

Domestic Debt and Exchange Rate Stability in Nigeria (1980 - 2021)

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ABSTRACT

This study investigated the relationship between domestic debt and exchange rate stability in Nigeria using data for the period 1981 to 2021. Domestic debt was disaggregated into treasury bills (TBILLS), treasury bonds (TBONDS) and Federal Government bonds (FGNB) as well as other sources of debt (OTHERS). Exchange rate stability was proxied by Nigerian naira/US dollar exchange rate. Data was collected from the Central Bank of Nigeria Statistical Bulletin 2021 and analyzed using a combination of Johansen cointegration, granger causality and co-integrating regression adopting the fully modified ordinary least square (FMOLS) technique. The findings showed that there is no long-run relationship between domestic debt and exchange rate stability. Also, TBILLS, TBONDS and OTHERS positively and significantly affect exchange stability in the short run at 5% level of significance while FGNB has a positive but insignificant short run relationship with exchange rate stability at 5% level of significance. It was also revealed that domestic debt variables (TBILLS, TBONDS and FGNB as well as OTHERS), does not granger cause exchange rate stability at the 5% level of significance. The study concluded that domestic debt significantly affects exchange rate stability in the short run but domestic debt has no long-run relationship with exchange rate stability, and there is no causal relationship between domestic debt and exchange rate stability. The study recommended among others that domestic debt variables are actually contracted using short term instruments. Thus, they should be used to maximally ensure short- and medium-term stability in exchanges.

KEYWORDS: Domestic debt, Exchange rate stability, Treasury bills, Treasury bonds and Federal Government bond

INTRODUCTION

Currency exchange rates arguably have become one of the most important determinants of a country's relative level of economic health. A higher-valued currency makes a country's imports less expensive and its exports more expensive in foreign markets. Conversely, a lower-valued currency makes a country's imports more expensive and its exports less expensive in foreign markets. As such, one major consideration for cross-country investment is the rate at which currencies are exchanged. Thus, exchange rate has far reaching implications for the balance of payments and macroeconomic aggregates of countries. Given the ups and downs of high and low foreign exchange rates, keeping such rates stable and/or less volatile have over time remained a major macroeconomic objective. A very strong exchange rate shows how viable an economy is,

while a very weak currency is a reflection of a very vulnerable and weak economy. Exchange rate instability has real economic shocks because it negatively affects price level, profit level of firms and even the entire activity in an economy (Bala-Sani & Hassan, 2018). Aside international trade related activities, countries also consider exchange rates when it comes to borrowing from abroad. This is because exchange rate depreciation (or devaluation) after such borrowings places the borrowing nation at a disadvantaged position whereby it will cost her more to offset such debts and vice versa. A case in point is Nigeria where the value of the naira in terms recognized foreign currencies like the United States Dollar, British Pound Sterling and the Euro has never been stable. A pound which exchanged for ₦1.25 in 1981 rose to ₦554.17 (AFEM/DAS rates) in 2021. Within the same period, a dollar rose from ₦0.61 to ₦402.54 (AFEM/DAS rates) (CBN, 2021).

Thus, the foregoing suggests that exchange rates are important to Nigeria's economy because they affect trade and financial flows between Nigeria and other countries. However, Ugorji and Akakem (2016) opined that countries, especially developing ones and those in transition, prefer to borrow locally than to borrow internationally because of the vulnerable nature of their currencies. Bacchiocchi and Missale (2012) thus stated that domestic debt may bring some prominent benefits like the lower exposure of the public debt portfolio to currency risk if and when the domestic debt is denominated in local currency; a lower vulnerability to capital flow reversals; the possibility to undertake counter-cyclical monetary policy to mitigate the effect of external shocks and the improved institutional infrastructure underlying the organization and functioning of local financial markets. In essence, long-term domestic currency-denominated debt reduces maturity and currency mismatches and hence tends to be safer. Little wonder, domestic debt in Nigeria in 2020 and 2021 were 56% and 55% of total debts respectively (CBN, 2021). Holdings of Federal Government's domestic debts outstanding in Nigeria come from the Central Bank of Nigeria (CBN), deposit money banks, sinking fund and the non-bank public; with a large chunk of these debts coming from the apex bank, followed by deposit money banks and the non-bank public. This trend changed in 2006 with the non-bank public now ahead in the queue (CBN, 2021). Nevertheless, the recognized instruments used by the Nigerian government for domestic borrowings are treasury bills, FGN (Federal Government of Nigeria) bonds, treasury certificates, promissory note, FGN (Federal Government of Nigeria) Sukuk, treasury bonds, development stocks, FGN (Federal Government of Nigeria) green bond and FGN (Federal Government of Nigeria) savings bond (CBN, 2021). The oldest of these instruments are treasury bills, treasury certificates and development stocks. Treasury bonds came into the fray in 1989 while FGN Bonds was introduced in 2003. FGN Sukuk, FGN green bond and FGN savings bond were first used as domestic debt instruments in 2017. A year later, promissory note came to lime light (CBN, 2021).

The Nigerian state which is a recognized developing country is amongst other things characterized by deficit budgeting year after year. The government in a bid to meet up its developmental goals and to close the huge deficit gap has resorted to borrowing both locally and internationally. Local borrowing has taken the driver's seat in recent times. According to Didia and Ayokunle (2020), this is as a result of the debt forgiveness by the Paris Club in 2005 and the obvious advantages associated with borrowing locally. They added that Nigeria's overall debt and external debt decreased by 59.0 percent and 90.8 percent respectively between 2004 and 2006 to the tune of ₦2,533.47 billion and ₦451.5 billion respectively while domestic debt rose

by 27.94%. In 2021, Nigeria's total debt was ₦35,097.79 billion made up of ₦19,242.56 billion in home debts and ₦15,855.23 billion in foreign debt (CBN, 2021). Expectedly, the continuous increase in domestic debt since 2005 should trigger growth in the Nigerian economy which should lead to increase in local production and strengthening of the naira against other currencies. However, the debate on the contribution of domestic debt to exchange rate stability in Nigeria rages on.

On the empirical front, given the obvious ties between external debt and exchange rate, a preponderance of studies exists on external debt and exchange rate stability (Bunescu, 2014; Nwanne & Eze, 2015; Couharde, Rey & Sallenave, 2016; Huq, & Ichihashi, 2018; Kouladoun, 2018; Husain, Ansari & Ansari, 2019; Mutua & Mugendi, 2020; Park, Ramayandi & Tian, (2020). However, given that that domestic debt on its own part spurs local production which ordinarily should affect exchange rate, one wonders why much has not been done in the area of domestic debt and exchange rate stability.

REVIEW OF RELATED LITERATURE

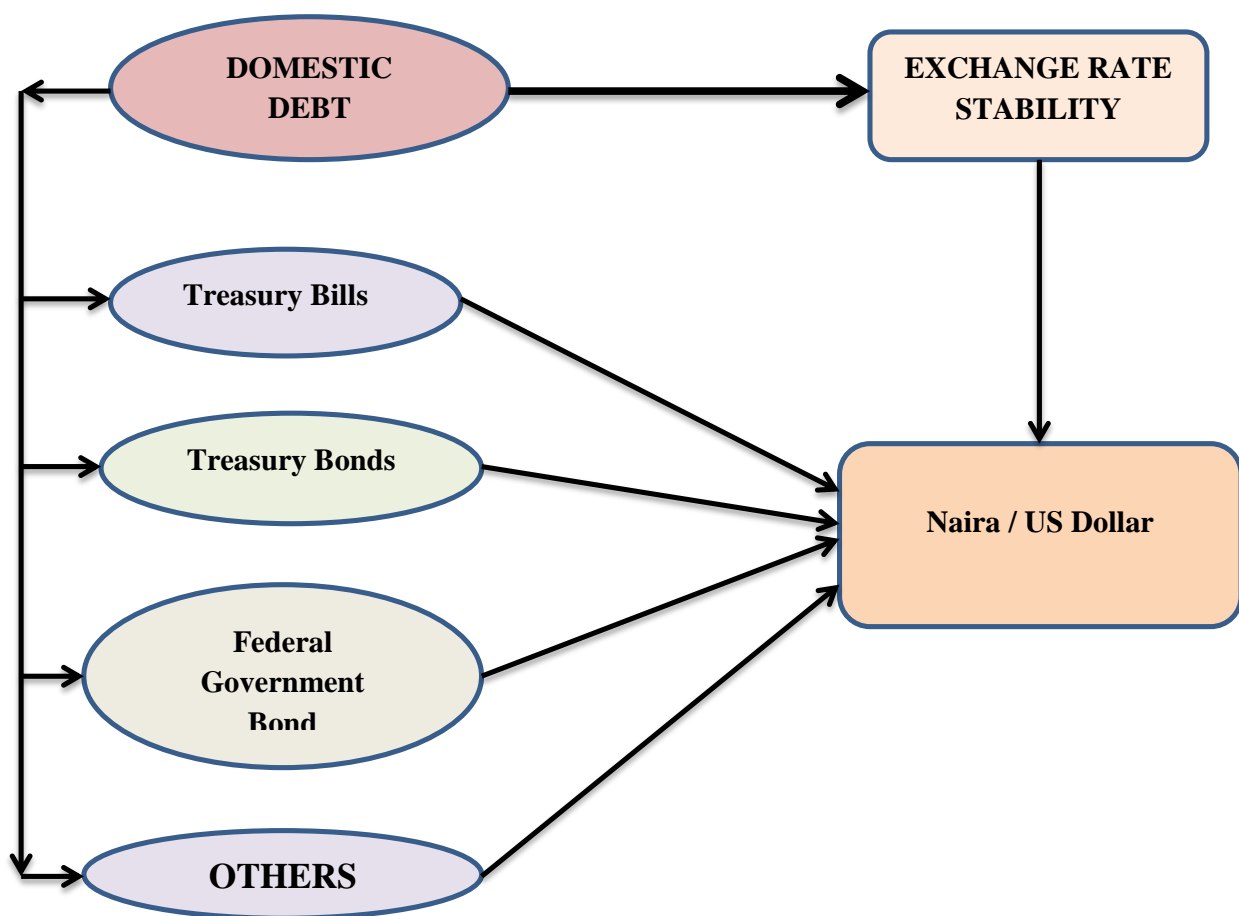


Figure 2.1: Conceptual Framework domestic debt / exchange rate stability nexus

Conceptual Review

Domestic Debt

Domestic debt, otherwise known as internal debt, simply means debt owed to the borrowing government's own citizens. Such a debt refers to the responsibility or obligation committed by a country within its borders. Domestic debt therefore can as well be defined as debt that government borrows within a country that involves the same currency (Abbas & Christensen, 2007). It involves a re-arrangement of assets such that citizens surrender current purchasing power in return for government securities, and no increase in real resource is directly created as a result. That is, it is a situation whereby the borrowing unit acquires the money from itself (lends to itself) hence taxpayers can be said to be borrowing from themselves (Olaoye & Orimogunje, 2022). Such internal debts include loans through the issues of treasury bills, treasury certificates, development stocks, ways and means advances, etc. Thus government creates internal debt by tapping personal and corporate savings directly and indirectly. The issue of government bonds or securities constitutes direct government absorption of domestic savings. An indirect method of absorption of private sector savings by government is by borrowing from the banking system through the sale of bonds and securities. However, Merritt (2017) added that domestic financing/borrowing can also be through outright money creation or borrowing from the central bank. Put differently, internal debts are debts incurred by government through borrowing in the domestic market in order to finance domestic investment, that is, all claims against the government held by the private sector of an economy, whether interest-bearing or not (including bank held debt and government currency, if any); less any claims held by the government against the private sector (Anyanwu, 1993). Therefore all the amount of money that government owes internally through treasury bills, treasury certificates, and Federal Government Development Stock, ways and means advances and treasury bonds are all regarded and grouped as domestic debt (Ajayi & Edewusi, 2020).

Treasury Bills

Treasury bills (T-bills) are government guaranteed debt instruments with maturity of less than a year, issued by the Central Bank of a country on behalf of the government of the country to finance expenditures. Thus, they are issued to meet short-term mismatches in receipts and expenditure. Such bills are also used to control money supply in an economy (Ekpo, 2013). In other words, treasury bills are highly liquid instruments traded in the money market. They are usually issued by government as debt instruments with a maturity of 3 months (91-days). According to Idris and Ahmad (2017), in modern times, governments have utilized this instrument to cushion its temporary excesses of expenditure over its revenue. One major feature of treasury bills is that they are not subject to withholding tax, which makes it attractive in spite of its low yield. They are also eligible for rediscount at the secondary segment of the money market. In Nigeria, the CBN issues treasury bills and they are sold through a bi-weekly auction conducted by the apex bank. Buyers as such are requested to quote bids following which the average minimum bid is selected. Treasury bills can be bought through any official dealer. The easiest these days are through banks' treasury bill mobile application. A typical example is the Sterling Bank's i-invest (Akhanolu, Babajide, Akinjare, Oladeji & Osuma, 2018).

Treasury Bonds

Treasury bonds (T-bonds) are also a form of government debt security issued by the central bank of a country on behalf of the government for a longer period of time and with a fixed rate of

return. Its maturity periods range from 20 to 30 years. T-bond holders receive semi-annual interest payments, called coupons, from inception until maturity, at which point the face value of the bond is also repaid. In the United States, the U.S. Treasury issues 10-year zero-coupon bonds, which do not pay any interest (Amilcar, 2016). Treasury bonds are motivated by the need for a steady, predictable return on investment. Such bonds can be purchased directly from the apex bank of a country or through a bank, broker, or mutual fund company. They are regarded as risk-free since they are backed by the full faith and credit of the government. The full faith comes from its ability to its citizens. Thus, T-bonds are part of government's treasury securities, which include treasury bills, and treasury notes. These securities are normally issued to raise funds for the government's day-to-day operations, defense spending, or funding development projects. In Nigeria, T-bond is one of the major domestic debt instruments and the first set of treasury bonds were issued in 1989 with an outstanding value of ₦11.35 billion (CBN, 2021).

FGN Bonds

FGN (Federal Government of Nigeria) bonds are debt securities (liabilities) of the Federal Government of Nigeria (FGN) issued by the Debt Management Office (DMO) for and on behalf of the Federal Government (Idris & Ahmad, 2017). The FGN has an obligation to pay the bondholder the principal and agreed interest as and when due. When you buy FGN Bonds, you are lending to the FGN for a specified period of time. According to Ekpo (2013), the FGN bonds are considered as the safest of all investments in domestic debt market because it is backed by the 'full faith and credit' of the Federal Government, and as such it is classified as a risk free debt instrument. They have no default risk, meaning that it is absolutely certain your interest and principal will be paid as and when due. The interest incomes earned from the securities are tax exempt (Idris & Ahmad, 2017). According to DMO (2021), The Nigerian Government issues FGN bonds for the following reasons:

1. To finance government fiscal deficits in a non-inflationary and sustainable manner.
2. To enhance fiscal discipline of the Government.
3. To refinance maturing debt obligations of the Federal Government.
4. To establish benchmark yield curve, this serves as reference for pricing bonds issued by other bodies, especially the private sector issuers.
5. To develop and ensure liquidity in the domestic bond market on a sustainable basis.
6. To enhance and deepen the savings and investment opportunities of the populace.
7. To sustain the development of other segments of the Bond market.
8. To diversify government financing sources.

However, the features of the FGN bonds according to DMO (2021) are:

1. Denomination: minimum subscription of ₦50,001,000.00 + multiple of ₦1,000.00 thereafter.
2. Yield- Interest payment:
 - a. Fixed interest rates: Most FGN bonds have fixed interest rates which are paid semi-annually.
 - b. Floating interest rates: Some FGN bonds (e.g. 3rd & 4th tranches of the 1st FGN bonds) have floating rates of interest which fluctuates around a reference rate (NTB rates) on the basis of specified parameters.

- c. There are also zero-coupon bonds (not yet in issue in Nigeria) whereby both interest and principal are repaid at the final maturity date of the bond.
3. Tenor: Minimum of two (2) years. There are bonds with maturities of 3, 5, 7 and 10 years; in issue and for the future we may have bonds with maturities of 15, 20, 30 years or more.
4. Default Risk: FGN bonds as a sovereign debt are the safest investment instrument. Default risk is nil. The Government always pays what is due to subscribers on the agreed date.

Exchange Rate Stability

Exchange rate refers to the rate at which the currency of one country is bought and sold in terms of the currency of another country. In other words, it is the price of a currency for another currency (Dwivedi, 2008). In Nigeria, exchange rates connote the value of the naira to other currencies such as United States Dollar, Japanese Yen, British Pounds, European Euro and so on. Exchange rates are either fixed or floating. Fixed exchange rates are decided by central banks of a country while the floating rates are determined by the interaction of demand and supply of foreign exchange (foreign currency) (Sekmen, 2011). The need for buying and selling of foreign currency arises for payments to the country from which imports are made. Thus, if demand for a currency rises with the supply being constant, the exchange rate of the currency will appreciate and exchange rate is said to depreciate if the amount of domestic currency required to buy a foreign currency reduces *ceteris paribus*. As such, exchange rate fluctuations refer to up and down movements in prevailing exchange rates typically due to the forces of demand and supply of currencies at different times. According to Aliyu (2011), exchange rates change whenever the value of any one of the two currencies involved in a foreign transaction changes. A currency at any point in time appreciates whenever demand for it is greater than the supply and vice versa. He added that fluctuations in exchange rates are caused by monetary flows regarding changes in trade balances (deficit or surplus), budgets, inflation rate, political stability; internal harmony, general state of economy, and quality of governance. Thus, domestic currency appreciates whenever credit transactions exceed debit transactions. Also, domestic currency depreciates whenever debit balance exceeds credit balance. Also, increases in interest rates provide higher rates to lenders which attract more foreign exchange, thereby, causes a rise in exchange rate and appreciation of the domestic currency (Ezenwakwelu, Okolie, Attah, Lawal & Akoh, 2019). As such, a currency that is not subjected to a high (significant) appreciation and depreciation over a given period of time is tagged a stable currency. In the same vein, exchange rate stability implies an exchange rate that is not susceptible to volatility (Mutua & Mugendi, 2020).

Theoretical Review

The Debt Overhang Hypothesis

According to Gordon and Cosimo (2018), debt overhang theory implies that large borrowing leads to high debt, debt traps and slowing down of economic growth. Thus, the debt overhang hypothesis states that if there exist, the likelihood that in the future government debt will be

larger than the country's repayment ability; expected debt service costs will discourage further domestic and foreign investment. Potential investors would be discouraged on the assumption that the more there is production, the more they will be taxed by governments to service the public debt and thus they will be less willing to incur investment costs today for the sake of increasing future output. In particular, the theory argued that the requirement to service debt reduces funds available for investment purposes; hence, a binding liquidity constraint on debt would restrain investment and further retard growth. The theory holds that both the stock of public debt and its service affect growth by discouraging private investment or altering the composition of public spending (Coccia, 2017).

Debt Crowding-Out Hypothesis

According to the debt crowding out hypothesis, higher debt service payments can increase a country's budget deficit, thereby reducing public savings if private savings do not increase to offset the difference. This, in turn, may either drive up interest rates or crowd out the credit available for private investment, thereby depressing economic growth (Yusuf & Mohd, 2021). When government increases borrowing to fund higher spending, it crowds-out private sector investment through higher interest rates. If increased borrowing leads to higher interest rates by creating higher demand for money and loanable funds and thus higher prices, the interest rate sensitive private sector will likely reduce investment due to lower rate of returns. A fall in business-fixed investment will hurt long-term supply-side economic growth, that is, potential production growth. This crowding-out effect is weakened by the fact that government spending through the multiplier increases the demand for private sector products, thereby stimulating fixed investment via the acceleration effect (Joy & Panda, 2020). In other words, government deficit financing through domestic and external borrowing might result in increased interest rates, lower disposable income and lower wages all of which reduces the profitability of businesses and by extension private investment. This may consequently discourage or crowd-out private investment and decrease the production level in an economy (Spilioti & Vamvoukas, 2015).

The Keynesian Theory

The major proponent of this theory is John Meynard Keynes, who views fiscal policy as the best policy that brings about growth in any economy since it acts in the interest of the general public. According to Keynes, when the government embarks on public borrowing to finance its expenditure, unemployed funds are withdrawn from the private pockets such that the consumption level of private individuals remains unaffected. These funds when injected back into the economy by the government leads to a multiple increase in aggregate demand causing an increase in output and employment. Hence, public borrowing can be used to influence macroeconomic performance of the economy (Matthew and Mordecai, 2016). According to the theory, people should not wait for the long run before they take action to bring the economy back to full economic activities (Ugorji & Akakim, 2016). Waiting for the long run when the market will adjust itself back to equilibrium is dangerous because in the long run, we may have all died. Conversely, government spending in an economy has short run solution to economic crisis. Thus, the Keynesian school recommended increase in government expenditure during economic slump and fall during economic prosperity

This study nonetheless tilted towards the Keynesian school of thought. This is because of the obvious need for government intervention in developing countries which are majorly characterized by yearly budget deficits. As such, to achieve laid down macroeconomic objectives like exchange rate stability, there is need for the government to borrow when budgeted revenue fall short of budgeted expenditures. By so doing, the government can encourage local production which will result to exports and thereby strengthening the local currency. Conversely, in a n unlikely event where projected revenue exceed projected expenditures, there is need for the government to cut back in its expenditure in order not to encourage inflation which is directly tied to interest rate and exchange rate movements. Better still, the government can save the excess revenue for rainy days or use it to offset existing public debts. Thus, the need for government intervention cannot be overemphasized; moreover, the opinion of the classical school may not work in a developing country like Nigeria that is characterized by so many structural imbalances.

Empirical Review

Ashogbon, Onakoya and Omokehinde (2023) investigated the relationship between institutional strength and currency rate volatility in Nigeria between 1981 and 2021. They employed an autoregressive distributed lag (ARDL) model with exchange rate as the dependent variable and total domestic debt, total external debt, trade openness, deposit rate, fiscal balance and institutional factor as explanatory variables to investigate both long- and short-term correlations. Data on these variables were generated from the Central Bank of Nigeria statistical bulletin, Debt Management Office, the Global Development Indicators, and the Worldwide Governance Indicators. Accordingly, there was evidence of long-term relationships in the error correction term, which turned out to be negative and statistically significant at one percent. Also, a considerable positive relationship between institutional quality and exchange rate and a long-term large negative association between external public debt and exchange rate were established. While domestic debt has a positive and significant relationship with the exchange rate, institutional quality was revealed to have a negative and significant association with the exchange rate in the near term.

A study by Eze, Ogwu, Obozua and Okolo (2021) examined the association between Nigeria's exposure to external debt and exchange rate risk. The study considered annual time series data on currency rate, foreign debt stock, external debt service payment, gross domestic product growth rate, interest rate, total payment on external debt, and trade openness for the period 1981 to 2019. These data were collected from the World Development Indicators (WDI) and Central Bank of Nigeria (CBN) statistical bulletin for 2019. Adopting the Indirect Least Square (ILS) regression technique, they found that the total payment of external debt has a small positive impact on the exchange rate. The payment of foreign debt service and the openness of trade, however, have a negative and significant impact on the currency rate.

Husain, Ansari and Ansari (2019) assessed the impact of foreign debt on exchange rate in India over a period of twenty-nine years, which spanned between 1991 and 2019. They used autoregressive distributed lag (ARDL) bounds test technique to cointegration as their empirical tool with exchange rate as the dependent variable while external debt to gross domestic product ratio, gross domestic growth rate, and fiscal deficit serve as independent variables. They study

found a positive association between external debt and exchange rate. Also, it was shown that there is a long-term correlation between exchange rate and external debt in India over the study period. Foreign debt also has a positive and considerable impact on the exchange rate in the short and long term. They concluded that a lack of responsible debt management practices is what leads to exchange rate volatility.

Mwaniki, Obwogi and Kiptui (2019) investigated the effects of local public debt, foreign public debt, and foreign exchange reserves on the volatility of local currency exchange rate in Kenya from 2007 to 2017. They applied the Augmented Dickey Fuller (ADF) unit root test before assessing co-integration's boundaries using autoregressive distributed lag (ARDL). The study found that while domestic public debt has a neutral effect on exchange rates, foreign exchange reserves has a positive effect on exchange rate volatility. It was also revealed that both domestic and foreign public debts have negative effects on exchange rates. Due to the effects of domestic and foreign public debts on exchange rate volatility, they suggested that both domestic and foreign public debt be managed carefully.

Baghebo and Uche (2018) examined the nexus between public debt and exchange rate movement in Nigeria by using annual time series data covering 1986-2017. The study applied augmented dickey-fuller for unit root test, vector autoregression to test for autocorrelation and multivariate vector autoregression to test for heteroskedasticity with the entire test returning favourable outcome. For empirical estimation, the study used structural vector autoregression (SVAR) model with government external debt, government domestic debt, real exchange rate and government debt service payment as the variables. The results showed that whereas government domestic debt has considerable positive influence on exchange rate movement only in the short term, government external debt has significant positive influence on exchange rate movement both in the short and long terms.

Kouladoum (2018) employed the generalised method of moments (GMM) to determine the correlations between external debt and real exchange rate in Chad for the years 1975 to 201. The study's explained variable was real exchange rate, while its explanatory factors were foreign debt, government spending, investment, money supply, level of economic openness, and service of external debt. The findings revealed that foreign debts have a positive and considerable impact on real exchange rate.

Hug and Ichihashi (2018) conducted an empirical examination into a variety of effects of borrowing foreign currency on the economy of Bangladesh's exchange rate volatility. Using quarterly data spanning 2010Q1 to 2017Q2, they used the econometric methods of ordinary least square (OLS) and vector error correction model (VECM) to ascertain whether the variables cointegrated over the long term. The VECM results showed that the volatility of exchange rates cointegrates with both government and private foreign currency debt. OLS results also demonstrated that foreign currency debt, both public and private, have a negative and significant effect on exchange rate volatility.

Couharde, Rey and Sallenave (2016) studied the relationship between external debt and real exchange rate changes in the Euro Area in a sample of 11 Euro Area countries from 2003Q3 to 2012Q3. On the relationship between the dynamics of real exchange rates and external debt, they

looked for a threshold impact. The findings showed that while real exchange rate dynamics are under pressure in the short term by increasing external debt position, real exchange rate dynamics tend to decline over the long term. Thus, they stated that rising foreign debt causes currency rates to depreciate.

Saheed, Sani and Idakwoji (2015) examined the impact of public external debt on exchange rate in Nigeria for the period 1981 to 2013. Adopting a linear multiple regression model, exchange rate was regressed on external debt, debt service payment and foreign or external reserve. Accordingly, external reserve was measured by total sum of foreign exchange reserve. Data on these variables were sourced from Central Bank of Nigeria (2012), Debt Management Office (2014), International Monetary Fund and World Bank International Financial statistics and Data file, as well as the World Bank Global Economic Monitor (2014). Prior to estimation of the model, standard econometric tests, that is, stationarity test was conducted to test for its stochastic properties through unit root tests in order to avoid estimating spurious regression results, while co-integration test was used to analyze the relationship between public debt and exchange rate. Based on unit root result, the OLS (Ordinary Least Square) technique was employed as the main analytical tool. OLS results revealed that all the dependent variables, that is, external debt, debt service payment and foreign reserve proved to be statistically significant in explaining exchange rate fluctuation in Nigeria within the period of observation, with debt service payment having the strongest effect, with a coefficient of 0.4443.

Bunescu (2014) examined the impact of external debt on exchange rate variation in Romania with the aim to identify the existence or non-existence of a link between Romania's external debt components on medium and long term and the evolution of RON/EUR exchange rate. These components are direct public debt and loans from the IMF, publicly guaranteed debt, private debt (publicly non-guaranteed), debt from medium and long-term deposits of nonresidents. They used monthly data series provided by National Bank of Romania and the data series used were time series covering January 2005 – August 2013 period; and they got 104 observations for each variable. Softwares that were used for data processing and statistical analysis were SPSS 18.0 and E-views 4.1. The 5 series were tested for normal distribution, it also checked for stationarity, cyclical and seasonal series and autocorrelation in time series data. After processing the data series to acquire content we moved to quantify the correlation coefficients of series. Graphical analysis showed no apparent seasonality and cyclicity for any of the five variables, but it was observed that a linear trend exist between variables. Exchange rate correlation analysis in Romania with external debt components revealed the existence of a strong link between variables. Also, public external debt has the greatest direct impact on variation of exchange rate, the positive correlation between the two indicators indicated that an increase in direct indebtedness of the government and local authorities on foreign financial markets is followed by a depreciation of the domestic currency against the euro.

Gap in Literature

One of the peculiarities of this study is that it considers domestic debt from a disaggregated perspective vis-à-vis exchange rate stability in Nigeria. Thus, given the sea of studies on external debt and exchange rate stability, this work stands out as one of those that focused solely on domestic debt and exchange rate stability in Nigeria in the context of domestic debt sources like

treasury bills, treasury bonds and FGN bonds. This no doubt will create a new line of research in the public debt-economic stability nexus.

METHODOLOGY

Research Design

In order to investigate the effect of domestic debt on exchange rate stability in Nigeria, the longitudinal, cross-sectional time series research design a type of quasi- experimental research design was adopted. In this study, domestic debt was proxy by Treasury Bills (T-Bills), Treasury bonds (T-Bonds), FGN Bonds (FGNB) and Others. These were the independent variables while Average Nigeria naira/US dollar Exchange rate (N/USD) was used to measure exchange rate stability as the dependent variable.

Sources of Data

Data on all the variables were sourced from the Central Bank of Nigeria statistical bulletin 2021.

Method of Data Analysis

The study adopted the Johansson cointegration test to analyze the data collected. This method was adopted because the variables under consideration were all stationary at first difference i.e. I (1) as indicated by the ADF unit root test. The Johansson cointegration test is interpreted using the trace test and the eigenvalue which indicate whether there is a long run relationship or not among the variable.

Model Specification

The functional model of the study is presented below as:

$$N/USD = f(T-BILLS, T-BONDS, FGNB, OTHERS)$$

The econometric model is presented in regression form as:

$$N/USD_t = \beta_0 + \beta_1 TBILLS_t + \beta_2 TBONDS_t + \beta_3 FGNB_t + \beta_4 OTHERS_t + \mu_t$$

Where:

N/USD = Naira to United States Dollar Exchange Rate

TBILLS = Treasury Bill

TBONDS = Treasury Bond

FGNB = Federal Government Bond

β_0 = Constant Term

$\beta_1, \beta_2, \beta_3, \beta_4$ = Coefficient of explanatory variables

μ_t = Error Term

DATA ANALYSIS AND INTERPRETATION

Table 1: Table showing the descriptive statistics of NUSD, FGNB, TBILLS, TBONDS and OTHERS

Statistic	NUSD	FGNB	OTHERS	TBILLS	TBONDS
Mean	1.56371	5.73613	8.548627	11.48755	9.070965
Median	2.048998	0	9.718136	11.67388	11.25435
Maximum	2.602021	13.14499	12.15143	12.5782	11.63408
Minimum	-0.21465	0	0	9.762078	0
Std. Dev.	0.870252	6.266706	3.695703	0.851729	4.53934
Skewness	-0.80677	0.162927	-1.74215	-0.49268	-1.5105
Kurtosis	2.391292	1.046267	4.509666	1.961256	3.32475
Jarque-Bera	5.08069	6.702227	24.63315	3.501926	15.77124
Probability	0.078839	0.035045	0.000004	0.173607	0.000376
Sum	64.1121	235.1813	350.4937	470.9894	371.9096
Sum Sq. Dev.	30.29357	1570.864	546.3288	29.0177	824.2243
Observations	41	41	41	41	41

Source: Researcher's Desk 2023 (e-views 10.2 output)

The descriptive statistics results above in table 4.2 indicate that:

1. Mean: NUSD, FGNB, OTHERS, TBILLS and TBONDS have mean values 1.56371, 5.73613, 8.548627, 11.48755 and 9.070965 respectively.

3. Skewness measures the asymmetry of the probability distribution of a real value random variable about its mean. FGNB is negatively skewed while NUSD, OTHERS and TBILLS as well as TBONDS are positively skewed.

4. Kurtosis measures the peak or flatness of the series distribution relative to a normal distribution. Data sets with high kurtosis tend to have a distinct peak near the mean and have heavy tails. Kurtosis value greater than 3 is said to be leptokurtic. From table 1 above, the variable "OTHERS" has a leptokurtic distribution while NUSD, FGNB, TBILLS and TBONDS are normally distributed. However, the Jarque-Bera test - a goodness of fit test of whether sample data have the Skewness and kurtosis matching a normal distribution. The value of the JB statistics and its probabilities indicate that NUSD, and TBILLS are normally distributed while FGNB, OTHERS and TBONDS are not normally distributed.

Furthermore, a graphical analysis showing the movement of the variables is presented below in figure 1.

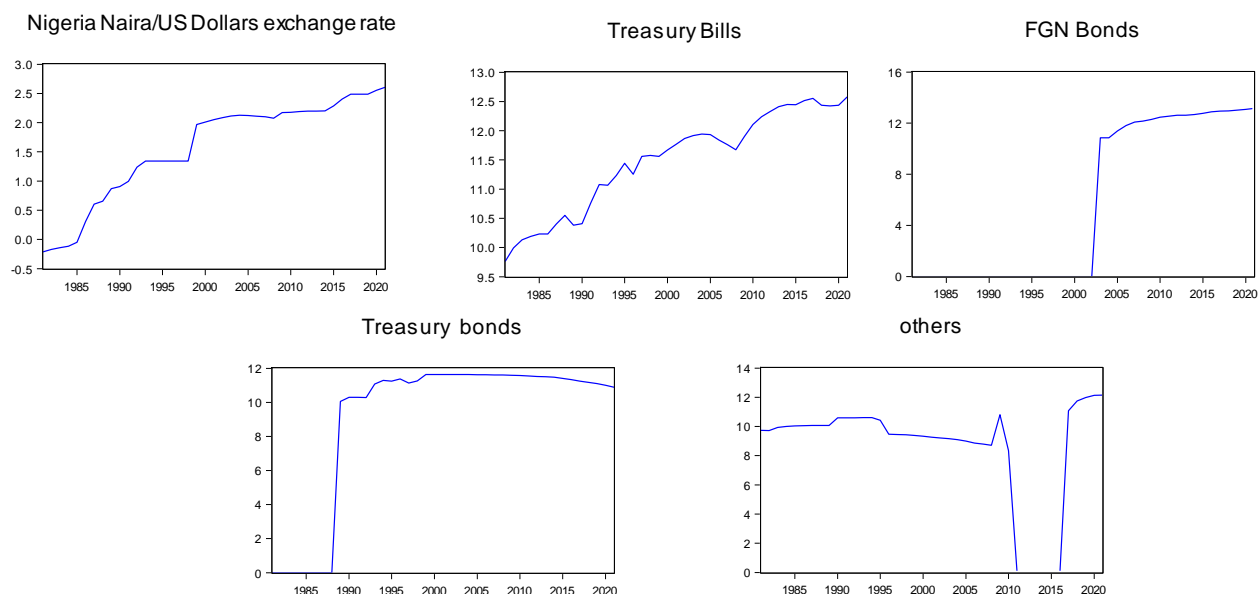


Figure 4.1: Movement of NUSD, FGNB, TBILLS, TBONDS and OTHERS 1981 2021

Unit Root Test

As noted in section three, the variables were subjected to unit root test to avoid using wrong method of data analysis and spurious results. The Augmented Dickey –Fuller Unit Root Test summary results are presented in table 4.3 below (full results are shown in appendixes 2a to 6b) . The results indicate that all the variables were stationary at first difference.

Table 2: Summary of Augmented Dickey –Fuller Unit Root Test results

Variable	$\sim I(d)$	Stationarity	Level of Significance
NUSD	$I(1)$	First difference	5%
TBILLS	$I(1)$	First difference	5%
TBONDS	$I(1)$	First difference	5%
FGNB	$I(1)$	First difference	5%
OTHERS	$I(1)$	First difference	5%

Source: Researcher’s Desk 2023 (e-views 10.2 output)

Following the outcome of the unit root tests which indicate that all the variables were stationary at first difference, the relationship between domestic debt variables and exchange rate stability was analyzed using the Johansson Cointegration test.

Empirical Results

The results are shown on table 4.4 below (see appendix 7 for full results)

Table 3: Summary Result of the Johansson Cointegration test

Series: N/USD TBILLS TBONDS FGNB OTHERS

Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.470547	58.34930	69.81889	0.2895
At most 1	0.305517	33.54878	47.85613	0.5266
At most 2	0.188676	19.32984	29.79707	0.4694
At most 3	0.161274	11.17543	15.49471	0.2010
At most 4	0.104774	4.316467	3.841466	0.0377

Trace test indicates no cointegration at the 0.05 level

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.470547	24.80052	33.87687	0.3986
At most 1	0.305517	14.21894	27.58434	0.8072
At most 2	0.188676	8.154417	21.13162	0.8940
At most 3	0.161274	6.858960	14.26460	0.5060
At most 4	0.104774	4.316467	3.841466	0.0377

Max-eigenvalue test indicates no cointegration at the 0.05 level

Source: Researcher's Desk 2023 (e-views 10.2 output, see appendix 12 for full results)

The results show that the two methods used to interpret the Johansson Cointegration test – the Trace test and the Max-eigenvalue test indicates that there is no cointegration between domestic debt variables and exchange rate stability at the 0.05 level of significance.

To investigate the short-run relationship, the researcher estimated a cointegrating regression using the Fully Modified Least Squares (FMOLS). The results are shown on table 4.5 below.

Table 4: Summary result of the estimated FMOLS cointegrating equation ((see appendix 8 for full results)

Dependent Variable: NUSD

Method: Fully Modified Least Squares (FMOLS)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TBILLS	0.727392	0.097951	7.426119	0.0000
TBONDS	0.051331	0.012137	4.229429	0.0002
FGNB	0.016529	0.009145	1.807398	0.0793
OTHERS	0.022625	0.009188	2.462479	0.0189
C	-7.543933	1.023777	-7.368726	0.0000

R-squared 0.962149, Adjusted R-squared 0.957823

From table 4 above, the model has an R-squared of 0.962149 or 96.21% and Adjusted R-squared of 0.957823 or 96% which indicates that the model has a good fit.

Furthermore, the test of hypothesis as reflected by the coefficients, t-statistic and t-statistical probability shown on table 4.5 above indicate that in the short-run, TBILLS, TBONDS and OTHERS positively and significantly affect exchange rate stability at the 5% level of significance. On the other hand, FGNB has a positive but insignificant short-run relationship with exchange rate stability at the 5% level of significance.

Further investigation on the relationship between domestic and exchange rate stability was tested using Granger causality test. The results are presented below on table 4.6.

The results show that on one hand TBILLS, TBONDS and FGNB as well as OTHERS does not Granger Cause exchange rate stability at the 5% level of significance. On the other hand, the Granger causality test also indicates that exchange rate stability (NUSD) does not Granger Cause TBILLS, TBONDS and FGNB as well as OTHERS at the 5% level of significance.

Table 5. Granger causality test result

Null Hypothesis:	Obs	F-Statistic	Prob.
TBILLS does not Granger Cause NUSD	39	1.07335	0.3532
NUSD does not Granger Cause TBILLS		2.05309	0.1440
TBONDS does not Granger Cause NUSD	39	0.28175	0.7562
NUSD does not Granger Cause TBONDS		0.78318	0.4650
FGNB does not Granger Cause NUSD	39	0.09768	0.9072
NUSD does not Granger Cause FGNB		2.51092	0.0961
OTHERS does not Granger Cause NUSD	39	0.05603	0.9456
NUSD does not Granger Cause OTHERS		0.38263	0.6850

Source: Researcher's Desk 2023 (e-views 10.2 output)

Discussion of findings

The finding from this study indicate that there is a positive and significant relationship in the short-run but no long-run relationship between domestic debt and exchange rate stability. The findings of this study agrees with Baghebo and Uche (2018) which showed that government domestic debt has considerable positive influence on exchange rate movement only in the short term. Also, this study agrees with Ashogbon, Onakoya and Omokehinde (2023) who asserts that domestic debt has a positive and significant relationship with exchange rate. However, this study differs from Mwaniki, Obwogi and Kiptui (2019) who found that domestic public debt has a negative effect on exchange rates. Furthermore, this disagrees with Yusuf and Mohd (2021), Juergen (2019), Sadiku, Bexheti and Sadiku (2018) but agrees with Alejandro and Ileana (2017) who examined the impact of government debt on gross domestic product in 16 Latin American economies.

Results of this study indicates that in the short-run, TBILLS, TBONDS and OTHERS positively and significantly affect exchange rate stability. On the other hand, FGNB has a positive but insignificant short-run relationship with exchange rate stability. These findings differ from the results of studies carried out by Yusuf and Mohd (2021), Juergen (2019), Sadiku, Bexheti and Sadiku (2018) but agrees with Alejandro and Ileana (2017). This study also shows that domestic debt variables - TBILLS, TBONDS and FGNB as well as OTHERS do not Granger Cause exchange rate stability in Nigeria. Granger causality test also indicate that exchange rate stability (NUSD) does not Granger Cause TBILLS, TBONDS and FGNB as well as OTHERS. The researcher could not find studies that applied the Granger causality model to the domestic debt – exchange rate relationship.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study investigated the relationship between domestic debt and exchange rate stability in Nigeria using data for the period 1981 to 2021. Domestic debt was disaggregated into treasury bills (TBILLS), treasury bonds (TBONDS) and federal government bonds (FGNB) as well as others sources of debt (OTHERS). Exchange rate stability was proxy by Nigerian naira US dollar exchange rate. Data was collected from the Central Bank of Nigeria Statistical Bulletin 2021 and analyzed using a combination of Johansson Cointegration, Granger causality and cointegrating regression adopting the fully modified ordinary least square (FMOLS). The findings are presented below.

1. There is no long-run relationship between domestic debt and exchange stability.
2. TBILLS positively and significantly affect exchange rate stability in the short-run at the 5% level of significance.
3. TBONDS has a positive and significant short-run relationship with exchange rate stability at the 5% level of significance.
4. OTHERS positively and significantly affect exchange rate stability in the short-run at the 5% level of significance.
5. FGNB has a positive but insignificant short-run relationship with exchange rate stability at the 5% level of significance.
6. Domestic debt variables (TBILLS, TBONDS and FGNB as well as OTHERS), does not Granger Cause exchange rate stability at the 5% level of significance.
7. Exchange rate stability (NUSD) does not Granger Cause domestic debt variables (TBILLS, TBONDS and FGNB as well as OTHERS) at the 5% level of significance.

The study concludes that domestic debt significantly affects exchange rate stability in the short-run. It is also concluded that domestic debt has no long-run relationship with exchange rate stability. Finally, the study concludes that there is no causal relationship between domestic debt and exchange rate stability

Recommendations

To effectively utilize domestic debt to target exchange rate stability, the study makes the following recommendations.

1. Domestic debt variables are actually contracted using short-term instruments. Thus, they should be used to ensure short and medium-term stability in exchanges.

2. Government through the Central Bank of Nigeria should deploy TBILLS for effective management of exchange rate stability.
3. Public debt managers should as a matter of policy, sustain the use of TBONDS in managing exchange rate stability.
4. OTHER sources of domestic debt should be maximized to contribute individually and collectively to the effective management of exchange rate stability.
5. Government should do more with FGNB to make it contribute significantly to exchange rate stability management.
6. Domestic debt variables (TBILLS, TBONDS and FGNB as well as OTHERS) should be used to the extent that they do not stimulate (Granger cause) exchange rate variability.

Contribution to Knowledge

This study was initiated following (1) the debate on the relationship between domestic debt and exchange rate stability (2) the researcher observed that a preponderance of studies exists on external debt and exchange rate stability while much has not been done in the area of domestic debt and exchange rate stability. This study therefore contributes to knowledge by proving support to previous studies' findings which say that domestic debt has a positive and significant relationship with exchange rate stability in the short-run but no long-run relationship exist between domestic debt and exchange rate stability. Furthermore, the study has provided for policy makers a short-run model for the targeting of exchange rate stability through domestic debt. Finally, this study has provided and enriched the literature on the relationship between domestic debt and exchange rate stability.

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