1 & 1 & \vdots & e_{n-2} \\ \vdots & \vdots & \ddots & \vdots \\ e_{n-1} & e_{n-2} & \dots & 1 \end{bmatrix} = \sigma^2 \rho$$

III. Methodology



The graphical presentation

Using the secondary data from the KNBS and KRA from 1998 to 2017 for Gross Domestic Product(GDP),Taxes and Debts were plotted against time in year and the graph on the left was observed.It is observable that the variables are trending.

Variable	Observations	Mean	Median	Standard deviation	Minimum	Maximum	Range
GDP	20	2263	1347	1362	930	4510	3580
Taxes	20	584	457	421	165	1435	1270
Fdebt	20	835	489	666	375	2560	2185

Descriptive statistics were computed and displayed by the **table 1**above and the tax registered the lowest mean during the entire period.

Statisical analysis

The R-Software was deployed and the following computation were obtaited from the same

IV. Result

Correlation analysis is used to examine the extent of the correlation of different pairs of variables under study. It measures correlation between 1 and -1. This further predict presence or absence of multicollinearity which is considered to exist when there is perfect linear relationship between the variable under study. The correlation matrix was used to determine if any pair of independent variables was highly collinear through the magnitude of correlation coefficient of the pairs of variables established. Multicollinearity would be considered present if the correlation coefficient was equal to or above 0.8 as it may lead to spurious regression.

: correlation matrix was

$$\begin{pmatrix} 1.00 & 0.947 \\ 0.947 & 1.00 \end{pmatrix}$$

Using the correlation matrix ,it is concluded that there exists correlation between foreign debt and taxation.

Stationarity Test.A common assumption in many time series techniques is that the data are stationary.A stationary process has the property that the mean, variance and autocorrelation structure do not change over time. Stationarity can be defined in precise mathematical terms, but for our purpose we mean a flat looking series, without trend, constant variance over time, a constant autocorrelation structure over time and no periodic fluctuations (seasonality).Presence of a unit root lead to a spurious regression which renders inferences inapplicable and therefore the model cannot be used in forecasting.

Suppose we test the stationarity of the variables:

H_0: GDP is not stationary

H_1: GDP is stationary

Using the Box test in R for stationarity of the variables under consideration:

Table 2: The result of stationarity test on the variables at α = 5% level of significance

Variable	Computed P-value
GDP	0.0027
Taxes	0.0082
Fdebt	0.0202

Decision: since the p-values of GDP, Taxes and Fdebt are less than α = 0.05 level of significance, we fail to reject the null hypothesis and conclude that the variables are not stationary. But for a times series data, the variables need to be stationary to avoid spurious regression. We therefore difference the variables to ensure stationarity

Table 3:The result of stationarity test on the variables at α = 5% level of significance after differencing.

Variable	Computed P-value
GDPdiff	1.0000
Taxdiff	0.0549
Fdebtdiff	0.0570

From the above table we see that the p-values of the variables are greater than 0.05 level of significance hence we reject the null hypothesis and conclude that the variables a stationary.The fitted model was
GDP= -3.61 + 20.29Taxes – 1.58Fdebt.

Overal view of the model The hypothesis tested was:
H_0: $\beta_1 = \beta_2 = 0$
Against
H_1: *at least one* $\beta_j \neq 0$ *for* $j = 0,1,2$
Since the p-value (0.0324) for Taxes is less than α = 0.05 level of significance, we reject null hypothesis and conclude that Taxes have significant effect on GDP at α = 0.05 level of significance. On the other hand, the p-value of Fdebt which is 0.5761 is greater than 0.05 level of significance implying that Fdebt has no significant effect on GDP.

V. Discussion

This study explored the significance of Taxes and Fdebt as captured by log of GDP. From the results, if all factors were kept constant, GDP as an indicator for economic growth in Kenya would be KSh -3.61 billion. The coefficient of Taxes is positive and significant. This implies that holding Fdebt constant, 1% increase in Taxes results to 20.29% increase in GDP of Kenya. The coefficient of Fdebt is negative and insignificant. This implies that holding Taxes constant, 1% increase in Fdebt results to a 1.58% decrease in GDP of Kenya.

VI. Conclusion

The empirical results showed that the relationship between foreign and economic growth in Kenya is negative. As foreign debt increases, economic growth deteriorates. The impact of foreign debt is negatively felt in Kenya due to the fact that the funds are not always channeled to the real productive sector. There is need for the government to manage foreign debt properly and accelerate economic growth.On the other hand, empirical results showed that the relationship between foreign debt and economic growth in Kenya is positive. As taxes increases, economic growth increases.

References

[1]. Amoating and Amoaku-Adu. (1996)"Economic growth,export and external debt casuality:the case of African countries."
[2]. Adam Smith. (1776 The Wealth of Nations)
[3]. Attiya Waris. (2012). A historical analysis of the kenyan taxation system
[4]. Baum et al. (2013)."debt and growth: new evidence for euro area."
[5]. Calvo. (1998).Balancce of payment crisis in emerging markets:Large capital inflowand sovereign government.
[6]. Cohen. (1993)."Low investment and large LCD debt in 1980's". The American Economic Review,vol. 83No.3.
[7]. Edwards. (1998).Openness productivity and growth. "what do we really know?"; Economic journal,vol.108,pp.383-98
[8]. Elidabawi,Ndulu and Ndung'u. (1997).Debt overhang and Economic Growth in Sub Saharan Africa. External Finance for low income countries IMF institute Washington.DC.ch.5.
[9]. Engen and Skinner. (1992).Fiscal Policy and Economic Growth
[10]. Feldstein. (1994).Taxes leverage and the national return on foreign direct investment.NBER Working Paper No.4689. Cambridge,MA National Bureau of Economic Research,March.
[11]. Henrich. (1966)."The changing level of Government Revenues Shares",General theory of Tax Structure change during Economic Development.
[12]. Keynes. (1936).The General Theory of Employment,Interest and Money
[13]. Lorz and Morss. (1967)."Measuring Tax Effort in Developing Countries". I.M.F Staff Papers

[14]. Mjema. (1996).The Impact of Foreign Debt and Debt Servicing in the Economy of Tanzania.
[15]. Musgrave. (1989).Public Finance in Theory and Practice,5th edition
[16]. Myers. (1977).Determinant of Corporate Borrowing
[17]. Ogbonna and Appah. (2012)."Impact of tax reforms and economic growth of Nigeria;A time series analysis."
[18]. Patenio and Tan-Cruz. (2007)."Economic Growth and External Debt Servicing of the Philippines"
[19]. Pattillo C. (2002).External debt and growth.
[20]. Plasschaert. (1962)."Taxable capacity in Developing Countries".International Bank for Reconstruction and Development Report NO.EC-103.
[21]. Reinhart et al. (2012).(public debt overhang)
[22]. Renelt. (1991).Economic growth:A review of theoritical and empirical literature(vol.678)
[23]. Rusike. (2007)."Trend and Determinants of Inward Foreign Direct Investment to South Africa "
[24]. Smith, A. (1776).An Inquiry into the Nature and Courses of the Wealth of Nations
[25]. Solow. (1956).a contribution to the theory of economic growth
[26]. Wawire. (1992).An empirical Assessment of Tax Performance in Kenya
[27]. Williamson. (1961)."Public Expenditure and Revenue: An International Comparison.

Caleb Okeyo Oyala. "Impact of Increased Taxation and Foreign Borrowing on Kenyan Economic Growth." *IOSR Journal of Mathematics (IOSR-JM)*, 16(1), (2020): pp. 01-05.