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EFFECT OF EXTERNAL DEBT ACCUMULATION ON ECONOMIC GROWTH IN KENYA

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Abstract

Most of the Sub-Saharan African Countries depend on external debt to spur economic growth. This occurs mainly because of insufficiency of internal financing sources for social-economic activities. The purpose of this paper was to establish the external debt accumulation effect on economic growth in Kenya, using ARDL Cointegration model. Specifically, the study was set out to determine the effect of external debt stock overtime on economic growth in Kenya. The explanatory research design was applied in the study and Solow growth theory guided the study. ARDL was aided by e-views statistical software to carry out the analysis of the data for the period of thirty-eight (38) years covering 1980 to 2017. The study findings indicated that external debt accumulation had a negative statistically significant effect on economic growth in Kenya with a stable long-run effect relationship between variables. The study recommended a policy review and guideline in Kenya on the use of externally borrowed funds to ensure they are put into development projects, which enhance economic growth. The study concluded that the findings of the study would be important to the government to understand that if external borrowing can boost economic growth if put into productive projects and vice versa.

Keywords: Economic Growth, External Debt accumulation, ARDL Cointegration

INTRODUCTION

World over, it is the ultimate goal of any government to sustain its economic growth. Any sovereign state requires sufficient capital finance for investment in infrastructure and development of productive capacity. However, due to capital inadequacy from domestic capital sources in developing nations, borrowing has to be done externally in order to finance spending, which leads to an increase in the social welfare and promoting economic growth(Akram, 2011; Mbah, Ummuna & Agu, 2016).

Economic growth is an increase in the productive potential of an economy, which results in the economy's ability to produce an additional amount of goods and services. This, in essence, explains why a given state can grow at a different rate over different times. This growth rate in the economy has an impact on the choice of tax rates and expenditure by governments to ensure smooth growth rates. Growth in the economy is important in that enterprises will expand and translate to aggregate expansion in the output of the whole economy, which is measured as a change in the GDP of a country over a period of one year, with inflation adjustment to give room for comparisons of figures over the years (Palmer et al., 2007). Over time, real growth in the economy leads to improved standards of living, expansion of the current and entering into new markets, which is a very essential sign of business opportunity (Wagner, 2007).

Growth in any economy allows businesses to employ more resources, which would match with the expansion of the production rate, aimed at satisfying an increase in demand (Gorodnichenko, 2010). Nevertheless, cost-cutting measures could be taken to reduce the possibilities of making losses, if an adverse growth is experienced due to consumers' low demand. More pay rise to the citizens of a nation will be realised when it produces more, leading to an increase in marginal propensity to consume, hence goods and services will be demanded in large quantities. This will in turn, lead to the multiplier effect and consequently a greater wealth to the nation and vice versa (Palmer, 2007).

External debt not only provides capital for industrial development but also managerial know-how, technology expertise and entering into international markets for mobilisation of a nation's material and human resources used for growth-related activities (Reinhart *et al*., 2012). Chowdhury (2001) argues that when external debt is borrowed prudently, it is capable of enhancing economic growth, capital accumulation and growth in productivity. However, it could lead to debt over-hang, that is, if it accumulates beyond a certain limit, by reducing economic growth (Baum et al., 2013). Burnside (2000) opines that when external borrowing is done with a view of enhancing investments, it leads to macro-economic stability. Otherwise, an adverse

effect on the investment rate, savings and economic growth, in general, will be felt when there is high external debt stock accumulation.

Since 1951, the issue of external debt accumulation and its servicing has become a matter of great importance and introduced the debt crisis debate. That is, countries were encouraged to borrow externally without taking care of the liability side of the current accounts and due to the concessional nature of external debts, countries tend to prefer this source to internal sources (Were, 2001). Kenya, for example, has been heavily depending on external borrowing for the improvement of its agricultural, industrial and infrastructure bases, with assumption that when conditions improve, there would be an expansion of the economy and which would lead to high foreign exchange to be used to repay the external debts (Were, 2001). According to the World Bank report (2017), external debt ratios in Kenya has been growing drastically, but not commensurate with the growth in the economy. It is in light of the trend at which the external debt stock is increasing, but not directly translated to economic growth in Kenya that motivated the researcher to carry out this study.

Research Objectives and Hypotheses

The objective of the study was to assess the effects of external debt accumulation on economic growth in Kenya.

Based on the objective of the study the following null-hypotheses were tested;

$\mathbf{H_{01}}$: external debt stock has no significant effect on economic growth in Kenya.

$\mathbf{H_{01}}$: there is no presence of a long-run equilibrium relationship between variables.

Value of the study

The study would be helpful to the government of Kenya in that it will give an insight into how external debt accumulation could enhance economic growth if it is put into productive activities of the economy. In addition, this study would be useful to the upcoming researchers, as this will form part of the existing literature in their studies.

LITERATURE REVIEW

Ali and Mustafa (2012) applied the extended production function to study the effect of external debt on economic growth in Pakistan. The study variables were human capital, gross national product, capital formation, labour force and foreign debt to examine the impact of external debt accumulation on economic growth. The study found out that there was a long-run relationship between external debt accumulation and economic growth with evidence of a debt over-hang. On the contrary, Chowdhury (2001) examined the dual relationship between external debt

accumulation and economic growth in two advanced Asian countries and the study concluded that there was a bi-directional relationship between the two variables.

Shah and Pervin (2010) focused on Bangladesh for the period between 1974 to 2010 determine the effect of external debt stock on economic growth in the short-run and long-run using the ordinary least square technique. The study found out that in the short-run, there was no debt over-hang as long as external debt stock did not affect economic growth negatively. However, in the study, the external debt had a positive impact on economic growth. Contrarily, Gani (1999) investigated the effect of external debt on economic growth in South Pacific Island countries and the conclusion of the study was that excessive borrowing is associated with serious hindrances to economic growth.

Elbadawi et al., (1996) examined the linkages existing between external debt, investment and growth in Sub-Saharan African countries using non-linear fixed effect panel estimation. The study covered a cross-section of 99 Sub-Saharan African countries and found out both debt over-hang and crowding-out effect due to excessive debt burdening economic growth in developing countries. The investigation by the United Nations Economic Commission for Africa (1998) as cited by Iyoha (1999) supported the study.

Iyoha (1999) used the simultaneous equation model and simulation method to investigate the interaction of debt and economic growth in Sub-Saharan African countries. The variables of the study were the labour force, gross domestic product, per capita and gross investment. The results of the study revealed a significant debt overhang as well as a crowding-out effect. The argument of the study was that large stocks of debt obligations negatively affect private investment in Sub-Saharan African countries. Moreover, the results indicated that large stocks of debt reduce investments, leading to a lower rate of economic growth.

Frimpong and Oteng-Abayie (2006) based on Ghana, examined the impact of external debt stock on economic growth, covering the period 1970 to 1999. The study used a gross domestic product, domestic investment, external debt stock, debt service, export capacity and foreign direct investment as the study variables. Multivariate cointegration approach was adopted in order to examine whether, under the period of the study, there existed debt over-hang and crowding-out effect in Ghana or not. The study found out a positive effect of external debt inflows on economic growth and both debt over-hang and crowding-out effect.

Sulaiman and Azeez (2012) undertook a study to investigate the effect of external debt stock on economic growth in Nigeria for the period 1970 to 2010. The study used a gross domestic product, external debt to exports ratio, inflation and exchange rate as the study variables. Data were analyzed using ordinary least squares method, and the results indicated that there was a positive effect of external debt stock on economic growth in Nigeria. On the

contrary, in the Nigerian economy, Ogege and Ekpudu (2010) carried out a study to examine the effect of external debt burden on the economy for the period 1970 to 2007. The results were that external debt stock had a negative effect on economic growth in Nigeria, implying that when the debt stocks increase it leads to a decrease in economic growth in Nigeria.

Babu et al., (2014) focused on the East African Countries, examined the effects of external debt on economic growth. Annual data for the period 1970 to 2010 was used in the study and Solow growth model augmented for debt was employed in the analysis of the data. Terms of trade, openness and external debt were used as the study variables. The findings revealed that debt stock had an adverse effect on per capita growth in East African countries.

METHODOLOGY

The study used annual time series data for a thirty-eight period (1980 - 2017) because of the availability of data from Central Bank of Kenya (CBK), World Development Indicators (WDI) and Kenya Nationa Bureau of Statistics (KNBS).

Descriptive and inferential statistics were applied by the researcher in the study. Eviews 10 software was used in the analysis of the data. The study made use of the causal research design which enabled the researcher in the determination of external debt accumulation on economic growth. Unit root tests were carried out using Augmented Dickey Fuller and Pillips Perron tests to test for the stationarity of the data, while Autoregressive Lag (ARDL) approach developed by Pesaran et al., (2001) was utilized to determine the external debt accumulation effect on economic growth. The main reasons for choosing this model is due to the advantages it has compared to the traditional cointegration techniques that are the Engle Granger (1987) and the Johansen and Juselius (1990) in that, pre-testing of the variables is not required, it does well in small samples and also both the short-run and long-run ingredients of the model can be estimated at the same time(Pesaran et al., 2001).

The study modelled economic growth as a function of external debt stock (EXD) to gross national product(GNP) as specified as;

GDP=$\boldsymbol{f}$(EXD/GNP)……..(3.1)

Where:

GDP is a proxy for economic growth, EXD/GNP is external debt stock as a ratio of the gross national product. The explicit model of the study was presented as;

$GDP=\beta_0 + \beta_1 EXD/GNP_t + \mu_t$……*(3.2)*

Where:

GDP is the dependent variable, $\beta_0$is a constant, β_1 is the intercept, μ is the error term and t represents time.

ANALYSIS AND FINDINGS

Descriptive Statistics

In order to visualize the data, descriptive statistics were generated as shown in Table 1.

Table 1: Descriptive statistics Results

Statistic	GDP Growth	External Debt accumulation
Mean	3.873442	3.656069
Median	4.246306	3.652941
Maximum	8.405699	5.090352
Minimum	-0.799494	2.774471
Std. Dev.	2.300130	0.601104
Skewness	-0.263970	0.299093
Kurtosis	2.115011	2.334880
Jarque-Bera	1.681383	1.267000
Probability	0.643141	0.530731
Sum	147.1908	138.9306
Sum Sq. Dev.	195.7522	13.36907
Observations	38	38

Table 1 results show that GDP had a mean of 3.87± 2.3 and EXD/GNP had a mean of 3.66± 0.6. The GDP variables lied between 8.41 and -.79 while EXD/GNP lied between 5.09 and 2.77. The data for both GDP and EXD/GNP depicted a normal distribution as shown by the insignificance of the Jarque-Bera probability, which is both greater than 5 percent significance level (P>0.05) Jarque & Bera (1987). The skewness and kurtosis felt within the accepted level of positive two (+2) and negative two (-2) respectively in both cases.

Correlation Analysis

In order to get a better understanding of the relationship between the study variables, the researcher used correlation analysis as shown in table 2.

Table 2: Correlation Analysis Results

	GDP	External Debt Stock
GDP	1	-0.41245
External Debt stock	-0.41245	1

The correlation analysis results shown in Table 2 indicate that GDP relates negatively with External debt stock as a ratio of GNP. This implies that when external debt stock increases, it leads to a decrease in economic growth.

Data Stationarity Test Results

Presence of unit root is an indication that the mean and variance are not constant over time, which may give rise to spurious regression results (Gujarati, 2004).The Augmented-Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests were applied as shown by table 3 and 4 respectively.

Table 3: ADF Unit Root test results

Variable	ADF	t-statistic	Lag	P-value	Remarks
GDP	3.82	3.54	.57	.0263	ADF>t, P<0.05; stationary 1(*0*)
EXD/GNP	1.98	3.54	.16	.59	ADF<t, P>0.05; nonstationary
EXD/GNP	5.21	3.54	.91	.0001	ADF>t, P<0.05; stationary 1(*1*)

Table 3 shows that GDP was stationary at levels *1(0)*, implying that data has no unit root, hence the null hypothesis was rejected, and the alternative accepted. However, the external debt stock (EXD/GNP) had a unit root at levels, but after first differencing, it became stationary. This means that it is integrated of order one *1 (1).*

Table 4: Phillips Perron Unit Root results

Variable	PP	t-stat	Lag coef.	P-value	Remarks
GDP	3.89	3.54	0.56	0.0224	PP>t, p<0.05; stationary *1*(*0*)
EXD/GNP	2.11	3.54	0.16	0.5245	PP<t, p>0.05; nonstationary
EXD/GNP	5.20	3.54	.91	0.0008	PP>t, p<0.05; stationary *1(1)*

Table 4 presents the PP Tests for unit root and indicated that GDP was stationary at level. This means that the null hypothesis was rejected and the alternative of no unit root presence was accepted. However, the external debt stock as a ratio of GNP was not stationary at level but became stationary after first differencing. Thus, the variables data co-integrates.

Lag Length Selection

Table 5 presents the lag length selection analysis results. An asterisk (*) implies the minimum and appropriately selected lag from each column criterion.

Table 5: Lag Length Selection Results

Endogenous variables: GDP, EXD/GNP, Included observations: 35						
Lag	**LogL**	**LR**	**FPE**	**AIC**	**SC**	**HQ**
0	-108.4932	NA	1.893022	6.313898	6.402775	6.344578
1	-66.14256	77.44119*	0.211723*	4.122432*	4.389063*	4.214473*
2	-64.32450	3.116680	0.240580	4.247114	4.691499	4.400516
3	-59.89395	7.088881	0.236380	4.222511	4.844650	4.437274

From table 5, the results show that the model was estimated at lag 1 as indicated by Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC) and Hannan Quinn (HQ). According to Nkoro & Uko (2016), AIC or SC with the smallest is preferred when choosing the model's lag length. Therefore, this study adopted for AIC criterion as its lag length criterion, due to the advantages for small sample sizes, which was the case with the current study.

Hypothesis Testing Results

The objective of the study was to assess the effects of external debt accumulation on economic growth in Kenya. The study tested the following null-hypotheses;

H_{01}: external debt stock has no significant effect on economic growth in Kenya.

H_{01}: there is no presence of a long-run equilibrium relationship between variables

ARDL Long Run Form and Bounds Test

In order to evaluate the absence of a long-run equilibrium relationship between the dependent and independent variables, the Autoregressive Distributed Lag (ARDL) approach was used. The ARDL long-run form and bounds tests evaluate the presence of a steady-state equilibrium between variables. Table 6 and 7 present the bound test and coefficient long-run results respectively.

Table 6: Bounds Test

Test Statistic	Value	Significance.	I(0)	I(1)
F-statistic	4.960356	10%	3.21	3.73
k	1	5%	3.937	4.523
	37	1%	5.593	6.333

The calculated F–statistics values at 5 and 10 percent levels of significance was found to be 4.96, which is above the critical values (3.21 and 3.73, 3.937 and 4.523) lower and upper bounds respectively. These results suggest that there is a long-run relationship between the dependent and the independent variables.

Table 7: Coefficient Test Results (1, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.597060	2.618249	2.137711	0.0400
GDP(-1)*	-0.617514	0.160390	-3.850081	0.0005
EXD/GNP(-1)	-7.530565	2.758313	-2.730134	0.0196
D(EXD/GNP)	4.698747	3.003057	1.564655	0.1460

The results from table 7 depict that in the long-run, EXD/GNP had a beta coefficient value of (β = -7.5306) and a p-value of 0.0196 (P< 0.05). From these results, the study rejected the null hypothesis and finds that EXD/GNP had a negative and statistically significant impact on economic growth. This implies that when EXD/GNP is increased by 1 unit, it leads to 7.5306 units decrease in economic growth.

Error Correction Model (ECM) Estimator Tests Results

In order to assess the disequilibrium adjustment speed; a short-run relationship was explored, using Error Correction (ECM). ECM explains the speed of adjustment in restoring disequilibrium in the dynamic model, with a negative sign desired. The ECM results estimates are presented in Table 8.

Table 8: Error Correction Model Results ARDL (1, 1)

Variable	Coefficient	Std. Error	t-Statistic	Probability
D(EXD)	-1.890201	1.614428	-1.170818	0.2501
CointEq(-1)*	-0.617514	0.155436	-3.972776	0.0004
R-squared	0.316192			0.019715
Adjusted R-squared	0.296655			2.341547

Table 8, shows that the error correction model had a high speed of adjustment with a negative (-0.617514) value and statistically significant (P = 0.0004). This implies that deviation from the long-run corrects itself in the short-run by approximately 62 percent (62%) within a period of one year.

Diagnostic Test Results

The post-estimation tests, which were carried out in this study, were autocorrelation, heteroscedasticity and stability tests as shown in table 9, 10 and Figure 1 respectively.

Table 9: Autocorrelation test results

2.274138	Prob. F(1,32)	0.1414
2.455002	Prob. Chi-Square(1)	0.1172

Table 9 shows that the results of autocorrelation suggested that the null-hypothesis of no autocorrelation was rejected, which what the model requires. This is because the value of the probability of the chi-square is more than 5 percent level of significance. Therefore, this means that the residuals were not serially correlated. From table 10, it was deduced that the null-hypothesis of homoscedasticity was not rejected because the probability value of the chi-square was more than 5 percent levels of significance. This implies that the residual of the model was homoscedastic.

Table 10: Heteroscedasticity Test Results

F-statistic	0.470499	Prob. F(3,33)	0.7049
Obs*R-squared	1.517673	Prob. Chi-Square(3)	0.6782
Scaled explained SS	1.716975	Prob. Chi-Square(3)	0.6332

Figure 1: Stability Test Results

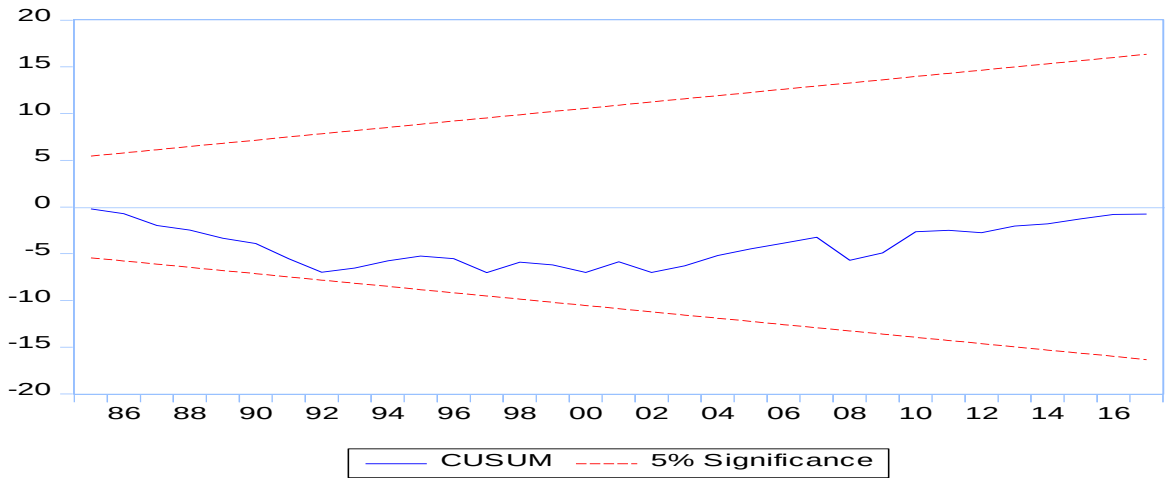

Figure 1 indicates that the model is stable because the blue line lies in between the two red lines.

SUMMARY OF FINDINGS

The study sought to find out the effect of debt accumulation on economic growth in Kenya. It applied the ARDL model developed by Pesaran et al., (2001) using annual time series data for the period 1980 to 2017. The purpose of this model was to find out the long-run equilibrium relationship and assess the short-run adjustment speed to equilibrium between the study variables. Unit root results revealed that GDP was stationary at levels meaning that it had no unit root while EXD/GNP had a unit root, but became stationary after first differencing. The calculated F-statistic was greater than the upper bound critical value revealing that there was a long-run relationship among the study variables as supported by Nayaran (2005). In addition, the long run results revealed that EXD/GNP had a negative and significant effect on economic growth. The error correction value was negative and statistically significant. Moreover, diagnostic test results indicated that the residuals of the model were not serially correlated, they were homoscedastic and that the model was stable at 5 percent level of significance.

CONCLUSIONS

This study attempted to investigate external debt accumulation effect on economic growth in Kenya, which has been an issue of concern to practitioners and scholars of economics who have been coming up with policies to reduce adverse effects of external debt on economic growth. In conclusion, the study revealed that EXD/GNP had a significant negative effect on economic growth. The implication is that when stock is accumulated it has an adverse effect on the economy. Also, concluded that there existed a long-run and short-run relationship among the study variables. This study is in support of the studies by Elbadawi et al., (1996), Ogege, and Ekpudu (2010) while it is contrary to the studies by Sulaiman and Azeez (2012) and Frimpong and Oteng-Abayie (2006).

POLICY RECOMMENDATIONS

Arguing from the point of view of the study findings, the study recommends that policy guidelines should be formulated to ensure that externally borrowed funds are channelled towards development projects, which are geared towards economic growth. Also, there should be a policy to ensure that external debt is not accumulated too much which may lead to inability to pay in the future hence transferring the tax burden to the future generations.

AREA FOR FURTHER RESEARCH

The researcher recommends further research on the effect of external debt accumulation applying other variables, which are not included in this study and apply other analysis tools and

approaches. In addition, a study covering some African COMESA countries can be carried out to find out if it corroborates with the current study.

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