Journal of Business and Economic Policy
UNIZIK Business School, Nnamdi Azikiwe University, Awka

UBSJBEP
1 (3)
https://journals.unizik.edu.ng/index.php/ubsjbep
Quarterly Journal of UNIZIK Business School, Awka, Nigeria

ANALYSIS OF FOREIGN DEBT ON CAPITAL FORMATION IN NIGERIA: 1981-2019

CITATION: [1]Yakubu Adamu, [2]Auwal Yahaya Tilde, [3]Umar Bala (2023), Analysis of Foreign Debt on Capital Formation in Nigeria: 1981-2019, *UBS Journal of Business and Economic Policy,* 1(3), 100-110

***Paper Type**: Original Research Paper; **Correspondence**: yakubunbauchi98@gmail.com*

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ABSTRACT
Over the years the rate at which Nigeria is borrowing has gone in the rise and the cost of living in the country as well as the infrastructural deficit continue to be more worrisome and alarming, this necessitated the study to investigate the impact of foreign debt on capital formation in Nigeria, covering the period of 1981 - 2019. The data of the variables used in the study are sourced from World Bank data base (WDI). ARDL bounds test for cointegration was applied after confirming the existence of mix order of integration of variables for the models of the study via ADF and PP unit root tests. Capital formation was found to be statistically positive and has significant impact on foreign debt in both long and the short run. Moreover, the study revealed that capital formation was negative and statistically significant in effecting exchange rate in the long run and also had significant negative impact on economic growth in the long run. While, gross domestic product was also found to be negative and has significant impact in influencing both capital formation and foreign debt in the long run. Furthermore, the study revealed that gross domestic product has positive and significant impact on debt servicing and exchange rate at five percent and ten percent level of significance respectively. Therefore, it is recommended that causation should be an important tool for government in formulating effective and functional policies in the Nigerian financial sector. It is important for the policy makers in the country to be cautious on the implementations of projects that raise the foreign debt. It is evidential that such costs lead to borrowing from foreign sources that may take the country towards high debt ratio regime associated with lower economic growth.
Keywords: capital formation, foreign debt, economic growth, debt ratio, gross domestic product

Introduction
The increase in debt around the world is one of the most important global developments in recent years. It is also one of the main sources of risk to global financial stability and economic growth (World Bank, 2021). The debt has reached to the point where many debtor nations were unable to pay even the interest rates on their loans and are threatening non-payment if their loans are not re-structured by the international monetary fund and other financial institutions (union international associations 2019). Africa in focus (2019), suggested that African continent needs to spend $93billion annually for eleven (11) consecutive years starting from 2009 to 2020 in order to close it infrastructural deficit. However, for the past two decades, the rate at which Nigeria is borrowing has gone in the rise, particularly in the last six years. Concern about such country's growing debt levels alongside an impending debt crisis are continuously rising. Currently there is a great fear in the minds of many Nigerians about the disparity between foreign

debt accumulation and the cost of living in the country, as they begin to ask questions on the honesty for the need of a foreign debt and it consequent benefit, as such huge debt overhang did not actually translate into Capital formation and economic growth. (Ndubuisi, 2017). For instance, Nigeria's total public debt stock rose continuously from NGN8.32 trillion in September 2013 to NGN22.7 trillion in March 2017, more worrisome is that of the foreign debt, which had a consistent increase from USD8.82 billion as at December 31, 2013, to a whopping USD22.07 billion as at March 31, 2018. The growth rate of foreign debt stock in the country leapfrogged from 10.17 in 2015 to 15.72 in 2016, a 43.23% increase within one year. This high debt profile made the World Bank and the International Monetary Fund (IMF) warn the country of the economic consequences of such huge debt. Even the Nigerian debt management office (DMO) that was created in October, 2000 and saddled with the responsibility of managing the national debts, warned that Nigeria's high debt service to revenue ratio could trigger a debt crisis. (Nathaniel et al, 2018).

Foreign Debt and Capital Formation

One of the main sources used to finance capital formation in economies is foreign debt and it is generally expected that most developing countries including Nigeria, when are faced with capital scarcity are expected to obtain foreign debt to supplement domestics saving (Ndemange, 2018). Foreign debt therefore, is that part of aggregate debt that is owed to lenders outside the country. Foreign debt has to be paid back in the currency in which it is borrowed and can be gotten from foreign commercial banks, international financial institutions like international monetary fund, world bank, African development bank and international bank for reconstruction and development (Rahmon & State, 2018). It is assumed that the country when facing a scarcity of capital would resort to borrowing from available foreign sources so as to supplement domestic saving. An effective foreign debt should have an effect on the economy through investment and efficiency of the labor force. Since the main drive for attracting foreign loans is a lack of own funds to finance capital formation, an increase in gross foreign debt with a proper utilization should stimulate the economic growth in investment and capital formation, which can lead to an increase in the potential size of GDP (Winifred, 2014). Capital formation as a component of economic growth and development in any society is the process of acquiring an extra capital stock which is used in productive process. The foundation of capital accumulation is savings and it results when some portion of present income is saved and invested in order to enlarge future output and incomes. The extent to which the level of savings can affect capital accumulation and growth largely depends on the capacity of the economy to channel the savings into productive use. Higher savings then implies higher capital accumulation and hence, economic growth (Osundina & Osundina, 2014).

Statement of the Problem

Economies of the third world countries are generally characterized by low and weak growth rates due to their inherent nature of under savings, which hinders them from providing financial support for investment in both private and public sectors. Savings and investment are therefore, two key macroeconomics variables that support and sustains economic growth. According to Africa in focus (2019) African continent needs to spend $93billion annually from 2009 to 2020 in order to close it infrastructural deficit, and the domestic savings and investments of such continent will not be enough to sustain the expected capital formation that can fuel such infrastructural deficit as well as the economic growth hence resort to foreign borrowing.

The foreign debt financing is therefore become a developmental necessity that is difficult to

avoid, especially in a developing country like Nigeria. The question then becomes why foreign debt has not been accelerated the pace of capital formation in Nigerian economy? problem of improving the propensity to saving of the citizens in the country, problem of how and where to utilize the amount of savings in the country and the high level of incessant corruption in the country. When a country reasonably applied good levels of borrowing it will lead to enhance in the capital formation and when a country's capital formation is enhanced, the living standards of the people in the economy will be affected positively. Therefore, the study was necessitated in order to assess the impact of Foreign debt on capital formation in Nigeria, on the other hand, the study is aimed at testing whether or not the marginal effect of capital formation on economic growth is a function of foreign debt in Nigeria.

Research Questions

This research seeks to investigate the impact of foreign debt on capital formation in Nigeria and therefore tries to answer the following research question:

1. Does foreign debt have no impact on capital formation in Nigeria?
2. why does foreign debt has no impact on capital formation in Nigeria?

Objectives of the Study

The general objective of this study is to examine the impact of foreign debt on capital formation in Nigeria. Whereas the specific objectives are as follows;

1. To determine the impact of foreign debt on capital formation in Nigeria
2. To determine the direction of significant causal relationship between foreign debt and capital formation in Nigeria.

Justification of the Study

On policy formulation, the study will be applied in government policies and programs in order to mitigate the negative effects of foreign debts on Nigerian economy. This could be achieved through ensuring a proper implantation and utilization of the borrowed funds. The study will also be importance to investors, researchers, academicians and other stakeholders, because it will offer them an insight of what is happening in the Nigerian debt profile and the way forward. Furthermore, the study will add to the existing literatures on the nexus between foreign debt and capital formation. Lastly, the study will be a guide tool for those who are interested in carrying out future investigation on the same topic in the case of other developing economy like Nigeria

Empirical literature

Teklu et al. (2014) examined the relationship between public foreign debt, Capital formation and economic growth in Ethiopia for the recent last forty years, time series data for the period under review were used and the result of the findings suggests that Public external debt as percentage of GDP has positive and significant effect on capital formation in the long run. While, in his study Akanni (2014) evaluated on how indebtedness and capital formation have directly affected the growth of 14 west African countries covering data from 1970-2008. Linear and nonlinear econometrics specification were used and estimated with the fixed effects and GMM estimation techniques. The finding reveals that foreign debt and capital formation affect growth is well supported by the results and all debt variables and the capital formation variable have the positive relationship and were statistically significant. In a related development, similar result was found as where Bal (2014) provides empirical evidence of the effects of public debt on gross fixed capital formation in India during the period between the fourth quarter of 1998 and fourth

quarter of 2012. Using the structural VAR model with variance decompositions and impulse response functions, the result reveals that public debt including the foreign debt has a positive effect on gross fixed capital formation. In a further assessment Haughton (2020) examines the relationship between gross fixed capital formation, public and publicly guaranteed external debt, and growth nexus for Mozambique, using autoregressive distributed lag (ARDL) analysis, Granger causality is also used to assess the direction of causality amongst the variables and the result of these analyses suggests that there is a long-run relationship between gross fixed capital formation and public debt to gross domestic product. The relationship also shows a one-way short-run causality between debt and gross fixed capital formation, meaning debt can cause gross fixed capital formation but gross fixed capital formation can't cause debt.

Simidi et al. (2021) has confirmed the finding of Haughton (2020) in an effort to examine the effect of gross capital formation on the relationship between debt financing and economic growth among east Africa community member countries, using lagged multiple linear regression model for the study and the study finds statistically significant strong positive relationships between external debt and gross capital formation. However, Abdullahi et al. (2015) analyzed the impact of external debt on capital formation in Nigeria utilizing time series data covering a period from 1980 to 2013, employing the autoregressive distributed lag (ARDL) modelling. the finding was found the relationship between external debt and capital formation to be negative and statistically significant. Yousaf and Mukhtar (2020) empirically evaluated the external debt and capital accumulation nexus in Pakistan over a period of 1972 to 2016. The ARDL bound testing technique was employed and the finding establish that the large accumulated debt leads to a decrease in overall capital accumulation in an economy of Pakistan for the period under study.

In a similar finding, Hameed et al. (2020) carried out an empirical investigation of public debt and capital accumulation nexus in south Asian countries. Panel data covering from 1990 to 2019 of these countries were used and fixed effect model has been used for estimation. The outcomes of the study suggest that there exists a negative relationship between public debt stock as a ratio of total revenue and capital accumulation in the south Asian countries for the period under study. Abdullahi et al. (2016) also had a similar finding with Hameed et al. (2020), Yousaf and Mukhtar (2020) and Abdullahi et al. (2015) in a study, debt overhang versus crowding out effects: understanding the impact of external debts on capital formation in theory, the study was conducted in Sub-Saharan African countries using panel data techniques and five decades were covered. According to the findings, indices have indicated an adverse relationship between foreign debt and capital formation in all SSA under study. Saxena and Shanker (2016) contradicts the finding of Hameed et al. (2020) in a similar study that also conducted in India, in order to assess the dynamics of external debt and capital flight using two staged least square method (TSLS), where the results indicate a positive relationship between foreign debt and capital flight in India.

Methodology

Harrod-Domar Growth Theory

The model shows mathematically that growth is directly related to saving and indirectly related capital output ratio. Suppose we define national income as Y, growth as G, capital output ratio as K, saving as S, and investment as l, and average saving ratio as s and incremental capital output ratio ask, then we can construct the following simple model of economic growth.

S = sY……...1
i.e., saving (S) is some proportion of (s) of national income (Y)
I= Δk……...……..……....**2**
i.e., net investment (I) is defined as the change in capital stock KG
=ΔY……...…….....3

ΔY i.e., growth is defined as change in National income ΔY divided by the value of the National income.

But since the total stock, K, bears a direct relationship to total national income, or output Y, as expressed by the capital/output ratio k, then it follows that:
K=k….....4

Finally, since total national saving, S, must equal total investment, I, we can write this equality as
S = I …….. 5

But from equation (I) above we know that S = sY and from equations (2) and (3) we know that: I = ΔK = kΔY.

It therefore follows that we can write the identity of saving equaling investment shown by equation (6) as
S= sY = kΔY =I ..…… ……..... 6

or simply as sY= kΔY…….....7

ΔY= G = sY K ….....8

Now by dividing both sides of equation (8) by Y and later by K, we derive the growth Model ΔY/Y which represents the rate of change of national income or rate of GDP (i.e., It is the percentage change in GDP). Equation (8), which is a simplified version of the famous Harrod – Domar equation in the theory of economic growth, implies that the rate of growth of GDP (ΔY/Y) is determined jointly by the national saving ratio, s, and national capital/output ratio, k. more specifically, if there is absence of government, the growth rate of national income will be directly or positively related to saving ratio (i.e. the more an economy is able to save-and- invest-out of given GDP, the greater will be the growth of that GDP) and inversely or negatively; relate to the economy's capital/output ratio (i.e., the higher the k is, the lower will be the rate of GDP growth). The economy logic of equation (8) is very simple. In order to grow, economies must save and invest a certain proportion of their GDP. The more an economy can save, and invest, the faster they can grow, for any level of the rate of growth depends on how productive the Investment is.

Model Specification

To specify the model for the objective, the study transformed an equation from a particular theory related to the study variables that discussed above. In order to derive the empirical model for achieving the objective of this study, Harrod-Domar growth theory equation will be utilized.

Model for Estimating the Impact of Foreign Debts on Capital Formation in Nigeria.

In formulating the model for the objective which is the impact of foreign debts on capital formation in Nigeria the study modified the Harrod dormar growth theory which denoted $K = F(G, D, S, I)$ but in the work of Akanni O. L., (2014) the derived empirical model is modified and will be presented in equation 9.

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Where K is the capital and will be replaced with capital formation, G is growth rate which will be replaced with economic growth and D is the total amount of debt which will be replaced with foreign debts, S is servicing which will be replaced with debts servicing and I which investment will be replaced with exchange rate. Therefore, the final empirical functional equation for the impact of foreign debts on capital formation in Nigeria is offered in equation 10.

$$CPF_t = F(ECG_t, FDB_t, DBS_t, EXR_t) \quad \ldots\ldots 10$$

Equation 10 is the functional form equation that does not include the intercept and error term parameters that would make it an econometric model. Therefore, Equation 11 is the transformed equation 10 that contained the intercept, error term parameters and natural logarithm for easy interpretation of the estimated coefficients in terms of elasticity.

$$\ln CPF_t = \varphi_0 + \varphi_1 \ln FDB_t + \varphi_2 \ln ECG_t + \varphi_3 \ln DBS_t + \varphi_4 \ln EXR_t + \mu_t$$

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Where φ_0 is the intercept parameter, φ_1 - φ_4 are the slope coefficients to be estimated, $\ln CPF_t$ is the natural log of capital formation at time t, $\ln FDB_t$ is the natural log of foreign debts at time t, $lnECG_t$ is the natural log of economic growth at time t, $\ln DBS_t$ is the natural log of debts servicing at time t, $\ln EXR_t$ is the natural log of exchange rate at time t and μ_t is the error term.

Method of Data Analysis

The data collected for this research would be analyze using the autoregressive distributed lag (ARDL) model as well as granger causality test. Since it has been discovered that there is cointegration relationship among the variables which suggests that there must be causality in at least one direction, however, it does not indicate the direction of causality among the variables. Therefore, the granger causality test would be applied to test for the direction of causality between the dependent and the independent variables. The diagnostic tests will also be applied to test the accuracy of the models which includes the serial correlation LM test, the heteroscedasticity test, the normality test, the Ramsey Reset test for specification and the stability test. The analysis of the data will be done using the Eviews Version 9 econometrics software as adopted by Sulaiman and Abdur-Rahim (2018), Musa et al. (2019), Maijama'a et al. (2019), among others.

Autoregressive Distributed Lag Short-Run and Error Correction Model for Objective One

$$\Delta \ln CPF_t = \beta_0 + \sum_{i=1}^{k} \beta_{1i} \Delta \ln CPF_{t-i} + \sum_{i=0}^{k} \beta_{2i} \Delta \ln ECG_{t-i} + \sum_{i=0}^{k} \beta_{3i} \Delta \ln FBD_{t-i} + \sum_{i=0}^{k} \beta_{4i} \Delta \ln DBS_{t-i} + \sum_{i=0}^{k} \beta_{5i} \Delta \ln EXR_{t-i} + \chi ECT_{t-1} + \varepsilon_{1t}$$

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Where β_0 is the drift parameter, $\sum$ is the summation sign, K is the maximum or optimum lag length, $\beta_1 - \beta_5$ are the short run coefficients to be estimated, $lnECG_t$ is the natural log of economic growth at time t, $\ln FDB_t$ is the natural log of foreign debts at time t, $\ln CPF_t$ is the natural log of capital formation at time t, $\ln DBS_t$ is the natural log of debts servicing at time t, $\ln EXR_t$ is the natural log of exchange rate at time t and ε_t is the error term.

RESULTS AND DISCUSSION

Unit Root Test

This test tries to examine the property of the variables. It is used to check for the presence of stationarity of the variables. This test is carried out using both Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) test. This is the first test carried out in the Co-integration analysis and is known as the pre cointegration test. The ADF and PP are carried out using EViews software package and the results from the tests are tabulated below:

Table 4.1 Unit Root Test Results

	Augmented Dickey Fuller		Philip Perron	
Variables	**Constant**	**Trend**	**Constant**	**Trend**
LnCPF	-3.6323***	-2.7138	-3.5682**	-2.6363
	(0.009)	(0.2370)	(0.0113)	(0.2674)
ΔlnCPF	-4.4764***	-5.1907***	-4.5037***	-5.2124***
	(0.0010)	(0.0008)	(0.0009)	(0.0008)
LnDBS	2.1888	-2.8145	-2.2178	-2.8011
	(0.2134)	(0.2011)	(0.2035)	(0.2057)
ΔlnDBS	-5.5686***	-5.4878***	-5.7486	-6.8283***
	(0.0000)	(0.0004)	(0.0000)	(0.0000)
lnECG	0.0262*	-1.5121*	0.7223	-3.1497
	(0.9551)	(0.8067)	(0.9911)	(0.1099)
ΔlnECG	-3.8569	-3.7642**	-3.8569***	-3.7642**
	(0.0054)	(0.0302)	(0.0054)	(0.0302)
lnEXR	-2.4155	-1.4310	-3.2089**	-1.2003
	(0.1443)	(0.8353)	(0.0272)	(0.8962)
ΔlnEXR	5.1771***	-5.7336***	-5.1771***	-5.9803***
	(0.0001)	(0.0002)	(0.0001)	(0.0001)
lnFDB	-2.5519	-2.5650	-1.8972	-1.9042
	(0.1120)	(0.2974)	(0.3300)	(0.6327)
ΔlnFDB	-4.6099***	-4.5459***	-4.5296***	-4.4630***
	(0.0007)	(0.0044)	(0.0009)	(0.0055)

*** 1%, ** 5% *10%

Table 4.1, indicated that Capital formation was stationary at one percent level of significance using both Augmented Dickey Fuller and Philip Perron at constant level form, while Debt Servicing, Economic Growth, Exchange rate and foreign debt are all stationary at five percent level of significance at constant and constant and trend except Exchange rate that was stationary at one percent level of significance using PP at constant level form.

The study bounds test results

After knowing the best optimum lags combination for the ARDL method to be three as indicated in Table 4.3. The Table 4.4 showed the estimated model equation 15 presented in chapter three of this study which is the bounds test for cointegration.

Table 4.2 Bounds Test Results

F-statistic	**8.3171*** **	
Significance Levels	**Lower Bound I(0)**	**Upper Bound I(1)**
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

*** 1%

In Table 4.2, the bounds test for the cointegration relationship for the model, which represent objective one revealed that the estimated F-statistics value of 8.3171 was higher than the both lower and the upper bounds values at one percent level of significance. Therefore, for the study, there is presence of cointegration relationship in the model.

Summary

The study examined the impact of Foreign debt on Capital formation in Nigeria for a period of 1981-2019. In order to achieve this core objective of the study, time series data was used for the period of 1981-2019, all the data of the variables that are used in the study were sourced from World Bank database (WDI). In assessing the dynamic relationship between foreign debt and Capital formation in Nigeria, the study used ARDL model. The method was valid irrespective of whether a series is I(0), I(1), I(2), non-cointegrated or cointegrated of any arbitrary order.
The core objective of the study was to examine the impact of foreign debt on capital formation in Nigeria and the results got from the ARDL analysis showed that foreign debt had significant positive impact on capital formation at five percent level of significance in the long run. While, in the short-run period, the results shown that foreign debt also has a significant positive impact on capital formation at five percent level of significance. The diagnostic result of the study using Breusch-Godfrey serial correlation LM test for the presence of serial correlation, revealed that the P-value is greater than 5% both in objective one and two respectively, therefore, the null hypothesis is not rejected or there is no serial correlation, where the null hypothesis for serial correlation test stated as Ho: There is no serial correlation.

Breusch-Pagan-Godfrey test was employed to test for the presence of heteroscedasticity. The null hypothesis for the test, Ho: variance is constant (homoscedasticity). The P- value for objective two of this study was greater than 5%, therefore, the null hypothesis is not rejected, where the P-value for objective one found to be less than 5%, therefore the null hypothesis is rejected. The study also tested for the normality of the errors in the model through the Jarque-Bera and its probability values where the result indicated that the estimated Jarque-Bera P-values were not statistically significance which implies non rejection of the null hypothesis that errors were normally distributed in the model both in objective one and two. The study as well tested whether non-linear combinations of the independent variables used in the study, ARDL model have any power in explaining the changes in the sectors output performance. Ramsey RESET

test result shows that the calculated f-statistic value of the objective one was insignificance which implies the acceptance of null hypothesis of no specification error functional form of the ARDL model. While, the calculated f-statistic value of objective two was significance which implies the rejection of null hypothesis of no specification error functional form of the ARDL model.

Conclusion

The data of the variables used in the study are sourced from the world bank data base (WDI). ARDL bounds test for cointegration was applied after confirming the existence of mix order of integration of variables for the models of the study using ADF and PP unit root tests.

The result of the estimated ARDL of this study concluded that one percent change in foreign debt is associated with 3.3524 percent increase in capital formation this implies that foreign debt has significant positive impact on capital formation at five percent level of significance in the long run. Equally, the result stated that the coefficient of economic growth has significant but negative impact on capital formation in the long run as increase in economic growth by one percent is interrelated with 8.3388 percent decrease in capital formation in the long run.

However, in the short-run the findings revealed that foreign debt has significant positive impact on capital formation at five percent level of significance in the short run. This implies that a percentage change in foreign debt is associated with 2.2833 units increase in capital formation in Nigeria.

Policy Recommendations

From the study where capital formation and foreign debt are considered essential in economic growth, suitable formation and assumptions of policies that would enhance economic growth are recommended;

i. The results of this research establish foreign debt has a positive impact on capital formation in Nigeria. This result implies that, causation should be an important tool for government in formulating effective and functional policies in the Nigerian financial sector.

ii. It is important for the policy makers in the country to be cautious on the implementations of projects that raise the foreign debt. It is evidential that such costs lead to borrowing from foreign sources that may take the country towards high debt ratio regime associated with lower economic growth.

iii. There should be an effective controlled measures on debt management profiles especially in the government expenditure by carrying out monitoring and evaluation of funded projects to measure the use of funds in such areas. Borrowed funds should be injected into productive projects and programs to ensure sustainable development. However, to avoid loan build up, the government needs to diversify the economy to help generate revenues.

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