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Article

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The Maturity and Repayment Structure of Sovereign Debt: Implications for Development Agenda in Nigeria

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Abstract

This study examines the maturity and repayment structure of sovereign debts in the Nigerian economy between 1981 and 2017 using the Ordinary Least Squares technique since debt has been the largest source of capital flows to the country for about five decades. Hence, the study employs economic development proxied with the per capita income, employment, and mortality rate, as dependent variables, while sovereign debt proxied with external debt stock, external debt service payment, domestic debt, sovereign debt repayment plans, and the exchange rate as independent variables. Empirical findings show that sovereign debt positively but insignificantly impacts economic development, external debt service payment has a negative but insignificant effect on economic development, domestic borrowing positively and significantly impacts the economic development, and sovereign debt repayment plans negatively and significantly impacts economic development in Nigeria. The study, therefore, concluded that sovereign debt enhanced the performance of the Nigerian economy while the repayment plans retarded economic development in Nigeria over the study period. It is recommended that sovereign debt repayment plans should be well spelt-out to reduce the burden on the economy.

Keywords

Sovereign Debt; Income; Employment; Mortality Rate; Development

JEL Codes: E01, E24, F34, I12, O10

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1. Introduction

Debt has provided a major means of capital flows to Less Developed Countries (LDCs) over the past five decades. Lending and borrowing expanded greatly starting from the 1970s, and with this trend extending to this period, total foreign debt of LDCs amounts to about 42.5% of their GDP in 2016 (Omojolaibi *et al.,* 2016; Sarafidis *et al.,* 2017; Mesagan and Yusuf, 2019). Evidently, out of the total long-term foreign debt, the highest amount is guaranteed by the government because sovereign or foreign debt provides the needed capital for the government to steer the economy in a desired direction. According to Niemann and Pichler, (2017), sovereign debt enhances the capacity of governments to generate sufficient resources to boost their expenditure and smoothen their short-run consumptions. However, Mesagan and Bello (2018) opines that despite the international transfer of resources made available by such capital flows, economic development remains largely a mirage in LDCs. In a few countries where the situation is somewhat different, economic development has been very minute compared with the volume of such foreign debts.

Across the globe, the discourse about the causes and consequences of persistent borrowing is at the front burner. Such discussion centres on whether borrowings have been useful to the nation's economy given both its maturity and repayment structure. This study, therefore, analyses the situation in Nigeria, which has experienced and is still experiencing increases in its sovereign debt because the country has been operating on deficit financing for several years now (Mesagan and Shobande, 2016). Available evidence from the African Development suggests that Nigeria and several African nations have been operating on fiscal deficits for over two decades now. For instance, fiscal deficits in Nigeria, which stood at 0.1% of Gross Domestic Product (GDP) in 2011 rose to about 1.9% of GDP in 2015 (AFDB, 2019). In attempt to stabilise the country's economy and steer it out of recession, caused by the fall in world crude oil prices, the Nigerian government has resorted to massive borrowings to finance its deficits since 2016. According to Mesagan, Yusuf and Ogbuji (2019), the country's 2018 budget has a deficit of N1.954 trillion out of which 52% were to be sourced from foreign sources and 48% from local sources. In 2019, however, the deficit reduced slightly to N1.86 trillion, but the fact remains that the Nigerian economy is still heavily reliant on sovereign debts in various forms. The proposed budget deficits for the year 2020 attests to this as it is estimated at N2.17 trillion, which is 17% higher than the 2019 figure. This makes the repayment structure of sovereign debt crucial to this study, in an attempt to achieve the country's development agenda.

Furthermore, from the arguments in empirical literature, several studies like Panizza *et al.* (2009) and Nwannebuike et al. (2016) confirmed that sovereign debt exerts positive impact on the growth of an economy while studies like Broner *et al.* (2003), Siddique *et al.* (2017), Senadza *et al.* (2017), and Chudik *et al.* (2018) found that it has negative impacts on growth. It thus follows that the way and manner in which sovereign debts are structured in terms of repayment plans as well as their maturity periods are crucial in shaping the sort of impact debts will exert on a nation's economy. For instance, when the maturity covers a long period of time, it could afford the nation the opportunity to utilise the debts for long-gestation capital projects and more sufficient time to repay the debts, thereby enhancing long-run productivity. Similarly, when the repayment plan is more flexible, it could be less strenuous and make room for careful planning and execution of the debts for developmental purposes. As identified in Rodrik and Velasco (1999), short-term debts have the tendency to hurt consumption smoothing owing to roll-over risks. This is because when such debts are close to maturity and they have to be rolled over into new debts, the interests they have generated will make the country involved to refinance the new debts at a higher interest rate and incur higher interest charges in the subsequent years.

To this end, the study examines the implications of both the maturity and repayment structure of sovereign debts on the development agenda of Nigeria by focusing on developmental indicators like income, employment generation, and mortality rate between 1981 and 2017. Specifically, the study analyses the effect of sovereign debt burden on Nigeria's economic development. It ascertains the impact of external debt service payment on economic development in Nigeria. It determines the effect of domestic debts on economic development and then examines the impact of sovereign debt repayment plans on economic development in the country. The study is theoretically and practically relevant to the Debt Management Office (DMO) and policy makers in Nigeria by providing vital information and policy frameworks to improve the development of the country through the sovereign debt channel. Hence, this research fills the gap which has been omitted by prior studies on how the structure and repayment plans of sovereign debts can be used to stimulate the economic development of a nation.

2. Literature review

Issuing sovereign debt by governments is considered an important mechanism to finance government projects and programmes, and hence, stimulates aggregate demand towards full employment of an economy. For studies focusing on sovereign debt and development, Diamond (1991) began by describing the considerations the government must weigh in deciding the optimal maturity structure of sovereign debt. The study showed how similar considerations can help determine other features of the debt structure, such as the mix between inflation protected securities and traditional bills, notes, and bonds. Evidence confirmed that reducing the maturity structure of sovereign debts can directly raise the wellbeing of households, the volatility of long-run taxes, which has a negative impact on wellbeing and can also reduce current taxes. Bulow and Rogoff (1989) recommended that government debts should be effectively managed to allow it to fund a large chunk of debt stock at low interest rates.

Moreover, Arellano and Ramanarayanan (2012) examined the situation in developing nations and reported that promised repayments of sovereign bonds are more back-loaded during business downturns when the spread is high and output is low. The study also found that maturity of sovereign bonds is shorter in periods when the spread is high and output is low. Similarly, Lorenzoni, and Schmukler (2013) confirmed that sovereign debt repayment structure helped consumption smoothing in 11 emerging economies during downturns. Senadza *et al.* (2017) focused on Sub-Saharan Africa (SSA) between 1990 and 2013. Result showed that foreign debt negatively impacted growth. Again, Siddique *et al.* (2017) analysed the scenario in Pakistan between 1975 and 2015and found that foreign debt negatively but significantly enhanced growth. Chudik *et al.* (2017) examined the threshold effects of debts in 40 countries between 1965 and 2010. Findings did not confirm universally applicable threshold effect between debt and growth but found negative and significant impacts of debts on growth. Recently, Chudik *et al.* (2018) used a panel of 40 emerging and developed nations and found that long-term public debt negatively impacted growth.

For studies focusing on external debt and economic development, Hernandez and Katada (1999) examined the situation in 32 Sub-Saharan African nations and found that debt relief worsened their debt overhang problem. Adesola (2009) found that debt payment in Nigeria between 1981 and 2004 significantly enhanced both gross capital and output growth. Similarly, Sulaiman and Azeez (2012) focused on Nigeria and found that no significant difference existed between debt management strategies and growth, while significant relationship existed between external debt servicing and economic development. Yue (2010) confirmed government debt reduced development in countries with huge government credit as a ratio of total lending. Ajayi and Oke (2012) analysed the macroeconomic impacts of external debts in Nigeria confirmed that foreign debts negatively affected the country's macroeconomy. Afonso and Alves (2015) analysed the situation in 14 EU nations and found that debt service negatively impacted their economic performance between 1970 and 2012. In a study by Nwannebuike et al. (2016), external debt positively enhanced short-run growth and negatively in the long-run. Meanwhile, service payment of external debt negatively impacted on growth. Recently, Mahmud (2018) analysed the situation among

third world nations using a cross-country analysis of Nigeria and Indonesia. Results showed that poor debt management significantly worsened economic growth by expanding financial crises in both nations.

3. Methodology of research

This study employs the Snyder (1998) framework to specify the relationships of economic growth and debt and other macroeconomic variables of interest to the case Nigeria. The major statistical tool used in this study is the ordinary least square (OLS) regression technique. We use the model specified in equation (1) to estimate the data:

$$Y = \beta_0 + \beta_1 SVD + \beta_2 EDS + \beta_3 DDT + \beta_4 SDR + \beta_5 EXR + e \quad (1)$$

Where Y is economic development and it is proxied with income per capita, mortality rate and employment. For the independent variables and in line with the specific objectives of this study, sovereign debt (SVD) is proxied with external debt stock, external debt service payment (EDS) is captured with the interest payment on foreign debt, domestic debt (DDT) is captured with total debt of government from local sources while sovereign debt repayment plans (SDR) is captured with foreign debt as a ratio of the nominal GDP. It is a measure of the solvency of government to repay its debt. However, exchange rate (EXR) is used as a control variable since it also has a role to play in the volume of foreign debt that the government borrows while 'e' is used to capture the error term. The choice of model for this research work is theoretically based. From this theoretical perspective, the model is justified based on debt and economic development nexus. It considers the impacts of the maturity and repayment structure of sovereign debts on economic development in Nigeria. Hence, we use income per capita, mortality rate and employment as proxies of economic development in the while the other explanatory variables remain as explained earlier. The study primarily depends on secondary sources of data, which are sourced from the Central Bank of Nigeria statistical bulletins (CBN, 2019) and the World Development Indicators of the World Bank (WDI, 2019).

4. Empirical results

From the result in Table 1, using the Augmented Dickey Fuller (ADF) test, we show that per capita income (INC), sovereign debt (SVD), external debt service payment (EDS), domestic debt (DDT), sovereign debt repayment plans (SDR), employment (EMP), mortality rate (MTR) and the exchange rate (EXR) in Nigeria are stationary at their first difference. This means that the variables do not have unit root in their first difference and that the series reverts to the mean and converges to the long run equilibrium. Having confirmed stationarity, we proceed to present the cointegration test to determine the existence of long-run relationship among the regressors in Table 2.

Table 1. Unit Root Test of the Regressors

Variable	Intercept	Order of Integration
SVD	-3.798245*(9) [-2.928142]	1
EDS	-6.808270*(9) [-2.929734]	1
DDT	-6.931529*(9) [-2.929734]	1
INC	-6.431028*(9) [-2.929734]	1
EXR	-5.384299*(9) [-2.929734]	1
SDR	-7.947064*(9) [-2.929734]	1
EMP	-4.528219*(7) [-3.481632]	1
MTR	-6.273528*(8) [-4.183672]	1

*Note: * significant at 1% level, Mackinnon critical values are shown in parenthesis, lagged values being chosen by Schwarz Information Criterion are shown in brackets.*

In Table 2, the result shows that both the trace and maximum Eigen tests have three cointegrating equations. This means that a long run relationship exists among the series employed in the study at 5% level of significance. Therefore, we can reject the null hypothesis of no cointegration at 5% and conclude that long-run relationship exists between income per capita, sovereign debt, external debt service payment, domestic debt, sovereign debt repayment plans, employment, mortality rate, and the exchange rate in Nigeria over the study period. Having confirmed long-run relationship, we then proceed to present the result of the long-run model in Table 3.

The coefficient of SVD indicates that the sovereign debt positively but insignificantly impacts both income and employment while it negatively but significantly affects mortality rate. This means that in the period under review (i.e. 1981-2017), increases in sovereign debt enhances economic development in Nigeria by improving both income per capita and employment generation while reducing mortality rate in the process. This result conforms to economic theory and it connotes that as foreign debt increases, the overall output in the economy also rise. Again, it intuitively means that

expansion of foreign debt causes reduction to government's local borrowing and expands the private sector access to funds. This helps the country to boost income and employment while also reducing the mortality rate.

Table 2. Cointegration Test

Hypothesized No of CE(s)	Trace Statistic	Prob**	Max-Eigen Statistic	Prob**
None *	182.4268	0.0000	94.53061	0.0000
At most 1 *	129.8962	0.0000	57.62569	0.0021
At most 2 *	78.12705	0.0017	47.93772	0.0054
At most 3	35.33277	0.1246	27.97637	0.2146
At most 4	33.35640	0.1139	24.75002	0.1106
At most 5	27.60638	0.2081	14.78066	0.3045
At most 6	19.82572	0.2878	13.42752	0.3575
At most 7	11.98201	0.4280	10.38201	0.5280

*Trace test indicates 5 cointegrating eqn(s) at the 0.05 level; * denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values*

The other intuition from this study is that the foreign loan secured by the government is a form of fiscal expansion to the economy, which helps to expand consumption, investment, output and employment in Nigeria. This result is in tune with Mahmud (2018) that sovereign debt management helps to boost both the Nigerian and Indonesian economies but at variance with Mbate (2013) for sustaining the Sub-Saharan African economies. It is also at variance with Nwannebuike *et al.* (2016) which found that external debt in Nigeria inhibits economic growth.

Table 3. Regression Result

Variables	INC	EMP	MTR
C	9.4435***	16.8395***	11.9691***
SVD	0.1199	9.2274	-0.0039***
EDS	-0.1389	-0.0154	0.6166
DDT	0.0635**	8.9264***	-0.0009*
SDR	-0.5432***	-0.7608***	6.2565
EXR	0.0987***	0.0059***	-0.2501***
R-squared	0.9742	0.6949	0.9718
Adj. R-squared	0.9678	0.6456	0.9672

Note: ***Significant at 1% level, **Significant at 5% level, *Significant at 10% level.

Regarding the coefficient of external debt service payment (EDS), the result shows that it has a negative but insignificant effect on income per capita and employment in the country while it exerts a positive but insignificant effect on mortality rate. It implies that increase in external debt servicing causes average income and employment to fall while making the mortality rate to rise. This result is expected as government revenue used to finance or service external debt is a withdrawal from the economy causing its negative impacts on income and employment while also reducing the available funds available to reduce mortality rate in the country. Again, it intuitively means that Nigeria's debt service payment has left to the future generation a heavy debt burden. Hence, this debt overhang issue places severe limitation on economic development efforts by lowering income and employment in the country. The result is at variance with Mbate (2013) for sustaining the Sub-Saharan African economies but it corroborates Mehl and Reynaud (2010) for developing economies. For domestic debt (DDT), result shows that DDT positively and significantly enhances income and employment generation while negatively but significantly reducing mortality rate. The implication is that government domestic borrowing does not crowd out private investment as it improves the performance of the economy and making more funds available to reduce mortality rate in the country. The result thereby corroborates the earlier result of the foreign debt and also in tune with Mahmud (2018) for both Nigerian and Indonesian economies, but at variance with Mbate (2013) and Nwannebuike *et al.* (2016) for Africa and Nigeria respectively.

Lastly, the coefficient of SDR suggests that sovereign debt repayment plans negatively and significantly impacts income and employment, but it exerts a positive but insignificant impact on mortality rate. The interpretation is that increase in sovereign debt repayment plans causes income and employment to fall while also compounding mortality rate in the country. This is in tune with the earlier result of the external debt service payment. The implication is that as sovereign debt repayment plans expands, aggregate demand reduces because it signals a shrinking of economy. Such withdrawal plans ultimately reduces aggregate output as investors optimisms reduce, reduce employment, lower average income and increase mortality rate. The result is at variance with Niemann and Pichler (2017) that debt sustainability is very important

for boosting the global economy while it is in consonance with Nwannebuike *et al.* (2016) which found that the modes of repaying external debt in Nigeria inhibits economic development.

6. Conclusions

The impact of the maturity and repayment structure of sovereign debts in Nigeria between 1981 and 2017 span across a period of about thirty-eight years. The empirical results showed that sovereign debt burden and domestic borrowing have positive effect on income per capita and employment but negative impact on mortality rate in Nigeria. Again, both external debt service payment and sovereign debt repayment plans have negative impact on income per capita and employment in the country, while they both exert positive impact on mortality rate. Therefore, this study concludes that sovereign debt enhanced the performance of the Nigerian economy while the repayment plans retarded economic development. Considering this result, we recommend that the deficits financing should be planned ahead of time so that it would be possible to predict the impact such on the economy. Also, government should consciously direct its spending at productive activities such that as more money goes into circulation, it is matched with an increase in output, thereby mitigating against inflationary tendencies, increasing employment and making more funds available to reduce mortality rate in the country. Also, sovereign debts should be well managed and attached to financing capital projects in order to encourage more private sector driven investment in the country. Again, domestic borrowing should be reduced to the barest minimum to ensure that the private sector of the economy is not crowded out. This will help to boost income and employment in the country and further reduce mortality rate via the expansion of income earning potentials. Lastly, foreign debt service payment should be properly designed and carefully managed to reduce the debt overhang burden on the future generation in Nigeria.

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