

# LONG RUN EFFECT OF FOREIGN DEBT AND DEBT FORGIVENESS GRANTS ON THE GROSS DOMESTIC PRODUCT OF KENYA

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**Abstract:** This study sought to estimate the long run effect of foreign debt and debt forgiveness grants on gross domestic product of Kenya. The study employed various theoretical models such as growth-cum-debt model, classical, neoclassical and endogenous growth model. Various empirical studies related to the area of study were also reviewed. Secondary time series data covering a period of 27 years from 1990 to 2016 was used as well as employing causal type of research design and a multiple linear regression model to estimate the relationship between variables with the help of EViews statistical software. It was found out that in the long run, there is a significant and positive effect of foreign debt on the gross domestic product of Kenya. Debt forgiveness grants were also found to have a non-significant negative effect on gross domestic product in the long run. Exports were used as a control variable but they were also found to have a positive and significant effect on gross domestic product of Kenya in the Long run. The study recommends that funds put a side to pay back debts should be put into good use so as to have a statistically significant and positive effect of debt forgiveness grants on gross domestic product of Kenya in the long run.

**Keywords:** Gross Domestic Product, Foreign Debt, Debt Forgiveness Grants and Exports.

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## 1. INTRODUCTION

Almost all countries in the world engage in the borrowing of funds so as to meet their financial needs and at the same time close their budget deficits. Domestic resources have proved to be inadequate and devastating in their effects more especially on the investments done by the private sector. According to Fajana (2003), debt is classified into two main categories namely, internal and foreign debt. In most cases, governments use external sources to finance their budget deficits as opposed to domestic sources since the former sources are highly concessional than the latter sources.

Ajisafe and Gidado (2006) admit that sometimes governments may get involved in the act of printing money purposely to evade payment of interest. In this way, governments reduce their interest costs but in the long run this leads to hyperinflation. According to Mutasa (2003), when there is high levels of domestic debt, the private sector is crowded out and the scope of countercyclical fiscal policies are constrained leading to adverse effects and higher volatility on economic performance.

It therefore goes without doubt that external borrowing is advantageous on matters relating to the stimulation of economic growth but the extent of such borrowings is being determined by the application of the already acquired resources. It is a matter of fact that in Kenya the level of capital formation is low, which is as a result of high incidence of poverty and

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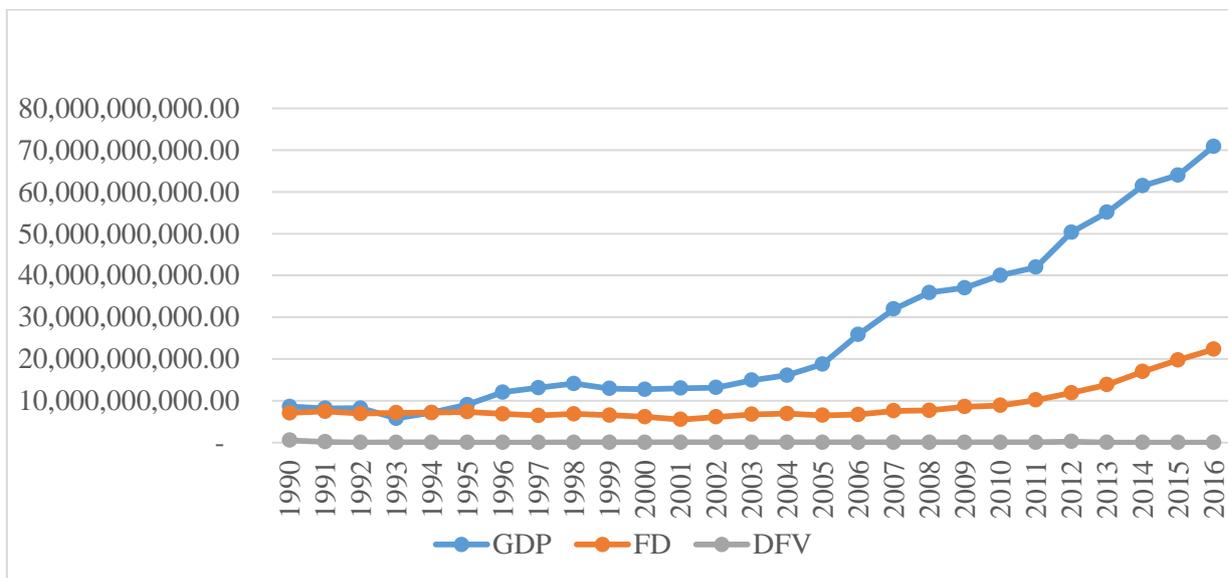
therefore the country does not have many prospects to source for enough funds that can be used for development internally. It is a general expectation that less developed countries, which faces capital scarcity, need to acquire external debt so as to supplement domestic savings (Avramovic, 2010).

According to Cohen (2010), foreign debt would be of great benefit to the borrowing country depending on whether the money that has been borrowed is used for consumption or for investment in viable projects. Early scholars assert that the economy of developing countries will only grow if they borrow reasonable amounts. Such kind of debts will play a very big role to enhance economic growth and even add up to the total available resources within a given period of time

(Ndekwe, 2008). It is desirable to engage in borrowing if only those borrowings are used to finance projects that are viable and able to bring in returns and at the same time smoothening consumption as far as aggregate supply is concerned. In addition to investing in viable projects, debt financed investments also need to be well managed so as to generate returns that exceed the debt servicing cost (Clements, 2008).

In the Sub Saharan Africa, debt crisis falls among the major causes of economic crisis affecting these countries. The external debt burden on these countries is very heavy and this has been compounded with structural weaknesses and massive poverty. This has made the attainment of sustainable and rapid growth difficult for these countries (Were, 2001). It is therefore widely and generally recommended that these countries in Sub Saharan Africa that are heavily-indebted be given debt relief so as to enhance their fight against poverty and in the long run enable them to achieve good economic performance (IMF, 2001a). To be eligible for foreign debt forgiveness, the country must show good track record of reforms, formulation and implementation of sound policies as well as having the ability of translating the resources available into projects that can benefit the poor (IMF, 2001a and IMF, 2001b).

In Kenya, gross domestic product, foreign debt and foreign debt forgiveness grant relate in the following manner as presented in Figure 1.



**Figure 1: Gross domestic debt, foreign debt and debt forgiveness grants**

Source: World Bank (2018)

Figure 1 presents the trend of gross domestic product, foreign debt and debt forgiveness grants from 1990 to 2016. It is evident that gross domestic product increases from 8,572,359,162.86 US dollars in 1990 to 12,705,357,103.01 US dollars in 2000. There is a further increase to 70,875,289,605.38 US dollars in 2016. This increase is attributed to the fact that Kenya is the Eastern and Central Africa’s hub more especially on communication, transportation and financial services. Kenya is also an investment friendly country as it has enacted several policies and regulation that favor both local and foreign investment. In the respective years foreign debt decreases from 7,055,159,000.00 US dollars in 1990 to 6,148,248,000.00 US dollars in 2000 and it later increases to 22,324,987,000.00 US dollars in 2016. On the same note

debt forgiveness grants decreases from 525,300,000.00 US dollars in 1999 to 10,190,000.00 US dollars in 2000 and later decreases to 3,260,000.00 US dollars in 2016.

Accumulation of foreign debt attracts interest which together with the principal amount need to be paid back in the future. If the borrowed amount are not well invested, economic growth will be adversely affected and therefore cause a decrease in economic growth. It is also evident that gross domestic product increases as foreign debt grants decreases. Decrease in foreign debt grants means that the country is going to spend more in paying back the debt thus remaining with little to be used for development purposes.

Gross domestic product can therefore increase on condition that foreign debt increases and that the money is well invested in viable projects as foreign debt forgiveness grants increases. This is not the situation in Kenya since foreign debt forgiveness grants decreases as foreign debt and gross domestic product increases. Even though the gross domestic product is a very sensitive macroeconomic variable, factors influencing its growth has not been fully exhausted and empirically tested more especially when considering foreign debt and debt forgiveness grants in Kenya. This study therefore intended to fill this gap and in addition to the said variables, exports was used as a control variable.

## 2. LITERATURES

### 2.1 Theoretical Review

From the Neo Classical point of view, The Neoclassical growth theory asserts that debt has a direct effect on economic growth. This is because the amount borrowed, if used optimally, is anticipated to increase investment. As long as countries use the borrowed funds for productive investment and do not suffer from macroeconomic instability, policies that distort economic incentives or sizable adverse shocks, growth should increase and allow for timely debt repayment. Public debt can also act as an implicit tax on the resources generated by a country and create a burden on future generations which come in the form of a reduced flow of income from a lower stock of private capital.

The debt overhang theory mainly focuses on the fact that total amount of debt exceeds the country's future repayment ability of the debt. This implies that part of the returns gained from Domestic market investment is taken by the foreign creditor's thus discouraging domestic Investments (claessens et al 1996). In such a situation the indebted country is left with a small Proportion increased output and exports because part of the proceeds is used to service external debt. The theory postulates that reducing debt obligation lead to a rise in investment and repayment Capacity. When this occurs, the outstanding debt is more likely to be repaid therefore reducing Chances of debt default. Similarly when the effect is strong, the indebted country is said to be on the wrong side of the debt Laffer curve. Here debt Laffer explains the relationship  $e$  between the level of debt and the country's repayment ability which implies that there is a maximum at which accumulation of debt spurs growth (Elbadawi *et al.* 1996). Therefore the debt overhang hypothesis predicts that if there is likelihood that in future, debt will be larger than the country's Repayment ability, then the cost of servicing the debt will depress further domestic and foreign investment

According to Diamond (1965), if economic growth rate is higher than interest rate, over-accumulation of capital and public debt increase will take place to improve welfare of future and current generations (Saint-Paul, 1992). The model argues that debt reduces household savings and consumption because taxes make payments for accrued interest on debt. Reduced savings decreases capital stock. Debt is believed to mature at the end of one period and in each period refloated paying for current costs on interest. External debt impacts economies by reducing utility caused by increase in taxes needed to finance interest expenses not paid by increased debt. Domestic debt has similar effects and an additional one of capital stock reduction due to physical capital substitution with debt in the portfolios of wealth owners causing output to decline.

By considering the growth-cum-debt model, a country is able to service its debt on condition that the debt leads to more growth. This imply that a country will reach a point of borrowing if only the borrowed funds helps it to improve and sustain its economy. Before they decide to borrow externally, such borrowings must be well analyzed to see that their affect is positive on economic growth. The amount of money does not quantify the value of debt but on the effects the debt will have on the economy of the country. The growth-cum-debt models consider debt capacity in terms of the benefits and costs of borrowing in the process of economic growth.

The endogenous growth model provides a link between public policies and long run growth by assuming aggregate production functions are exhibiting non decreasing returns to scale (Renelt, 1992). It states that economic growth and investment primarily depends on endogenous or within factors and not on external factors. Investment in human capital and labour are significant contributors to economic growth. Long run economic growth rate of a country is assumed to depend on government policy measures.

The study borrowed the initial model from Akram (2011) which assumes a Cobb-Douglas production function with non-decreasing returns to scale. Debt burden was introduced into the production function as per (Akram, 2011). This is because debt burden has important implications for the capital and labour productivity. Nations that carries a significant debt burden requires spending portion of its resources to service its debt liabilities having significant implications on decisions regarding the employment of labour and capital in the production function. Therefore, a foreign debt, debt forgiveness and exports-inclusive production function can be written in the following form:

$$Y = A(FD, DFG, EX) \dots\dots\dots 1$$

Where FD, DFG, EX and A are the measure of GDP, foreign debt, debt forgiveness, exports and technology level respectively. This makes standard assumption in equation that input elasticity's of output are constant and technical change is neutral.

## 2.2 Empirical Review

Were (2001) explains the debt accumulation and its implications for growth and poverty in Pakistan. The study shows that debt accumulation (domestic and external) and debt servicing affects the poor adversely. The findings of the study illustrate that even though debt burden as a percentage of GDP of Pakistan exceeds that of all South Asian countries but it is not still so high as to go for debt write off. This means that Pakistan has the capacity to service the debt.

Siddiqui and Malik (2002) examine the impact of rising external debt burden on economic growth of South Asian countries by considering three different critical ratios which could help in determining debt burden of the countries, these ratios were debt-export ratio, debt-output ratio and debt servicing to export or output. The debt situation was found to have changed and was becoming critical for some countries and as a result it could generate negative impact on economic growth.

Makau (2008) established econometric findings on external public debt servicing and economic growth in Kenya. The study used a single growth model estimated using Ordinary Least Squares(OLS) method with annual time series data covering period of 1970 – 2003 .The results of the study indicated that external debt is mainly official of which a bigger proportion is from multilateral source. Accumulation of debt has been rising over the years with debt indicators increasing in the early 1990s.By using Co integration and error correction model; the study established both the short run and long run equilibrium. The estimated model was single regression equation with the growth rate of Gross Domestic Product as dependent variable and explanatory variables were savings as a ratio of GDP, stock of external debt as a ratio of GDP and yearly growth rate of labor force. The empirical findings in the short run estimated model indicated that the coefficients of external debt to GDP, Savings to GDP and debt service to GDP had correct sign and significant while the coefficients of interest to GDP and growth rate in human resource were insignificant.

Kibui (2009) analyzed the impact of external debt on public investment and economic growth in Kenya (1970-2007) .The findings of the study posits that the key debt indicators have been above the critical level since 1982.The empirical findings of the time series data analysis for the period 1970 -2007 indicated that the debt service ratio is significantly explaining growth of GDP in Kenya. There exists a negative relationship on stock of external debt expressed as a percentage of GDP and debt service ratios. There was realization that debt relief acted as a spur to investment recovery and growth in Kenya .The government should embark on the poverty reduction strategy focusing on the growth enhancing policies that will lead to upward move in exports earning ,provision of a stable environment for investments and implement measures that will increase investors positive belief on the local investments .The study focused on external debt on public investments and economic growth and ignored the domestic debt .

Akram (2011) used Autoregressive Distributed Lag (ARDL) modeling to assess the impact of public debt on the economic growth in Pakistan. The study found that there is debt overhang in Pakistan and that per Capita GDP and investments had a negative and significant relationship with public external debt. However, the crowding out effect of

external debt could not be confirmed as the relationships between investment and per capita GDP to debt servicing was found to be insignificant. The domestic public debt was found to have a crowding out effect on private investments and a negative relationship with per Capita GDP.

Maji, Okon, and Denies (2013) used the error correction model to investigate the relative potency of external and domestic debt on the economic performance in Nigeria. Economic growth is determined by external debt, domestic debt, gross domestic investment, exchange rates and inflation while gross domestic investment is influenced by external debt, domestic debt and interest rates. Both domestic and external debt were found to have a positive effect on economic performance but while external debt had a significant impact, domestic debt had an insignificant impact. The impact of external debt on GDI was negative and insignificant while the impact of domestic debt on GDI was positive and significant. This has the implication that external debt and not domestic debt has a crowding out effect on the level of investments in Nigeria.

### 3. METHODOLOGY

Causal type of research design was used in this study since the cause and effect variables are easily identified with this type of a research design. Foreign debt, foreign debt forgiveness grants and exports were used as the independent variables with gross domestic product as the dependent variable. Ordinary least squares method was used in estimating the model since all ordinary least squares assumptions were certified. Secondary time series data was used covering a period of 27 years from 1990 to 2016.

World Bank formed the source of data collection from the already published documents on their website. Various tests were carried out before running a regression analysis. Tests such as Augmented Dickey-Fuller (ADF) tests which was based on Schwarz Info Criterion (SIC) to test series stability, Descriptive statistics to test variable volatility, Wald test to test independent variables' significance as a group, normality test with the help of Jarque- Bera statistic, Breusch-Pagan-Godfrey test to test for heteroscedasticity, Ramsey Reset Test to test for specification errors, Chow Forecast Test to test coefficients' structural change, and Recursive Coefficient Estimates for variable stability test were carried out.

Jarque- Bera statistic was used because it is simple and is still applicable when time series data is used. Breusch- Godfrey test was used because it is applicable when a lagged dependent variable is used as an explanatory variable and it takes into account higher order of autocorrelation. Ramsey Reset test was also employed because it does not require us to know whether the independent variables are the cause of the problem.

Long run model specification can be specified as:

$$GDP_t = \alpha_0 + \alpha_1 FD_t + \alpha_2 DFG_t + \alpha_3 EX_t + \varepsilon_t \quad \varepsilon_t \sim N(0, \sigma^2_\varepsilon) \dots \dots \dots 2$$

Where;  $GDP_t$  is the current gross domestic product,  $FD_t$  is the current foreign debt,  $DFG_t$  is the debt forgiveness grant and  $EX_t$  is the current total exports.  $\alpha_0$  is the constant whereas  $\alpha_1$ ,  $\alpha_2$  and  $\alpha_3$  are the coefficients of foreign debt, debt forgiveness grant and exports respectively.  $\varepsilon_t$  is the error term which is iid, that is, normally distributed to zero mean and constant variance.

The constant is the y-intercept which gives the value of gross domestic product in case all other independent variables equal to zero. These coefficients measure the change in gross domestic product when a given independent variable changes by a unit as others remain constant. For instance  $\alpha_1$  measures the change in gross domestic product in the long run when foreign debt changes by a unit given that debt forgiveness grant and exports remain constant.

The study targeted the Kenyan population from 1990 to 2016 since this is the period the data used in the study covered and this period represent various economic times in the history of Kenya. Ordinary Least Squares method was used to estimate the model since all OLS assumptions were satisfied. World Bank was the main source of data where the secondary data sheet was used to collect data from the World Bank website. The data was tested and modified to suit the model which was used in the study before being analyzed using the eviews statistical software.

### 4. PRESENTATION AND ANALYSIS OF RESULTS

This section presents the findings of the study whose objective was to examine the long run effect of foreign debt and debt forgiveness on the economic growth of Kenya. Exports growth rate was used as a control variable. Also captured in this section are various diagnostic tests.

**Descriptive statistics**
**Table 1: Descriptive Statistics Summary**

|             | GDP      | FD       | DFG      | EX       |
|-------------|----------|----------|----------|----------|
| Mean        | 2.60E+10 | 8.95E+09 | 42763333 | 5.48E+09 |
| Median      | 1.49E+10 | 7.11E+09 | 10880000 | 3.59E+09 |
| Maximum     | 7.09E+10 | 2.23E+10 | 5.25E+08 | 1.12E+10 |
| Minimum     | 5.75E+09 | 5.50E+09 | 370000.0 | 2.16E+09 |
| Std. Dev    | 1.99E+10 | 4.33E+09 | 1.07E+08 | 3.31E+09 |
| Jarque-Bera | 4.020592 | 26.54314 | 269.7799 | 3.308252 |
| Probability | 0.133949 | 0.000002 | 0.000000 | 0.191259 |
| Sum         | 7.02E+11 | 2.42E+11 | 1.15E+09 | 1.48E+11 |
| Sum Sq Dev  | 1.03E+22 | 4.87E+20 | 3.00E+17 | 2.84E+20 |
| Obs         | 27       | 27       | 27       | 27       |

Table 1 gives various descriptive statistics of variables that were used in the study. It includes the mean, median, maximum value, minimum value, standard deviation, Jarque-Bera test, probability and sum square deviation of the study variables. The total number of observations that were used was 27. The average gross domestic product as given in Table 1 is  $2.60 \times 10^{10}$  US dollars while that of foreign debt and debt forgiveness grants is  $8.95 \times 10^9$  US dollars and 42763333 US dollars respectively. The maximum value for the gross domestic product is  $7.09 \times 10^{10}$  US dollars and minimum value is  $5.75 \times 10^9$  US dollars with a standard deviation and median of  $1.99 \times 10^{10}$  US dollars and  $1.55 \times 10^{10}$  US dollars respectively. The respective values for foreign debt, debt forgiveness grants and exports are as shown in Table 1.

**Granger Causality Tests**

Granger causality test shows the direction of the relationship that exists between gross domestic product, foreign debt, debt forgiveness grants and exports. The test was therefore run using eviews statistical software to test the null hypothesis that one of the variable does not granger cause another variable. This hypothesis is rejected if the P-value for the effect of one of the variables on any other variable is not more than 0.05 units. As presented in Table 2, the null hypotheses that one of the said variables granger causes not another variable cannot be rejected since the P-value is more than 5 percent.

**Table 2: Granger Causality Tests Summary**

| Null Hypothesis:           | Obs | F-Statistic | Prob.  |
|----------------------------|-----|-------------|--------|
| FD Granger causes not GDP  | 25  | 0.04293     | 0.9581 |
| GDP Granger causes not FD  |     | 5.56049     | 0.0120 |
| DFG Granger causes not GDP | 25  | 0.10926     | 0.8970 |
| GDP Granger causes not DFG |     | 0.61697     | 0.5495 |
| EX Granger causes not GDP  | 25  | 2.98548     | 0.0734 |
| GDP Granger causes not EX  |     | 2.33562     | 0.1226 |
| DFG Granger causes not FD  | 25  | 0.18809     | 0.8300 |
| FD Granger causes not DFG  |     | 0.77172     | 0.4755 |
| EX Granger causes not FD   | 25  | 6.46025     | 0.0068 |
| FD Granger causes not EX   |     | 4.56271     | 0.0233 |
| EX Granger causes not DFG  | 25  | 1.19526     | 0.3233 |
| DFG Granger causes not EX  |     | 1.60143     | 0.2264 |

**Correlation Tests**

Gross domestic product was used as the dependent variable in this study as foreign debt, debt forgiveness grants and exports were used as the independent variables. The variables were subjected to correlation test to find out whether these variables correlate with each other.

**Table 3: Correlation Matrix**

|     | GDP       | FD        | DFG       | EX        |
|-----|-----------|-----------|-----------|-----------|
| GDP | 1.000000  | 0.891947  | -0.130981 | 0.965200  |
| FD  | 0.891947  | 1.000000  | -0.070523 | 0.774081  |
| DFG | -0.130981 | -0.070523 | 1.000000  | -0.113247 |
| EX  | 0.965200  | 0.774081  | -0.113247 | 1.000000  |

Table 3 reveals that there is no perfect correlation between any of the two variables. This makes it possible to carry out a regression using eviews software. The relationship between debt forgiveness grants and gross domestic product, foreign debt and exports is negative but for the rest of the variables it is positive.

**Wald Test**

Wald test is carried out to show the significance of the independent variables which were used in the study. The parameters of the variables that are significant are not zero and therefore they need to be included in the model.

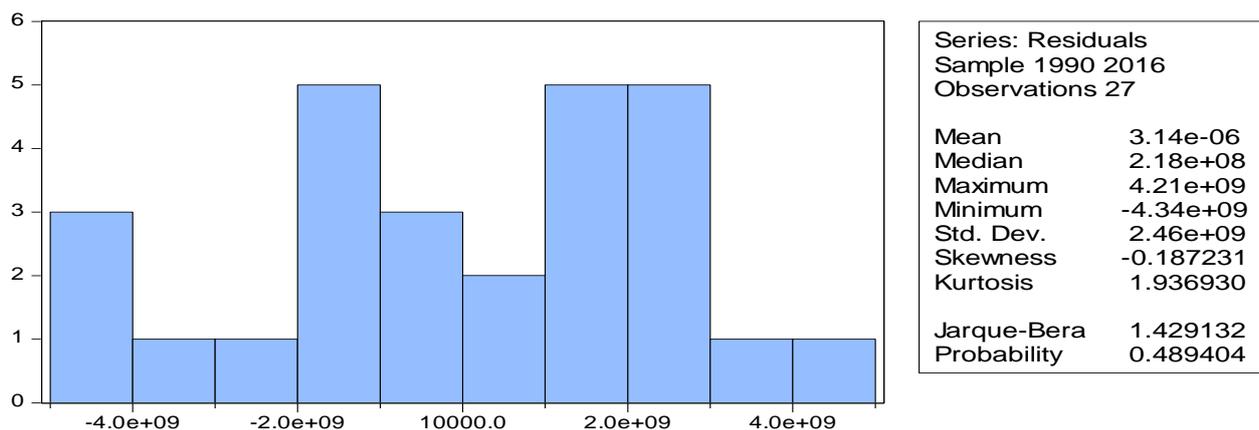
**Table 4: Wald Test Summary**

| Test Statistic | Value    | df      | Probability |
|----------------|----------|---------|-------------|
| F-statistic    | 41.71017 | (2, 23) | 0.0000      |
| Chi-square     | 83.42035 | 2       | 0.0000      |

It is evident from Table 4 that the F-statistic probability and the Chi-square probability are all less than one percent. This is an indication that all the independent variables that were used in the study are statistically significant and therefore were all included in the study model.

**Normality tests**

Normality test is done to show how the residuals are distributed. Normal distribution of the residuals is evident when the histogram is bell shaped and the p-value not more than 0.05.



**Figure 2: Bell-Shaped Histogram**

The p-value is not less than 0.05 and the histogram is not such bell shaped. This is an indication that the residuals are not normally distributed but this never affected the regression which was conducted.

**Heteroscedasticity: Breusch-Pagan-Godfrey Test.**

Heteroscedasticity was tested using Breusch-Pagan-Godfrey test. This test intended to find out whether the variance of the error term was constant. In case the p-value is more than 5 percent, then there is no heteroscedasticity.

**Table 5: Heteroscedasticity Test Summary**

|                     |          |                     |        |
|---------------------|----------|---------------------|--------|
| F-statistic         | 0.717632 | Prob. F(3,23)       | 0.5516 |
| Obs*R-squared       | 2.310993 | Prob. Chi-Square(3) | 0.5104 |
| Scaled explained SS | 0.785604 | Prob. Chi-Square(3) | 0.8529 |

It is evident from Table 5 that the p-value is more than 5 percent and therefore there is no heteroscedasticity.

**Chow forecast test**

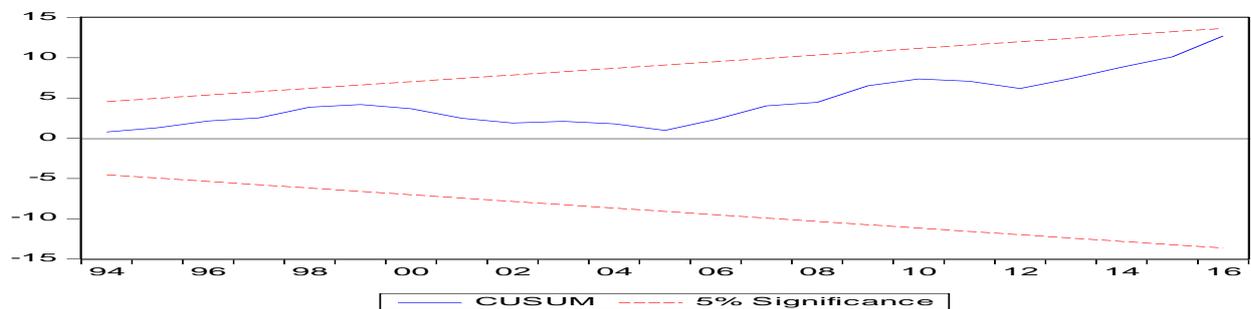
The multiple regression model was used in this study and therefore this test was carried out to test and assesses the coefficient stability in the model. Since data is split into break points, in this study the break point was introduced in the year 2000. In other words the test is carried so as to test whether there exist structural changes in the model. If p-value is not more than 5 percent, the null hypothesis that there is no structural change is not accepted but is not rejected in case it is more than 5 percent.

**Table 6: Chow Forecast Test Summary**

|                  | Value    | df      | Probability |
|------------------|----------|---------|-------------|
| F-statistic      | 2.479637 | (17, 6) | 0.1333      |
| Likelihood ratio | 56.23131 | 17      | 0.0000      |

Table 6 reveals that the p-value is more than 5 percent and therefore there is no structural change in the model.

**Recursive coefficient estimates test**



**Figure 3: Stability of the model variables.**

Recursive coefficient estimate test is used to test whether the variables used in the model are stable. The variables are said to be stable if the blue line falls between the two red lines. Figure 3 shows that the variables are stable since the blue line lies between the two red lines.

**Stationarity Tests**

Schwarz Info Criterion was used in line with the Augmented Dickey-Fuller test to test for the stationarity of the variables. Unit root tests were carried out and it was found out that all variables had a unit root with a p-value of less than 0.05 and t-statistic of more than two in absolute terms. All variables were stationary at level as shown in Table 7.

**Table 7: Stationarity Test Summary**

| Variable | t-statistic | Probability |
|----------|-------------|-------------|
| GDP      | 2.9144      | 0.0093      |
| FD       | 2.5602      | 0.0172      |
| DFG      | -4.7622     | 0.0001      |
| EX       | -4.3427     | 0.0002      |

### Multiple Regression Results

Table 8 presents the multiple regression results as given after running a multiple regression model using eviews statistical software. The main objectives of the study was to find out the long run effect of foreign debt and debt forgiveness grants on the gross domestic product of Kenya. The objectives of the study were therefore realized.

**Table 8: Multiple Regression Results Summary**

| Variable | Coefficient            | Standard Error        | t-statistic | Probability |
|----------|------------------------|-----------------------|-------------|-------------|
| FD       | 1.668239               | 0.187472              | 8.898585    | 0.0000      |
| DFG      | -5.236403              | 4.811361              | -1.088341   | 0.2877      |
| EX       | 4.103230               | 0.246280              | 16.66082    | 0.0000      |
| Constant | -1.12*10 <sup>10</sup> | 1.21*10 <sup>09</sup> | -9.243400   | 0.0000      |

The coefficients of the independent variables that were used in the study are as presented in Table 8. Gross domestic product was used as a dependent variable as foreign debt, debt forgiveness grants and exports were being used as independent variables. It is evident that foreign debt and exports have a p-value less than 0.05 and t-statistic of more than 2 in absolute terms. Their effect on gross domestic product is therefore significant. The constant also have a p-value of less than 0.05 and t-statistic of more than 2 in absolute terms and therefore having a significant effect on gross domestic product. On the other hand the effect of debt forgiveness grants on gross domestic product is not significant since the p-value is more than 0.05 and t-statistic is less than 2 in absolute terms.

When foreign debt increases by a unit, gross domestic product increases by 1.668239 units given that all other variables are kept constant. Also when debt forgiveness grant increase by one unit, gross domestic product decreases by 5.236403 units on condition that all other variables remain

constant. On the other hand gross domestic product increase by 4.303230 units when exports increase by unit *ceteris paribus*. Gross domestic product equals to -1.12\*10<sup>10</sup> units in case foreign debt, foreign debt forgiveness and exports equals to zero. It is also worth noting that 98.62 percent of the changes in the independent variables (foreign debt, foreign debt forgiveness and exports) is explained by the dependent variable (gross domestic product) since adjusted r-squared is 0.986252.

### 5. SUMMARY, CONCLUSION AND POLICY IMPLICATIONS

This study examined the long run effect of foreign debt and foreign debt forgiveness grants on gross domestic product of Kenya. Exports was also used but as a control variable. To realize the objectives various theories such as growth-cum-debt model, classical, neoclassical and endogenous growth model were used with various empirical studies that were reviewed. To confirm the suitability of used data, various diagnostic tests were carried out such as descriptive statistics, granger causality tests, correlation tests, wald test, normality tests, heteroscedasticity test, chow forecast test, recursive coefficient estimates test and stationarity tests. From the results the variables were found to be stable, stationary, homoscedastic, not perfectly correlated and evenly distributed. The variables were therefore viable for regression analysis.

It is evident from the analysis that the effect of foreign debt on gross domestic product is significant and positive. This means that money borrowed from outside countries is well invested in viable projects with good returns that are in excess of the principal amount and the interest to be paid back. On the other hand debt forgiveness grants have a negative and non-significant effect on gross domestic product. This implies that the money which otherwise will have serviced the loan are not well invested in viable projects so as to increase the gross domestic product of the country. Exports which was used as a control variable was found to have a positive and significant effect on gross domestic product. Returns from exports are well invested which translates to increase in gross domestic product.

It is therefore recommended that for Kenya to improve its gross domestic product in the long run, it has to ensure that debt forgiveness grants are put into good use so as to yield returns that will translate to increase in gross domestic product. Government authorities should not take as an opportunity to embezzle finds which otherwise will have been paid but now has been given as a debt forgiveness grant.

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The study also recommends that government authorities need to put more mechanisms to ensure that money borrowed is put into better use so as to increase its positive effect on the gross domestic product. In case of any wastage, measures should be put in place like creating a watch dog section to monitor the use of those funds.

Another recommendation is that the government need to create more export processing zones so as to increase exports since exports have been found to increase gross domestic product of Kenya. Exports earn foreign currency which is used to finance foreign owned projects.

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**APPENDICES - A**
**Appendix 1: Variables Data**

| YEAR | GDP               | FD                | DFV            | EX                |
|------|-------------------|-------------------|----------------|-------------------|
| 1990 | 8,572,359,162.86  | 7,055,159,000.00  | 525,300,000.00 | 2,202,462,461.61  |
| 1991 | 8,151,479,004.21  | 7,453,506,000.00  | 154,970,000.00 | 2,204,292,981.29  |
| 1992 | 8,209,129,171.74  | 6,898,202,000.00  | 5,700,000.00   | 2,155,748,038.29  |
| 1993 | 5,751,789,915.05  | 7,111,502,000.00  | 10,880,000.00  | 2,237,655,076.70  |
| 1994 | 7,148,145,375.79  | 7,124,411,000.00  | 14,020,000.00  | 2,647,693,121.93  |
| 1995 | 9,046,326,059.99  | 7,309,191,000.00  | 6,390,000.00   | 2,948,351,560.77  |
| 1996 | 12,045,858,436.24 | 6,813,730,000.00  | 7,310,000.00   | 3,035,628,835.91  |
| 1997 | 13,115,773,737.57 | 6,465,016,000.00  | 370,000.00     | 2,975,495,234.27  |
| 1998 | 14,093,998,843.73 | 6,824,530,000.00  | 11,650,000.00  | 2,842,655,387.82  |
| 1999 | 12,896,013,576.73 | 6,526,077,000.00  | 14,530,000.00  | 2,686,592,359.60  |
| 2000 | 12,705,357,103.01 | 6,148,248,000.00  | 10,190,000.00  | 2,742,778,003.43  |
| 2001 | 12,986,007,425.88 | 5,496,282,000.00  | 10,880,000.00  | 2,977,896,209.54  |
| 2002 | 13,147,743,910.72 | 6,097,000,000.00  | 10,490,000.00  | 3,273,521,678.34  |
| 2003 | 14,904,517,649.85 | 6,716,482,000.00  | 11,710,000.00  | 3,590,023,638.48  |
| 2004 | 16,095,337,093.84 | 6,916,407,000.00  | 23,550,000.00  | 4,283,010,819.24  |
| 2005 | 18,737,897,744.79 | 6,486,772,000.00  | 19,300,000.00  | 5,341,992,929.57  |
| 2006 | 25,825,524,820.81 | 6,681,910,000.00  | 17,250,000.00  | 5,935,981,292.86  |
| 2007 | 31,958,195,182.24 | 7,538,434,000.00  | 11,220,000.00  | 7,004,914,019.51  |
| 2008 | 35,895,153,327.85 | 7,659,361,000.00  | 23,780,000.00  | 8,138,887,724.38  |
| 2009 | 37,021,512,048.82 | 8,549,248,000.00  | 9,100,000.00   | 7,416,382,252.56  |
| 2010 | 40,000,088,346.80 | 8,847,568,000.00  | 7,810,000.00   | 8,262,811,548.69  |
| 2011 | 41,954,942,416.91 | 10,162,730,000.00 | 12,590,000.00  | 9,072,837,988.17  |
| 2012 | 50,334,699,324.26 | 11,893,745,000.00 | 214,240,000.00 | 11,205,421,267.82 |
| 2013 | 55,096,730,083.32 | 13,836,037,000.00 | 6,750,000.00   | 10,978,237,363.12 |
| 2014 | 61,448,046,801.72 | 16,969,376,000.00 | 6,330,000.00   | 11,243,137,398.75 |
| 2015 | 64,007,293,814.88 | 19,764,038,000.00 | 5,040,000.00   | 10,620,373,945.81 |
| 2016 | 70,875,289,605.38 | 22,324,987,000.00 | 3,260,000.00   | 9,902,141,597.94  |

Source: World Bank (2018)