

External Debt and Price Stability in Nigeria (1981-2021)

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ABSTRACT

This study investigated the effect of external debt on price stability in Nigeria between 1981 and 2021 by considering external debt from the standpoint of multilateral debt and other forms of external debt which includes Paris Club, London Club, promissory notes, bilateral, Euro bond and diaspora bond; while inflation rate was used as a surrogate for price stability. Yearly time series data on these variables were generated from Central Bank of Nigeria (CBN) statistical bulletin 2021, and International Financial Statistics and data files World Development Indicators of the IMF (International Monetary Fund). The major tool of analysis was the Vector Auto Regression (VAR) technique which covered VAR Impulse Response Functions, VAR Granger Causality Test, and Variance Decomposition. Results revealed that multilateral debt and other external debt sources effects on inflation rate are mixed; multilateral debt and other debt sources of debt are not significant in the determination of inflation; and other sources of debt influenced variations in inflation more than multilateral debt. Hence, it was concluded that external debt disaggregated into multilateral and other sources of external debt has no significant relationship with price stability (inflation) in Nigeria. On this backdrop, it was recommended that government should manage its external borrowing in such a way that its initial inflationary tendencies are minimized; and government should manage external debt's potential to reduce inflation by reducing the length of time it takes to affect inflation negatively.

KEYWORDS: *External debt, Price stability, multilateral debt, Inflation rate and OTHER external debts*

INTRODUCTION

A whole lot of theories have been put forward on how price stability, as a major macroeconomic goal, can be achieved. One of these theories is the classical theory, which emphasizes that markets are self-regulating and governments should not intervene in economic activity. According to the theory, individuals have complete autonomy over their productive resources, so governments should not interfere with the market's equilibrium of supply and demand through fiscal or monetary policies. Furthermore, classical economists believe that given this equilibrium, economic growth can result from innovative entrepreneurs rather than government intervention (Ekperiware & Oladeji, 2014). A contrary theory is from the Keynesian School which emphasizes active government intervention to address supply-side shortcomings and decrease unemployment. The theory emphasizes public spending and borrowing to fuel economic activity during periods of slow growth or recession. It is based on the notion that governments have control over aggregate demand and can strategically intervene in areas such as taxes, spending,

and business regulations to manage inflation and unemployment rates (Sulaiman & Azeez, 2012). According to Imimole, Imoughele and Okhuese (2014), the Keynesians in addition believe that markets may not completely self-regulate at times and that government intervention can be beneficial in a number of ways such as creating jobs, funding public works projects, or providing social safety nets during recessionary periods. Thus, government spending can help jump-start an economy out of recession by increasing demand.

Government all over the world resort to different options in a bid to meet up their spending needs and one of these options is to borrow when there is a shortfall in revenue. Such borrowings constitute public debt, which may be grouped either by way of term or area sourced from. In terms of term, public debt may be classified into long-term debt, when the debt is expected to last for a longer period of time and short-term debt, if the debt is designed to last for one or two years only (Safdari & Mehrizi, 2011). Also, it can be classified in terms of source; that is domestic and external debts. Domestic debt refers to the class of debt that a government borrows within a country, which involves the same currency. Therefore all the amount of money that government owes internally such as treasury bills, treasury certificates, and Federal Government development stock, ways and means advances and treasury bonds are all regarded and grouped as domestic debt in Nigeria (Okon, Etim and Mfon, 2020). On the other hand, external debt, which also known as foreign debt, refers to any financial resources which governments are using that are borrowed from outside the shores of a country. Such debts are typically owed to foreign creditors. These are multilateral agencies such as the Africa Development Bank (ADB), the World Bank, or the Islamic Development Bank (IDB), and bilateral agencies such as the China Exim Bank, the French Development Bank, or the Japanese Aid Agency. There are also foreign private creditors such as investors in Nigeria's Eurobonds.

Traditionally, external borrowing has been widely viewed as a helpful tool for many low-income countries, like Nigeria, to supplement domestic savings and to achieve their development objectives, mainly if the funds are channeled towards increasing productive capacity (Ezeabasili, Isu & Mojekwu, 2011). Thus, it is generally expected that developing countries, facing a scarcity of capital, should acquire external debt to supplement domestic saving (Safdari & Mehrizi, 2011). Besides, external borrowing is preferable to domestic debt because the interest rates charged by international financial institutions like International Monetary Fund (IMF) is about half compared to the interest charged in the domestic market (Ezeanyej, Imoagwu & Ejefobihi, 2019). Also, external borrowing could contribute to accelerated economic growth and support macroeconomic stability. However, whether or not external debt would be beneficial to the borrowing nation depends on whether the borrowed money is used in the productive segments of the economy or for consumption (Safdari & Mehrizi, 2011). Adepoju, Salau and Obayelu (2007) stated that debt financed investment need to be productive and well managed, enough to earn a rate of return higher than the cost of debt servicing. In other words, the accumulation of external debt carries risks, including excessive debt servicing charges and the potential for a debt overhang, which can harm economic and price stability (Atique & Malik, 2012). Additionally, a debt overhang could create uncertainty and limit a country's future access to financing, hindering

investment and sustainable economic growth.

As a typical developing nation, Nigeria is not new to borrowing. Successive governments since independence seem to have made borrowing a habit. Thus, as far back as 1981, Nigeria's public debt was ₦13.52 billion, comprising of ₦11.19 billion internal debt and ₦2.33 billion external debt (CBN, 2021). However, prior to external public debt relief in 2005, total public debt was characterized by huge external borrowing by the government in meeting its financing needs, which resulted in public debt stock that was largely dominated by external public debt stock (Debt Management Office Nigeria, 2006). Though this trend changed, external debt has still been on the increase as it increased from ₦2695.07 billion in 2005 to ₦3478.92 billion in 2016, and to a whopping ₦15,855.23 billion in 2021 (CBN, 2021). Given this trend in foreign borrowing, it is expected in line with the Keynesian School of thought that amongst other things, prices should be stable. However, researchers are not in agreement on the effect of external debt on price stability. Some say the influence is a positive one while others say it is a negative one. A different group is of the opinion that external debt has a significant effect on price stability while another opined that the effect is insignificant (Sharaf & Shahan, 2023; Ewane & Mejame, 2023; Aimola & Odhiambo, 2022; Wairima, 2021; Muhammad, Olaolu, Abu & Umar, 2021; Aimola & Odhiambo, 2021; Okon, Etim & Mfon, 2020; Ezeanyej, Imoagwu & Ejefobihi, 2019; Karakaplan, 2015). Thus, the debate seems to be an inconclusive one.

REVIEW OF RELATED LITERATURE

Conceptual Review

External Debt

External debt like most terms has been variously defined. According to Joy and Panda (2020), external debt is the portion of a country's debt that is borrowed from foreign lenders, including commercial banks, governments, or international financial institutions. These loans, including interest, must usually be paid in the currency in which the loan was made. To earn the needed currency, the borrowing country may sell and export goods to the lending country. The World Bank (2008) sees it as the amount, at any given time, of disbursed and outstanding contractual liabilities of residents of a country to non-residents to repay principal, with or without interest, or to pay interest, with or without principal. The liabilities which fall within this core definition include: currency and transferrable deposits, other deposits, short-term bills and bonds, long-term loans (not classified elsewhere), and trade credit and advances. Such foreign borrowings are meant to supplement national resources (domestic) without an immediate reduction in other uses of resources, whether for consumption or capital formation (Musgrave, 1959). External debt can take the form of a tied loan, whereby the borrower must apply any spending of the funds to the country that is providing the loan. From the view point of the creditor, external debt can be classified into bilateral debt, multilateral debt, Paris Club debt, London Club debt etc. (Spilioti & Vamvoukas, 2015). However, if a country cannot repay its external debt, it is said to be in sovereign debt and faces a debt crisis (Atique & Malik, 2012).

Multilateral Debt

Multilateral debt is a major component of external debt. According Ekperiware and Oladeji, (2012), it is that portion of a country's external debt burden owed to international financial institutions (IFIs) such as the International Monetary Fund (IMF) and the World Bank. Put differently, multilateral debt refers to the debt owed by developing countries to the Bretton woods institutions and other multilateral institutions, regional development banks and inter-governmental agencies. The government of such countries allocates tax revenue and provides guarantees to these multilateral institutions which allow them to provide loans to developing countries (Ekperiware & Oladeji, 2012). Falegan (2014) stated that for most of the world's poorest countries, multilateral debt looms larger than other debts because of the IFIs' status as "preferred creditors," as providers of core development and balance-of-payment loans. This status means that payments to them must be given the highest priority, over private and bilateral (government-to-government) debt. These institutions also maintain that their bylaws prohibit them from granting debt relief or writing off debts, as governmental and private creditors often do. Governments have special incentive to stay current with their multilateral debts, since IFIs determine the creditworthiness of countries: until the IMF gives its stamp of approval, which usually requires adherence to the economic policies it recommends, poor countries generally cannot get credit or capital from other sources. And until a country has signed onto an IMF program, it cannot apply for bilateral debt relief from the "Paris Club" of creditor countries (Falegan, 2014).

Paris Club Debt

The Paris Club or the Club de Paris is an informal group of creditor nations established in 1956 in the French capital of Paris (Hayes, 2022). The objective of this group is to address and arrive at solutions for the various debt and payment issues faced by debtor nations. The club consists of two types of participants – members and observers. The members are the creditor nations, who send officials to attend the meetings. The observers are international institutions, NGOs, and other countries. The group is organized around the principles that each debtor nation be treated case by case, with consensus, conditionality, solidarity, and comparability of treatment. As of 2022, The Paris Club has 22 permanent members, including most of the western European and Scandinavian nations, the United States, the United Kingdom, and Japan (Hayes, 2022). The Paris Club stresses the informal nature of its existence. As an informal group, it has no official statutes and no formal inception date, although its first meeting with a debtor nation was in 1956, with Argentina (Joy & Panda, 2020). Accordingly, monies borrowed from this Club are tagged Paris Club debt. Thus, Paris Club debt encapsulates debt owed the Paris Club of debtors.

London Club Debt

The London Club is an informal group of private creditors on the international stage, and it is similar to the Paris Club of public lenders. The London Club is not the only informal group of private payables. The first meeting of the London Club took place in 1976 in response to Zaire's debt payment problems (Asley, 2022). Since then, the London Club has been responsible for schedules of repayment of countries' debt to commercial banks as members' duty is to change them (repayments) into more convenience for economies (Kenen, 2014). The membership of this

informal group is non-exclusionary, and there are no minimum requisites to commercial bank creditors (Sperling & Kirchner, 1997). Similarly, loans contracted from this club are simply referred to as London Club debts.

The London Club is quite different from the Paris Club. According to Biersteker (2019), the first mentioned difference is the scope and type of activity. Members of the Paris Club rather negotiate loans already existing, while the London Club quite often negotiates new loans (practically never rescheduling interest obligations), which is why the interest rates in the French Club are lower. The second area of divergences between the two clubs is participation and length in negotiations. The London Club schedule charges must take account of all commercial banks at risk in the country of the debtor while in the Paris Club, negotiations are open to almost everyone (with the appropriate amount of debt a candidate country) (Biersteker, 2019). The last category of differences is the conditions for changing the schedule. The Paris Club requires "a debtor country to be in a position of imminent default and to have an agreement with the IMF in place before undertaking rescheduling negotiations" while the London Club is more likely "to restructure debt service payments in the absence of an IMF arrangement" (Biersteker, 2019). However, it should be noted remembered that both clubs have the mission of changing a country's debt repayment schedule in the most optimal way.

Price Stability

Price stability is a subset of macroeconomic stability. It is a desired economic situation which occurs when there is an absence of large swings in the general level of prices in an economy (Vaidya, 2021). Thus, maintaining price stability entails avoiding lengthy phase of inflation or deflation that are too high, contributes to high employment, and moderate long-term interest rates. In other words, price stability occurs when the average price levels are constant for more extended period and vary slowly. It is significant for the market economy's long-term growth and efficient functioning. Price deflation arises when average prices decline, while price inflation occurs when average prices rise above the standard and estimated level. Both scenarios influence a nation's economic performance and the well-being of the people (Ugorji & Akakim, 2016). The absence of price stability can create various issues. For example, consumers' purchasing power decreases as prices rise sharply during inflation. In contrast, during deflation, when prices decrease sharply, the purchasing power of currency increases. However, production may decrease when prices decline. Moreover, wage cuts might result from the diminished output, and demand may decline due to lower compensation. Additionally, the decline in demand may result in prices falling further (Ugorji & Akakim, 2016).

Inflation Rate

Inflation is a major macroeconomic problem that has been described in some quarters as an economic monster. It has been variously defined but all definitions points to the fact that inflation is an undesirable situation that arises as a result of a sustained rising trend in the general price level of good and services. In essence, inflation describes a state of a general and persistent increase in the prices of goods and services and it is directly connected with erosion and reduction of purchasing power of money (Dwivedi, 2008). As such, inflation rate simply means the rate at which prices increase over time, resulting in a fall in the purchasing value of money

(Jockey, 2007). Inflation rate measures changes in the average price level based on a price index. Higher prices tend to reduce overall consumer spending which, in turn, leads to a decrease in GDP. While inflation itself is not negative, rapidly increasing rates of inflation signal the possibility of poor macroeconomic health. However, a moderate rate of inflation is considered to be desirable for an economy (Dwivedi, 2008). The limit of desirable inflation varies from country to country and from time to time. He added that the desirable rate of inflation can be determined on the basis of the rise in price that contributes in keeping economic outlook optimistic and helping production and employment; and promoting mobilization of resources (savings and investment) by what is called inflationary method of financing. Since many tax rates are adjusted by average inflation, volatile inflation can severely alter government revenues and individual liabilities, the Maastricht criteria capped inflation at 3% (Sharaf & Shahan, 2023).

Theoretical Review

The Classical Hypothesis

According to Akpakpan (1999), the classical economics refers to the economic doctrine of Adam Smith and his followers, which was further developed with the works of David Ricardo, John Stuart Mill and Reverend Thomas Malthus. The classical school believes that the role of the government in every economy should be restricted to the activities which will provide enabling climate for the market to work well. Government should limit itself to the provision of defence which will guarantee law and order in the society together with efficient market operation. The classical argument is that any work outside that of law and order in the name of the public sector can distort the economy and cause economic crisis. Based on this, the classical school recommended laissez fair system for every economy. The classical economic ideas were so well established and widely accepted for over a century that they were labeled, classical (Dewett, 2009). The hey-days of classical economics, according to Afonso and Ibraimo (1208), were during the years 1800-1850. The Classical school holds the view that fiscal deficit financed by debt is largely offset by the crowding out effect of deficit financing on private sector investment, and by extension, lowers the level of economic growth. In addition to the crowding out effect on private investment, the society will have to bear the burden of increase in public debt as a result of debt financed expansion in government expenditure. This opposition to deficit financing on the part of the classical economists was based on the assumption of full employment. Obviously, if there is already full employment, any extra expenditure financed by debt or created by money is bound to create inflationary rise in prices. In essence, the classical school of thought argues that public debt obstructs economic growth because it reduces both the financial discipline of the budget process and the private sector's access to credit (Broner, Aitor, Alberto & Jaume, 2014). In sum, according to this theory, excessive deficit financing can lead to poor economic performance.

The Keynesian Theory of Public Debt

The Keynesian theory of public debt was developed partly as a result of the economic crisis created by the great depression of the 1930s in the 20th century. The progenitor of this theory, John Maynard Keynes was able to convince economic scholars of the time who supported

minimum government activities that increase in government spending, especially during economic recession will help to revive the economy back to life. According to Keynes, 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. According to the theory, constant unbalanced budgets and rapid increase in public debt affect a nation's financial stability. It conceived that huge public debt is a national asset rather than a liability and hence, continuous deficit spending is very essential to the economic growth of nations because, it leads to full employment (Precious, 2015).

Structuralism Theory

The likes of G. Myrdal and P. Streeten are the major proponents of this theory. According to Ezeanyej, Obi, Imoagwu and Ejefobihi (2021), the inelasticity in the structures of the economy is the main drive of inflation based on this theory. This is mainly obtainable in the developing countries. This is as result of inelasticity in capital formation, institutional framework, labour force, production level, agricultural sector and unemployment structures. Therefore, inflation sets in due to inefficiency in the structures of the economy. In other words, according to this theory, inflation is caused by structural imbalances such as imbalance between demand and supply of industrial inputs. Governments are forced to rely on deficit financing because of insufficient external borrowing, grants and aid. Other structural imbalances causing inflation include food scarcity, foreign exchange bottlenecks, and infrastructure bottlenecks, social and political constraints. Structuralist economists argue that inflation is a manifestation of structural rigidities in the system (Dwivedi, 2008).

Nevertheless, this study revolves around the structuralist approach to inflation. This is because the other theories do not offer a reasonable explanation to inflation in the less developed countries (LDCs). In as much as inflationary pressures in Nigeria can be attributed to so many factors but the bulk of these factors can be traced to the structural imbalances in the Nigerian economy. These imbalances manifest in the form of food scarcity (imbalance between demand for and supply of food); input imbalances (shortage of capital and surplus labour, shortage of fuel and oil); foreign exchange bottleneck (imbalance between exports and imports, and balance of payment deficits); infrastructural bottlenecks (inadequate supply of electricity, transport and communication, and telecommunication); and social and political constraints (Dwivedi, 2008). In essence, inflation in a LDC like Nigeria is caused by a combination of structural factors. Thus, these structural imbalances play a dual role as they allow for poor utilization of foreign borrowings and at the same time lead to inflationary pressures in a country like Nigeria.

Empirical Review

Sharaf and Shahan (2023) carried out a related study that was aimed at examining the symmetric and asymmetric impact of external debt on inflation in Sudan from 1970 to 2020 within a

multivariate framework by including money supply and the nominal effective exchange rate as additional inflation determinants. They utilized an Auto Regressive Distributed Lag (ARDL) model to examine the symmetric impact of external debt on inflation, while the asymmetric impact was examined using a nonlinear Auto Regressive Distributed Lag (NARDL) model. The existence of a long-run relationship between inflation and external debt was tested using the bounds-testing approach to cointegration, and a vector error correction model was estimated to determine the short parameters of equilibrium dynamics. The linear ARDL model results showed that external debt has no statistically significant impact on inflation in the long run. On the contrary, the results of the NARDL model showed that positive and negative external debt shocks statistically impact inflation in the long run. The estimated long-run elasticity coefficients of both the linear and nonlinear ARDL models revealed that domestic money supply has a statistically significant positive impact on inflation. In contrast, the nominal effective exchange rate has a statistically significant negative impact on inflation.

Ewane and Mejame (2023) examined the effect of external debt stocks on inflation using World Bank data from 1980 to 2020 in Cameroon. External debt, which is the dependent variable, was measured using total external debt stock in dollars while inflation was measured using consumer price index. Real exchange rate, trade openness, and domestic investment were introduced as control variables. The study made use of non-linear ARDL to examine the positive and negative changes in external debt stocks and their effects on inflation. The results indicated a long-run increasing and decreasing asymmetry effect of external debts on inflation. Only the coefficient of positive external debt stock on inflation was positive and significant in the long run while in the short run, positive and negative external debt stocks respectively have negative and positive significant impacts on inflation.

Aimola and Odhiambo (2022) investigated the dynamic granger-causality between public external debt and inflation, and public domestic debt and inflation in Nigeria using annual data for the period between 1986 and 2019. They introduced interest rate and economic growth as intermittent variables alongside key variables to create a multivariate Granger-causality model to account for omission-of-variable bias. Using the Autoregressive Distributed Lag (ARDL) bounds testing approach to cointegration and the error correction model (ECM)-based Granger-causality test, the results showed a distinct unidirectional causal flow from inflation to external debt. The findings further showed a feedback relationship between domestic debt and inflation in the short run, but causality runs from domestic debt to inflation in the long run.

Aimola and Odhiambo (2021) used the Autoregressive Distributed Lag (ARDL) framework to investigate the impact of total public debt on inflation in Nigeria for the period 1983–2018. The study used annual time-series data for the aforementioned period and the data were sourced from CBN Statistical Bulletin (2019) and World Bank Development Indicators database (2019). The data so generated were exposed to unit root test, bounds co-integration test and other ARDL estimations. The co-integrating regression results reveal evidence of a stable long-run relationship among inflation, total public debt, money supply, interest rate, economic growth, trade openness, and private investment in the presence of structural breaks. Empirical results show that the impact of public debt on inflation is statistically insignificant, irrespective of

whether the regression was in the short or the long run. Hence, the study concludes that inflation in Nigeria could be driven by other factors other than public debt.

Wairima (2021) investigated the effect of external debt on inflation in Kenya, Uganda and Tanzania for the period 1988-2018 by using a balanced annual panel data obtained from World Bank International Financial Statistics and Data Files. The study adopted the Engle and Granger, and Johansen's cointegration techniques to test for the availability of co-integration among the variables. A Vector Error Correction Model (VECM) was employed to estimate long run dynamics and Granger Causality to test if the co-integrated variables can help in predicting each other. The results showed that external debt has a positive long-term effect on inflation and that money growth helped in explaining this relationship. Moreover, it was revealed that there is a unidirectional causality between external debt and inflation. This causality was found to be homogeneous.

Muhammad, Olaolu, Abu and Umar (2021) examined the effect of public debt on inflation rate in Nigeria for the periods of 1985 to 2020 using Autoregressive Distributed Lag (ARDL) technique for data analysis. The study measured public debt with domestic and external debt while consumer price index was used to measure inflation rate in Nigeria. They tested for stationarity of the time series data used with the Augmented Dickey Fuller (ADF) test criterion and results showed that domestic debt and external debt were stationary at first difference while inflation rate was stationary at level. The study as such revealed further that domestic debt has a significant positive effect on inflation rate in Nigeria, while external debt has no significant effect on inflation rate in Nigeria. Hence, the study concluded that there is inflationary effect of domestic debt in the country called Nigeria whether the regression was in the short or the long run. Hence, the study concludes that inflation in Nigeria could be driven by other factors other than public debt.

Okon, Etim and Mfon (2020) studied the impact of public debt on economic development in Nigeria from 1981 to 2018. They employed ex-post-facto research design and data used for analysis were collected from CBN (Central Bank of Nigeria) statistical bulletin of 2018 and World Bank Database (World Development Indicator 2018). Gross fixed capital formation was employed as the dependent variable, while foreign debt and domestic debt were utilized as proxies for public debt; and exchange rate was employed as a control variable. This study employed Auto Regressive Distributed Lag (ARDL) model to analyze the collected data, as other diagnostic tests, such as: test of normality, autocorrelation, heteroskedasticity and Breusch-Godfrey Serial Correlation LM tests were also carried out and they confirmed the validity and reliability of the model employed. Inferential results suggested that public debt has a positive and significant impact on economic development in Nigeria.

Ezeanyej, Imoagwu and Ejefobihi (2019) examined the relationship between public debt and inflation in Nigeria for the period 1981 to 2017. Thus, inflation rate was regressed on public debt (% of GDP), exchange rate, money supply (% of GDP), and real GDP growth rate. Annual time series data sourced from the World Bank national accounts data and Central Bank of Nigeria (CBN) statistical bulletin, were extensively utilized to investigate the relative impact of public

debt on inflation in Nigeria. The Augmented Dickey-Fuller (ADF) test, co-integration test and Error Correction Model (ECM) were employed as tools of analysis. Results revealed that public debt, exchange rate and money supply have positive and significant impact on inflation in Nigeria respectively. Also, real GDP (Gross Domestic Product) growth rate has a negative and statistically insignificant impact on inflation in Nigeria.

Afonso and Ibraimo (2018) examined the macroeconomic effects of public debt for the Mozambique economy using quarterly data over the period of 2000 to 2016. The study used the structural VAR estimation method for describing the dynamic behaviour of interaction between these variables. The study considered public debt effects separately and in aggregate form, namely, external debt, domestic debt, external debt service, domestic debt service, total debt and total debt service. The main findings of the study were that the study could not conclude for external and total debt having an inflationary tendency. On the other hand, the study confirmed that domestic debt has a positive effect on price levels in the short term and recovery in the long term. The study also found that debt service variables (external, domestic and total debt service) have a positive effect on general price level, suggesting the existence of inflationary episodes.

Observed Gap in Empirical Review

The novelty of this study is not farfetched. This is because unlike the trend observed from the reviewed empirical literature, it is clear that little or no effort have been made to look at external debt in Nigeria from its component parts. Thus this study brings to the fore the effects, nature and magnitude of relationships that subsists between multilateral debt, Paris Club debt, London Club debt and other forms of external debts and inflation rate in Nigeria. Secondly, the currency of this study in the context of Nigeria is not in doubt.

METHODOLOGY

The longitudinal, cross-sectional time series research design a type of quasi- experimental research design was applied in this study. In this study, external debt was proxy by Multilateral, Paris Club, London club, Promissory Notes, Bilateral, Euro Bond, Diaspora Bond and Others. These were the independent variables while inflation was used to measure price stability as the dependent variable. Annual time series data on all the variables were sourced from the Central Bank of Nigeria (CBN) statistical bulletin 2021 except Inflation, consumer prices (annual %) – Nigeria came from International Monetary Fund, International Financial Statistics and data files World Development Indicators.

Method of Data Analysis

Following preliminary unit root tests, the study adopts the Vector Autoregressions (VAR). Sims (1980) came up with Vector Autoregression (VAR) to model the “joint dynamics and causal relations among a set of macroeconomic variables”. The relevance of Vector Autoregression (VAR) in this study is that it allows the research to combine both I(0) and I(1) in the same model unlike Johansson cointegration and others that require all the variables to be integrated of a particular order.

In equation form, a VAR model is presented in equation 1 below as:

$$y_t = A_1 y_{t-1} + \dots + A_p y_{t-p} + Bx_t + e_t \dots \dots \dots (1)$$

“Where y_t is a k vector of endogenous variables, x_t is a d vector of exogenous variables, A_1, \dots, A_p and B are matrices of coefficients to be estimated, and e_t is a vector of innovations that may be contemporaneously correlated but are uncorrelated with their own lagged values and uncorrelated with all of the right-hand side variables” (E-Views 10.2).

Interpretation of VAR

VAR models are interpreted using three methods

- (a) Impulse Response Functions (b) Granger Causality Tests and (c) Variance Decomposition

VAR Impulse Response Functions (IRFs)

The Impulse response function (IRF) traces the effect of one variable on others in the system and is used for “empirical causal analysis and policy effectiveness analysis”.

VAR (Granger) Causality, Variable Exclusion Tests

A situation where the past observations on variable x do not help to forecast the values of variable y “given lagged values of y and lagged values of other variables”, it is said that “ x does not Granger-cause y ” and vice versa (Granger, 1969; Sims, 1972).

Variance Decompositions

Variance decomposition shows “the proportion of the movements in the dependent variables that are due to their own shocks, versus shocks to the other variables (E-Views 10.2).

Model Specification

To capture the external public debt and price stability relationships the functional relationship of the estimated model is presented as equation 1 below.

$$\text{Inflation} = f(\text{Multilateral, Paris Club, London, Promissory Notes, Bilateral, Euro Bond, Diaspora Bond, Others}) \dots \dots \dots (2)$$

Thus, equation 2 is restated in equation 3 as follows

$$inf = f(MD, OD) \dots \dots \dots (3)$$

And the estimated econometric equation from the above functional form is given in equation 4 below as.

$$inf_t = \alpha_0 + \alpha_1 MD_t + \alpha_2 OD_t + \epsilon_t \dots \dots \dots (4)$$

A priori expectations of signs of parameters are:

$$\alpha_1 > 0, \alpha_2 > 0$$

Where;

inf = inflation

MD = multilateral debt

OD = other debt sources

$\alpha_0 = \text{constatant term}$

$t = 1, 2 \dots \dots, n$

$\epsilon = \text{the error term}$

Unit Root Tests

Unit root test helps to ensure that the rigjt tool of analysis is used given the level of integration of the variables to avoid spurious results. This study started the econometric analysis by analyzing the order of integration of the variables using Augmented Dickey and Fuller (1979) Unit Root Tests (ADF).

Units of Measurement Problems

To avoid spurious results still, this study ensured that all the variables were in the same unit of measurement. Finally, E-views 10.2 econometric software - a product of Quantitative Micro Software, LLC aided the effective conduct of the analysis using the proposed method of data analysis.

ANALYSIS AND INTERPRETATION

Table 1: Descriptive Statistics

Statistic	InINF	InMD	InOD
Mean	0.18949	11.14126	11.54198
Median	0.128766	11.52142	11.68949
Maximum	0.728355	12.88676	12.91118
Minimum	0.05388	8.254306	9.332762
Std. Dev.	0.166594	1.16566	0.887436
Skewness	1.854175	-0.81269	-0.46147
Kurtosis	5.306552	2.980866	2.552109
Jarque-Bera	32.58139	4.51382	1.797883
Probability	0	0.104673	0.407
Sum	7.769108	456.7916	473.2213
Sum Sq. Dev.	1.110136	54.35051	31.50168
Observations	41	41	41

Source: Author Computations (E-views 10.2 Outputs)

From 1 above, InINF is positively skewed while InMD and InOD are negatively skewed. The kurtosis compares the distribution of the variables with that of Gaussian distribution. With a Kurtosis value of 5.306552, inflation is peaked relative to a normal distribution and can be described as leptokurtic. According to E-views 10.2 manual “the kurtosis of the normal distribution is 3”. “If the kurtosis exceeds 3, the distribution is peaked (leptokurtic) relative to the normal; if the kurtosis is less than 3, the distribution is flat (platykurtic) relative to the normal”. Thus, with a kurtosis of 2.980866 or approximately 3.0, InMD can be described as a normally distributed variable while InOD may be said to have platykurtic distribution relative to the

normal with kurtosis of 2.552109.

The graph below shown in figure 1, reveal the trend in InINF, InMD and InOD within the period under study. The trend analysis shows that InINF experience a very volatile movement rising and falling over the period of study. On the other hand, the trend analysis of InMD shows a slightly stable and consistent upward movement. InOD however could not sustain its upward movement as it fell but recovered and started rising again. In terms of values, InINF had its lowest value of 0.05388 in 2007 with maximum value of 0.73 in 1995. InMD was highest in 2021 with a value of 12.9 and lowest in 1981 with a value of 8.3. InOD started from a minimum of 9.3 in 1981 and reached its first peak (12.7) in 2004 before falling and after recovery, attained its second and maximum peak 12.9 in 2021.

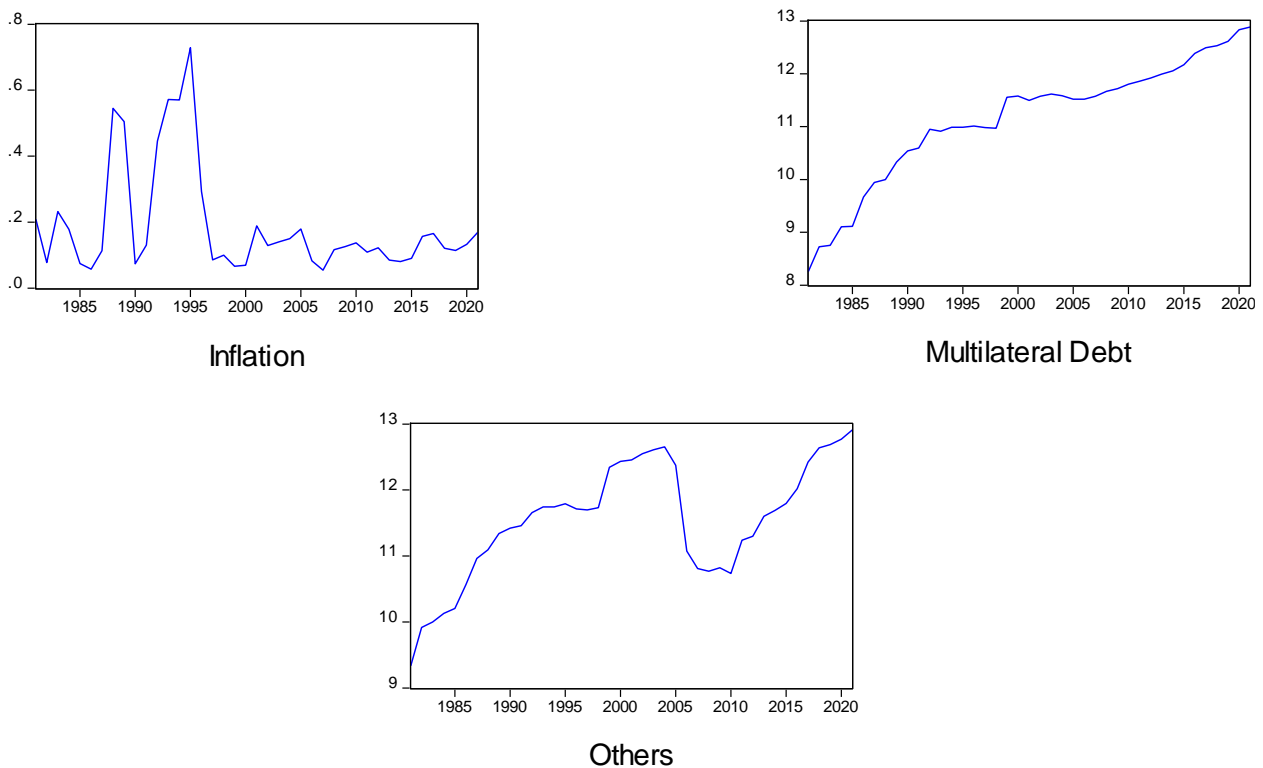


Figure 4.1: Trend analysis of movement in Inflation, Multilateral Debt and Others 1981 - 2021

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 results are presented in table 2 below. The results indicate that InINF and InMD are stationary at level I(0) while InOD was stationary at first difference I(1) all at 5% level of significance.

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

Variable	$\sim I(d)$	Stationarity	Level of Significance
InINF	$I(0)$	level	5%
InMD	$I(0)$	level	5%
InOD	$I(1)$	First difference	5%

Source: Author Computations (E-views 10.2 Outputs)

Estimation Results

The estimated standard vector auto regression results are found in appendix 6.

For general acceptability of the estimated VAR, the researcher determined the lag length by querying the VAR Lag Order Selection Criteria which indicated a lag order of 2 as suggested by Sequential modified LR test statistic (LR), Final prediction error (FPE), and Akaike information criterion (AIC) (each test at 5% level) shown on table 4.5 below.

Table 3 VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-66.30152	NA	0.007703	3.647448	3.776731	3.693446
1	45.24641	199.6121 17.84192	3.50e-05	-1.749811	-1.232678*	-1.565819*
2	56.18178	*	3.19e-05*	-1.851673*	-0.946691	-1.529687
3	63.10726	10.20597	3.65e-05	-1.742487	-0.449656	-1.282508

Source: Author Computations (E-views 10.2 Outputs)

Another test to ensure that VAR was appropriate for the analysis was the stability condition using the Roots of Characteristic Polynomial presented in table 4.6 below and the Inverse Roots of AR Characteristic Polynomial figure 4.2 below.

Table 4: Roots of Characteristic Polynomial

Root	Modulus
0.952397	0.952397
0.664039	0.664039
0.397270 - 0.418041i	0.576699
0.397270 + 0.418041i	0.576699
0.541909	0.541909
-0.293233	0.293233

The results show that the Roots of Characteristic Polynomial values are all less than one and the Inverse Roots of AR Characteristic Polynomial show that No root lies outside the unit circle.

Thus, VAR satisfies the stability condition.

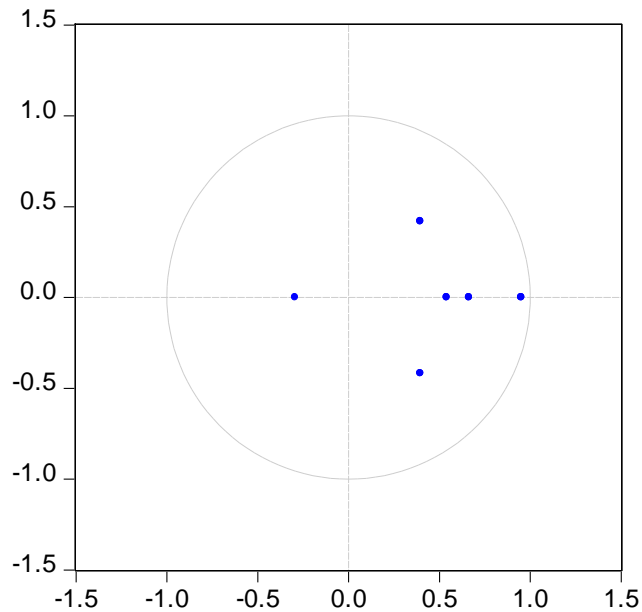


Figure 4.2: Inverse Roots of AR Characteristic Polynomial

Interpretation of Results

Having met the conditions for using VAR, the results were interpreted using (a) Impulse response function (b) VAR Granger Causality/Block Exogeneity Wald Tests and (c) variance decomposition.

VAR Impulse Response Function

The impulse response function shown in figure 3 below trace the response of inflation to shocks (changes, news about) in multilateral debt as well as changes in others sources of debt.

Looking at the graph showing the response of inflation to shocks in multilateral debt, it is observed that at first inflation responds positively with increase in inflation rate from period one 0.000% to period two of about 0.008% change. This situation remained the same up to period three at which time inflation began to decrease and by the sixth period became negative with a change of about -0.001% . The responsiveness of inflation to shocks in multilateral debt remained negative (-0.002) up to the tenth period.

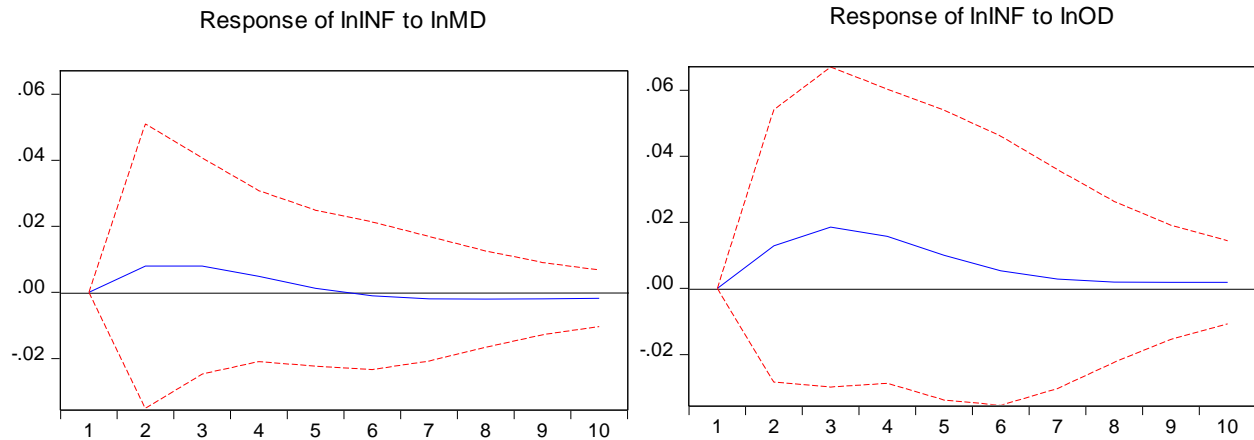


Figure 4.3: Response to Cholesky One S.D. (d.f. adjusted) Innovations \pm 2 S.E.

Similarly, inflation responded positively to shocks in other sources of debt from 0.000 in period one to 0.019 in period three before declining to 0.016 in period four, 0.003 in period seven from where it remain positive at 0.002 up to period ten.

Summarizing the impulse response function, the study show that multilateral debt and other external debt sources effects on inflation is mixed.

VAR Granger Causality/Block Exogeneity Wald Tests

The VAR Granger Causality/Block Exogeneity Wald Test tests whether the endogenous variables could serve as exogenous variable to be used for the prediction of the independent variable. Can the endogenous variables be used in causality analysis? The results the VAR Granger Causality/Block Exogeneity Wald Tests (table 4.7) below indicate that multilateral debt and other debt sources are not exogenous. In other words, they are not significant in the determination of inflation as their probability suggests.

Table 5: VAR Granger Causality/Block Exogeneity Wald Tests

Dependent variable: lnINF

Excluded	Chi-sq	df	Prob.
INMD	1.091696	2	0.5794
INOD	0.603683	2	0.7395
All	1.846409	4	0.7640

Variance Decomposition

What are the contributions of shocks to multilateral debt and other sources of debt to changes in inflation? The variance decomposition indicates the relative importance of innovations in one variable to variations in other endogenous variables. From table 4.8, the results of the variance

decomposition show that innovations in inflation itself contribute 96% or more of the variation in inflation from period one to period ten. Between other sources of debt and multilateral debt, other sources debt influenced variations in inflation more than multilateral debt. In period one, other debts contributed 0.000 so did multilateral debt. In period two, shocks in other sources debt contributed 0.568% to variations in inflation while multilateral debt contributed 0.217%.

Table 6: Variance Decomposition of Inflation

Period	S.E.	InINF	InMD	InOD
1	0.134347	100.0000	0.000000	0.000000
2	0.171081	99.21578	0.216568	0.567649
3	0.176810	97.96257	0.406251	1.631176
4	0.177599	97.11321	0.478666	2.408121
5	0.178441	96.81940	0.479081	2.701515
6	0.178761	96.73967	0.480687	2.779642
7	0.178799	96.70493	0.492230	2.802842
8	0.178847	96.68164	0.505035	2.813322
9	0.178911	96.66202	0.515977	2.822003
10	0.178959	96.64312	0.525596	2.831284

Cholesky Ordering: InINF InMD InOD

Diagnostics Tests

To ascertain the utility of the estimated VAR and conform to VAR assumptions, the study subjected the VAR results to residual tests namely VAR Residual Serial Correlation LM Tests, VAR Residual Heteroskedasticity Tests (Levels and Squares) and VAR Residual Normality Tests. The results indicate the residuals of the estimated VAR were free from serial correlation. Also, there was no Heteroscedasticity in the residuals of the estimated VAR. The comparison of the third and fourth moments with the normal distribution under the normality test was rejected.

Discussion of Findings

The findings of this study show that external debt disaggregated into multilateral and other sources of external debt has positive but insignificant effect/relationship with inflation in Nigeria. These findings agree with earlier positive relationships found by several empirical studies reviewed in section two. These include the studies by Ewane and Mejame (2023), Wairima (2021), Muhammad, Olaolu, Abu and Umar (2021), Aimola and Odhiambo (2021) as well as and Afonso and Ibraimo (2018). However, the present study disagrees with some previous studies on the significance of external debt variables to inflation. While this study indicate that external debt components like multilateral debt and Other sources of debt have insignificant relationship with inflation, Ewane and Mejame (2023), Sharaf and Shahan (2023), Okon, Etim and Mfon (2020) and Ezeanyej, Imoagwu and Ejefobihi (2019) posit that external

public debt has significant effect on inflation.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study investigated the relationship between external public debt and price stability in Nigeria using data for the period 1981 to 2021. External debt was disaggregated into multilateral debt and other debt sources due to data constraints. Multilateral debt lagged one period has a positive but insignificant relationship with inflation. Multilateral debt lagged two periods has a negative but insignificant relationship with inflation. Other sources of external debt lagged one period have a positive but insignificant relationship with inflation. Other sources of external debt lagged two periods has a negative but insignificant relationship with inflation. Based on the findings of this study, it was concluded that external debt disaggregated into multilateral and other sources of external debt has no significant effect/relationship with price stability (inflation) in Nigeria.

Recommendations

To effectively utilize external debt to moderate inflation in Nigeria, the study makes the following recommendations:

1. Government should manage its external borrowing in such a way that its initial inflationary tendency should be minimized.
2. Government should manage external debt's potential to reduce inflation by reducing the length of time it takes to affect inflation negatively.
3. Similar recommendation one above, Government should manage its "Other" sources of external borrowing in such a way that their initial inflationary tendency should be minimized.
4. Government should manage "Other" sources of external debt's potential to reduce inflation by reducing the length of time it takes to affect inflation negatively.

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