

Public Debt and It's Implication on Kenya's Future Economic Growth

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Abstract: An upsurge of Kenya's public debt has elicited public debate on whether these crises could affect the future generation. Thus, the study adopted VAR model using data from 1980 to 2019 to investigate the effect of public debt on the future generation. To do this, the study utilized the historical data for GDP (dependent) and Public debt (independent variable) to estimate GDP for the years 2020, 2021, and 2022. Results reveal that public debt could slow down Kenya's economic growth for the next three years. It was recommended that the country need debt restructuring to free up some financial resources and enhance investment in productive sectors as a mitigation measure.

Key Words: Public Debt, VAR, GDP, External Debt, Internal Debt.

I. INTRODUCTION

While borrowing is normal, poor debt management can plunge the economy into crisis. William, Davis, and Kopf (1960) in their seminal paper titled, "*The Public Debt: A Burden on Future Generations?*" cite that the usual economic theory textbooks hold that the real burden of the public investments financed by private entities cannot be shifted to the next generation because, expenditure by the government must drain real resources from the community at the time when the project is being carried out with an assumption of full employment regardless of the source of financing. This argument resonates well with the definition of a real burden as the amount of consumption by private individuals given up by the society at the point of spending the borrowed money (William, Davis, & Kopf, 1960). In this view, the cost of public project must be borne by the present generation when borrowing happens. However, real burden has also been described as the total consumption of private goods given up during life-time of the generation as a consequence of public borrowing and attendant public spending. This captures the benefits that accrue from public spending, and refers to "gross burden," meaning that both the current and the next generation bears debt burden.

The aim of borrowing is to channel resources to productive use in order to transform lives of the citizens through improved living standards (KENDRED, 2009). However, sometimes government use borrowed resources to finance recurrent expenditures as opposed to investment and production. High debt ratio to an economy implies that most of the revenues collected are channeled to payment of interest accruing from the public debt. This therefore, reduces the resources available for public investments ((El-Mahdy and

Torayeh, 2009). As at the end of December, 2019, Kenya's debt to Gross Domestic Product (GDP) stood at 59.8 percent (Central Bank of Kenya, 2020). For sustainable economic growth and development, this high GDP ratio must be accompanied by high economic growth rate to guarantee servicing of debts which is not the case for Kenya.

History of the current debt crises in Kenya and many developing countries across the globe is traced back to the oil price shocks of the 1970s (1973 and 1979). The result was huge deficits in the current accounts of most developing countries which did not produce oil. To address the deficits, developing countries had no option but to borrow. The 1973 oil price hike also resulted in huge surpluses in the international commercial banks which enabled them to lend to the developing countries at a much lower interest rate (Were, 2001). Nevertheless, the financial crisis of 1982 which resulted from the collapse of oil prices and a sharp increase in the level of interest rates hampered credit availability. As a result, many developing countries were unable to meet their debt obligations. In turn, the international commercial banks were reluctant to give out loans and instead, devised strategies to collect debts which were due for repayment. This implied that developing countries serviced their debts by increasing exports and minimizing imports.

Many countries had to apply austerity measures to reduce their spending. The World Bank and the International Monetary Fund (IMF), recommended Structural adjustment Programmes (SAPs) as a way of countering these challenges mainly brought by the debt crisis. The aim was to restore stability and spur economic growth in the medium and long-run. Nevertheless, the SAPs had opposite effects (Iyoha, 1999). They led to a decline in incomes and living standards, increase in poverty, and unemployment in many countries in Africa. This was mainly attributed to currency devaluation, price deflation, and major components of the SAPs which in turn led to a decrease in GDP.

In 1980s and earlier years, Kenya was among economies receiving financial assistance in Africa (Putunoi & Mutuko, 2013). This was majorly to expand its infrastructure and to incorporate rural economy into import substitution strategies. However, in early 1990's, the country witnessed a steady reduction in the amount of aid coming from the World Bank and IMF. This was attributed to poor governance and mismanagement of public resources and macroeconomics. This led to financial crises that later turned Kenya into a

highly indebted country. The situation was later worsened by the Goldenberg scandal where millions of Kenyan shillings were stolen leading to a steady decline in donor inflows.

Thus, the Kenyan government started borrowing to finance budgetary deficits. Initially, occasional debt rescheduling and expensive domestic borrowing worked. However, Kenya's debt burden would later worsen. For instance, as of December 2008, Kenya's public debt stood at Ksh 867 billion with Ksh 413.5 billion in external debts, and by December 2018, external debts stood at Kshs.3.568 trillion while the domestic debt was Kshs. 2.856 trillion (KNBS, 2019). Currently, the country's total public debt stands at Kshs.6.28 trillion (CBK, 2020).

Policy analysts are worried about the country's external debt compared with its national income. Unsustainable debt levels can be harmful; they can crowd out development and social programmes because huge portions of government revenue are taken away from essential services and used instead to service debt. In addition, there are also some fears that the current surge of public debt could have some negative effect of the future generations.

External debt contributes to economic performance and financial liquidity in an economy and it makes external funds available for international trade. However, this sometimes poses some challenges making it difficult to ascertain its full contribution to the performance of various economic sectors. A significant proportion of external debt is related to infrastructural projects aimed at promoting economic growth and development. Nevertheless, developing countries like Kenya, continually face debt-servicing problems partly due to the failure to achieve growth and development targets. This failure has been attributed to external debts being used in the settlement of external debt service obligations.

Modigliani's Theory on public debt assert that a surge in public debt has an advantage on the current generation but, it the future generations which bears the burden of the current national debt through reduced private capital stock (Modigliani, 1961). In addition, the theory argues the reduced levels of public debt overburdens the present generation and profits generations to come. Modigliani determines the burden or gain of public debt to the future generations using the interest rate at which the government borrows. This was taken as a proxy for marginal productivity of private capital. Similarly, on one hand, Endogenous growth theorists argue that higher level of government borrowing whether domestic or external reduces economic growth rate implying that future generations are disadvantaged, while on the other hand, reduced public debt harms the current generation and is advantageous to the next generation. They state that although borrowing increases economic growth rate, it harms the current generation. Nevertheless, these models assumes existent of constant tax and debt-GDP ratio in the economy (Romer, 1990, Saint-Paul, 1992). They also assume that the level of interest rate remains unaffected. They theories imply

that high or low public debt will have an effect on at least one generation.

Empirically, there is limited evidence to test these theories. More importantly, there has been no attempt from researcher to examine the Kenya's debt burden on the future generations. Most studies have focused on determinants of debts, the effect of debts on economic growth, the impact of investment of GDP on investment, and the relationship between private investment and economic growth. Thus, the current study attempts to test these theoretical foundations using Vector autoregressive (VAR) and answer to the question, "Does the current public debt in Kenya have any effect on the future generations?"

II. METHODOLOGY

The study adopted forecasting theoretical framework to establish the effect of Kenya's debt burden on the future economic growth. There are several models employed in predicting macroeconomics. The most common ones are: Judgment-based and model-based (Robertson & Tallmam, 1999). The accuracy of the judgement based approach depends on the forecast ability to observe both regularities and irregularities in an economy which renders it more difficult for outsiders to observe the model and data employed. The mode-based uses statistics which makes it easier to detect sampling mistakes and hence, evaluation of model performance. Vector autoregressive (VAR) is the commonly used approach under model-based, and this study found it appropriate. A general VAR model is expressed as:

$$y_t = \alpha_0 + b_1y_{t-1} + \dots + b_p y_{t-p} + \mu_t \dots \dots \dots 1$$

Equation 1 imply that y at time t depends on the values of y up to a lag length of p . α_0 is the constant while b is the contribution of explanatory variables to predict y , μ_t is the error term.

In VAR, predictions are made one step ahead, $(t + 1)$ and iterates forward. The initial prediction relies on the primary estimates of parameters and data available at time, t . Then, the estimated (updated) parameters are employed to make a one step ahead for the desired number of periods, say $t + h$. $t + 1$ imply that the prediction is made for only one-period ahead. For this study, forecasts were conducted for time horizon, $t + 8$, that is for the next 8 years (starting 2019-2026). The performances of the forecasts were evaluated by relating observed real GDP with forecast values between 2019 and 2026.

The variables used in the VAR model are GDP growth rate, public debt, public debt service and inflation. According to Marcellino, Stock and Watson (2001), addition of more variables may lead to poor results.

This paper adopted a reduced form of VAR which expresses each variable incorporated as a linear function of its historical values. In this way, the previous data of a variable is taken into consideration and the error term is said to capture the

omitted variables which influence the dependent variable. In addition, the error term explains shocks and unexpected volatility in the variables which occurs when historical values are taken into consideration (Stocks & Watson, 2001).

Equation 2 presents the VAR equation adopted to predict the values of GDP.

$$GDP_{1t} = \alpha + \sum_{i=1}^n \beta_1 GDP_{t-1} + \sum_{i=1}^n \delta_1 PD_{t-1} + \sum_{i=1}^n \gamma_1 INF_{t-1} + \sum_{i=1}^n \phi_1 DS_{t-1} + \mu_t$$

Where, real GDP at time, t is determined by its own historical values, public debt (PD), debt service (DS), and inflation (INF) up to a lag length of n , α is a constant term, n is the number of selected lags, β, δ, γ and ϕ are estimated coefficients representing contribution of explanatory variables to the dependent variable. Finally, i is a notation indicating that the series begins at, i and ends at n .

The study employed time series data from 1980 which was computed annually. This was collected to the Kenya National Bureau of Statistics, Central Bank of Kenya and the World Development Indicators (World Bank).

III. EMPIRICAL FINDINGS

The aim of the study was to investigate how Kenya’s public debt affects future generation through GDP growth rate. GDP growth rate forecast was employed as a proxy for future wellbeing. The results of the study are presented in two sub-sections. The first section analyses summary and correlation statistics, while sub-section two presents results and discussion on econometric results.

Descriptive Statistics

The study presents summary statistics for all variables of interest. These include: mean, standard deviation, minimum and maximum values. In addition, statistics on Kurtosis and Skewness indices as well as coefficient of variation are also documented in Table 1.

Table 1: Summary Statistics.

Variables	GDPgrowth rate	PD	DS	INF
Mean	3.9520	504.5796	.7132	11.9725
Std. Deviation	2.2639	556.6747	.4184	8.5694
Min	-.7994	17.1524	.3583	1.5543
Max	8.4022	2423.728	2.7807	45.9788
Kurtosis	0.1307	0.0087	0.0000	0.1307
Skewness	0.4444	0.0003	0.0000	0.4444
Coef of variation	0.5728	1.1032	.06161	0.5728

Source: Author’s computation using Stata 14

During the period under study (1980-2018), the study reports the mean GDP growth rate of 3.9520 with a standard deviation of 2.2639. In addition, the highest economic growth rate that Kenya experienced was 8.40. This came in 2010 and

can be attributed to the sound macroeconomic policies of the grand coalition government. Nevertheless, Kenya recorded the lowest GDP growth rate of -.7994 in 1992. This can be attributed to mismanagement of economy which led to suspension of funding to Kenya by the World Bank and IMF as well as other development partners.

Regarding public debt (PD), the study reveals that it ranged between a minimum of Kshs.17.1524 billion and a maximum of Kshs. 5423.728 billion. The coefficient of variation shows that there is huge dispersion around the mean given a higher coefficient value (1.1032). The mean of Kenya’s debt servicing (DS) was Kshs. 0.7132 billion with standard deviation of Kshs. 0.4184 billion and ranges between minimum of Kshs. 0.3583billion to a maximum of Kshs.2.7807 billion during the same period. The highest level of inflation ever experienced in Kenya was 45.9788. Again, this rate was also experienced in early 1990’s (1993), the period of economic downturn due to poor governance, and rampant corruption. Apart from GDP growth rate, the probability values of Kurtosis and Skewness for all variables indicate normality in distribution.

Turning to correlation analysis, Table 2 indicates that GDPgrowthrate is positively correlated to public debt (PD) and negatively correlated to both debt service (DS) and inflation (INF).

Table 2: Correlation Analysis

	GDP growth rate	PD	DS	INF
GDP growth rate	1.0000			
PD	0.1126	1.0000		
DS	-0.1443	-0.2830	1.0000	
INF	-0.4450	-0.2256	0.0667	1.0000

Source: Author’s computation using Stata 14

Empirical Results

The aim of the study was to investigate the effect of public debt on the future generations. The study employs time series methods using data from 1980 to 2018. Reduced VAR was implemented to predict values of GDPgrowth rate in the next 8 years starting from 2020 given Kenya’s public debt crisis. To conduct the regression/prediction (equation 2), first, units root test was undertaken to ascertain stationarity status of the variables of interest. Non-stationary series cannot be used to implement this estimation. This was done with the aid of Augmented Dicky Fuller (ADF), and Philip Perron (PP) tests. The test is done to ensure that no variable with a unit root enters a regression analysis since this could lead to spurious regressions. According to the results (see Table 3), GDPgrowthrate and INF variables were found stationary at level under both ADF and PP tests, while PD and DS variables contained unit roots at level. These two variables were thus differenced (first difference) and re-subjected to tests upon which they now became stationary.

Table 3: Unit root test

Series	Order	Exogenous	ADF Test t-statistic (p value)	PP Test t-statistic (p value)
GDPgrowthrate	Level	Constant	-3.315 (0.0142)**	-3.380 (0.0117)**
		Constant & trend	-3.766 (0.0184)**	-3.787 (0.0173)**
DS	Level	Constant	2.679 (0.9991)	3.472 (1.0000)
		Constant & trend	2.237 (1.0000)	3.417 (1.0000)
	First Difference	Constant	-3.122 (0.0250)**	-3.228 (0.0184)**
		Constant & trend	-3.584 (0.0312)**	-3.636 (0.0269)**
PD	Level	Constant	-2.346 (0.1574)	-2.168 (0.2180)
		Constant & trend	-4.669 (0.0008)**	-4.641 (0.0009)**
	First Difference	Constant	-8.891 (0.0000)**	-10.333 (0.0000)**
		Constant & trend	-8.829 (0.0000)**	-10.448 (0.0000)**
INF	Level	Constant	-3.416 (0.0104)**	-3.411 (0.0106)**
		Constant & trend	-3.620 (0.0282)**	-3.608 (0.0292)**

Source: Author’s computation using Stata 14

Note: *** and ** represent 1% and 5% levels of significance respectively.

The second pre-condition for the prediction using VAR is that the model must be devoid of serial correlation, and be normally distributed. Thus, the study conducted LM and Jarque-Bera tests for serial correlation and normality respectfully. The test confirmed that the model was normally distributed and that serial correlation was absent.

After ascertaining that variables are stationary, there was normal distribution in the series and that the model was devoid of serial correlation, the study implemented basic (reduced) VAR forecasting model to estimate values of GDP growth rate for the next 8 years beginning with 201. Results are presented in Table 4.

Table 4: VAR Predicted GDP Growth Rate for Kenya

GDP growth rate	2019	2020	2021	2022	2023	2024	2025	2026
Forecast	5.278	4.426	4.059	3.961	3.955	3.966	3.974	3.977
% change	-16.47	-16.14	-8.29	-2.41	-0.15	0.28	0.20	0.08

Source: Author’s computation using Stata 14

According to the results, Kenya’s GDP growth rate dropped by 16.47% in 2019 and it is expected to decline by 16.14% in 2020. Given the ongoing covid 19 crisis whose effects have not been captured by the study, it is expected that GDP growth for 2020, 2021, and possibly 2022 will drop more than the estimated values. Nevertheless, according to the forecasted

results, the economy is expected to report a positive growth begging from the year 2024 with growth rate of about 3.97% and continue with this recovery path going forward. These results are clearly shown in Figure 1.

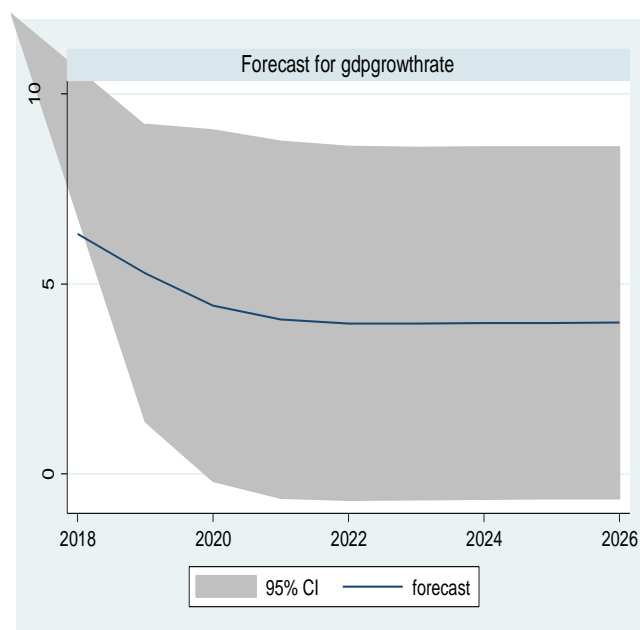


Figure 1. Annual forecast of Kenya’s GDP growth rate for the period 2019-2026

Source: Author’s computation using Stata 14

These forecasts clearly predict slowdown in the Kenya's GDP growth rate until the year 2023 where it is expected that the economy will pick slowly. With decline in economic growth, tax revenues are likely to reduce and given the increased social transfers amidst others things, Kenyan government could experience huge budgetary deficits and hence leading to more public debt. With large public debt, the government will be forced to reduce public investment due to huge debt service obligations and this could reduce effective demand in the economy and compromise the welfare of most poor Kenyans.

This study reports that the projected decline in economic growth rate is attributed to the rising public debt. Equally important to note is that while GDP growth rate is expected to decline in the next five years, Public debt is projected to increase slightly over the same period (Figure 2). With higher amounts of PD, the country is likely to devote most of its revenue to debt service as opposed to public investment, a situation that could lower the level of economic activities in the country.

According to the forecasted results, Kenya's debt service is expected to decline in the next coming eight years (Figure 3). With an increased level of PD, a reduction in debt service can only be contemplated under debt restructuring arrangement. This implies that with the anticipated worsening of Kenya's economic growth, Kenya could experience harsh economic times and hence be compelled to restructure some of its external debt obligations. Figure 4 points out that inflation, one of the key determinants of economic growth is more likely to increase slightly up to end of 2021 and thereafter, flatten. However, the expected economic effects of covid 19 might worsen this curve by pushing it slightly up. Nevertheless, this will depend on the government's response strategy.

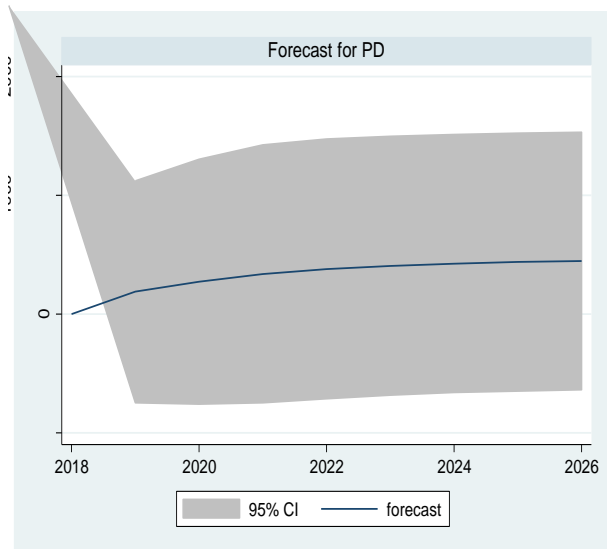


Figure 2. Annual forecast of Kenya's PD for the period 2019-2026

Source: Author's computation using Stata 14

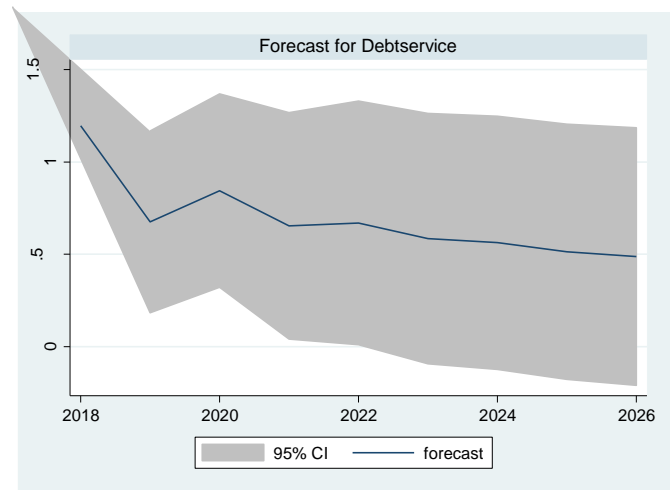


Figure 3. Annual forecast of Kenya's DS for the period 2019-2026

Source: Author's computation using Stata 14

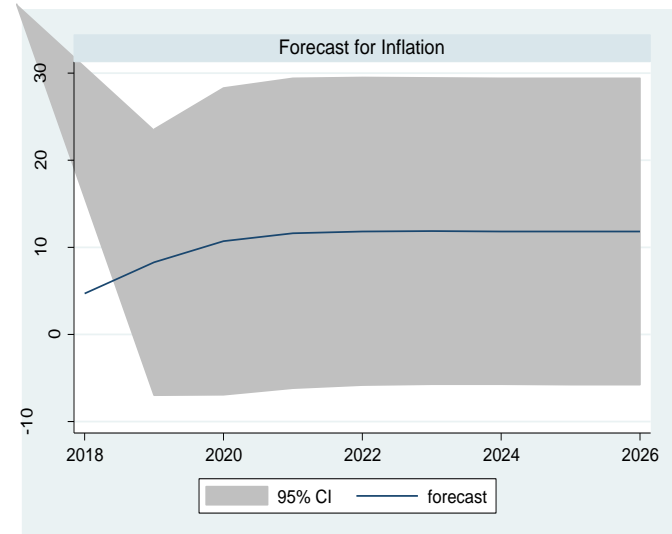


Figure 4. Annual forecast of Kenya's INF for the period 2019-2026

Source: Author's computation using Stata 14

IV. CONCLUSION AND RECOMMENDATIONS

The study investigated the potential effect of Kenya's growing public debt on the economic growth. The study forecasted GDP growth rate using reduced VAR model with time series data ranging from 1980-2018. The forecast was performed for a horizon of up to $t + 8$. PD, DS and INF were included in the model as explanatory variables.

Findings indicate that Kenya expects a town turn in the GDP growth rate for the years 2020, 2021, 2022, and 2023. In addition, the economic growth rate is expected to pick up although slowly from 2024 going forward. According to the estimated results, public debt and inflation are expected to contribute to the decline in Kenya's economic growth. This is consistent with Modigliani (1961) who argues that the burden of public debt could be felt by the future generations.

With these findings in mind, Kenyans could face hard time ahead. A decline in economic growth has far reaching implications. It implies reduced economic activities and hence, a decline in government revenue and unemployment. It is also likely to have adverse effects of effective demand which could choke private investment. This might increase poverty levels and ultimately lower development indicators among majority of the citizens who are poor.

From the findings, it is possible to conclude that the adopted model provides reliable forecast for GDP growth. However, it is vital to note that forecasting can be affected severely by high volatility of financial markets which increases uncertainty when predicting for longer horizons. In addition, the expected effects of the ongoing covid 19 were not captured in the study. This could change the turn of events.

Given the results, Kenyan government should take appropriate measures to mitigate the effects of public debt on economic growth. For instance, the country should reconsider restructuring some of its current external debts to restore cash flow. In addition, Kenya should focus more on concessionary as opposed to its current appetite for commercial loans. This can provide additional resources for public investment. Enhancing investment climate by reducing costs of energy and corporate tax rates could promote small and microenterprises development and hence, healthy economic growth.

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