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PUBLIC DEBT AND HUMAN DEVELOPMENT IN NIGERIA (2003-2021)

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K E Y W O R D S

Public Debt, Foreign Debt, Domestic Debt, Human Development, Nigeria.

A B S T R A C T

This study evaluates the effect of public debt on human development for the period 2003 to 2021 in Nigeria. Public debt was disaggregated into total debt (TD), foreign debt (FD) and domestic debt (DD) while human development was proxied with human development index (HDI). Annual data were obtained from Central Bank of Nigeria Statistical Bulletin and United Nations Development Programme (UNDP) Human Development Report for the period. Augmented Dickey Fuller test of stationarity and Johansen co-integration test revealed that the annual time series data were stationary and had long run causality among the variables. Empirical results from Vector Error Correction Model showed that TD had positive but insignificant effect on HD; FD has positive and significant effect on HD while DD had negative and insignificant effect on HD. The study recommended that domestic debt should be strategically channeled towards human development endeavors such as basic education and primary health care in order to improve human development in Nigeria

Introduction

Globally, public debt remains one of the most contemporary issues that bothers the economy of nations. Whether developed or developing, economies rely on borrowed funds to augment government resources for crucial needs of the state. Public debt refers to the total financial responsibilities acquired by governmental bodies of a nation, which includes money owed to individuals, mutual funds, pension funds, hedge funds and foreign creditors (Odo, Igberi & Anoke (2016). Public debt therefore refers to government borrowings from both internal and external sources. Public debt has time frame within which the debt and the accompanying interest should be repaid in order to avert the consequences of non-repayment. According to the Keynesian theory, debts stimulate the economy thereby increasing aggregate demand which encourages consumption and output. Public debt has the ability to reduce poverty and unemployment in the economy. However, classical theorists argue that public debt should be avoided except when absolutely necessary since government borrowing encourages indiscriminate spending. Karazijiene (2015) argues that the most important reason for public debt in most nations is due to budget deficits. Public debts have been on the increase since the global economic recessions witnessed after the second-world-war in which nations borrowed internally or externally to fund budget deficits. Many economies have accumulated debts resulting to debt crises across countries (Donayray & Taivan, 2017; cited in Hilton, 2022). Nigeria is not left out of this debt challenge as yearly budget deficits have resulted in debt accumulations with inherent interests. Investments in the economy are expected to reduce unemployment and poverty thereby improving economic performance.

Human development refers to the process of enlarging people's choices so that they live longer and healthier lives, get educated and have decent income (HDR, 1990). The United Nations Development Programme (UNDP) emphasizes that government policies should be geared at human development and not just economic progress. People are central to the goal of development. Human development is measured globally with human development index (HDI) which is a summary measure for assessing the long-term progress of a country in three core areas of human development which are a long and healthy life, access to education and income per capita (UNDP, 2022). Since 1990, UNDP has released annual human development scores of countries ranging from low to very high human development categories. Nigeria had her first HDI in 2003 with an index of 0.443 which fell into the low human development category. Government policies and programmes are directed at provision of economic and social needs that will promote human development. When taxation revenue and other revenue are inadequate to provide basic social infrastructure, public debts are incurred to bridge the gap while ensuring that basic infrastructure such as roads, bridges, airports, health care centers, schools, clean water and safe environments are available. These improve human capital and encourage development. However, Nigeria has witnessed progressive deterioration in basic infrastructure and development even though both foreign and domestic debts have accumulated over the years with the attendant repayment challenges. Access to primary health care and basic education remain critical issues at both the national and state levels while poverty indices increase yearly. Thus, there is a growing need to critically evaluate the effect of public debt on human development in Nigeria.

Nigeria has witnessed developmental challenges since independence which has spiraled lately to inequality in income, poor infrastructure, inadequate social facilities as well as unemployment. Successive governments have grappled with provision of basic economic and social safety nets that would accelerate economic recovery and improve lives despite the inadequate finances available to government without achieving set targets. Public trust has been eroded especially with regards to uncompleted projects in the power sector while the education and health sectors which are critical areas to economic growth have not been properly funded. Nigeria has therefore depended on both foreign and domestic debt to augment resources required to accelerate the economy.

With respect to individuals, income remains very important in the development arena since it is critical to the provision of essential needs. It is presumed that the higher the income, the higher the opportunities available to a person in the society. Income remains a very fundamental factor for achievement of higher standard of living (Anand & Sen, 2000b). The National Bureau of Statistics "2019 Inequality and Poverty report" states that 40 percent of the population live below the poverty of N137, 430 naira ($381.75) per year (The World Bank, 2020). Investment in social infrastructure over the years has been below international standards. Nigeria has not been able to increase allocation to the health sector as required by the Abuja declaration of African countries in 2005 as well as the increase to the education sector as required by United Nations Education Science and Cultural organization (UNESCO). This implies that though funding of education and health in Nigeria have increased in terms of value, in relative comparison with other countries Nigeria invests lower than the agreed standards which keeps undermining the social sector. With increasing population and less revenue from crude oil, Nigeria may need to continue to rely on further public borrowings to meet basic expectations in social infrastructure.

Public debt in Nigeria is a recurring decimal which commenced just before independence in 1960. According to Mathew and Mordecai (2016), the administration of former President Shagari between 1980 to 1985 commenced borrowing with the intent of financing some projects. Unfortunately, the debt which was financed from private creditors could not be paid back when due. While revenue from sale of crude plummeted, exports did not yield much revenue which resulted to increase in the debt burden (Okechukwu & Anele, 2012; Aminu, Ahmadu & Salihu, 2013; cited in Mathew & Mordecai, 2016). Nigeria's public debt has risen over the years which led to the government of Obasanjo negotiating for debt relief in 2006. Even with the debt cancellation between 2005 and 2006, public debt has further increased under the administration of Muhammadu Buhari. Total debt profile of Nigeria as at 31st December 2000 was N3'995.63 billion and increased to N5,241.66 billion and N10,948.51 billion as at 31st December 2010 and 2015 respectively. By the end of 2021, Nigeria had a total public debt portfolio of N39,556.03 billion (Debt Management Office, 2022). Increasing debt portfolio has further exacerbated the challenge of debt repayments as well as the goal of incurring the debts. Funds which should have been channeled to economic and social sectors are mostly utilized for debt servicing.

Nigeria has depended on both domestic debt and foreign debt simultaneously over the years. Government borrowing whether foreign or domestic debt can lead to higher interest rates, reduced disposable income and increased wages. These have the ability to not only reduce the profitability of businesses but can also influence private investment negatively. The consequences would be to crowd out or discourage private investment which ultimately reduces output in the economy (Spilioti & Vamvoukas, 2015). Assessment of the effect of borrowing either way remains critical for fiscal stability in the economy. Empirical research on public debt and economic growth in Nigeria are many (Obademi, 2012; Mathew & Mordecai, 2016; Elom-Obed, Odo, Elom & Anoke, 2017; Ayuba & Mohd Khan, 2019; Ajayi & Edewusi, 2020; Nwamuo & Agu, 2021) and with varying results. Obademi (2012) found that both domestic and foreign debt had negative and significant association with economic growth in the short run and positive and insignificant association with economic growth in the long run. Elom-Obed, Odo, Elom and Anoke, (2017) on the other hand revealed that public debt has negative and significant relationship with economic growth. Also, there appears to be dearth of empirical research on public debt and human development in Nigeria while few studies exist internationally (Attah-Botchwey, Lawluvi, Akoe, Boadu & Awadzie, 2021; Mezni & Djebali, 2021). This study intends to fill the gap in empirical research by examining the effect of total debt, foreign debt and domestic debt on human development in Nigeria between the period 2003 to 2021.

Review of Related Literature

The operational conceptual framework depicts the variables of the research.

Operational Conceptual Framework

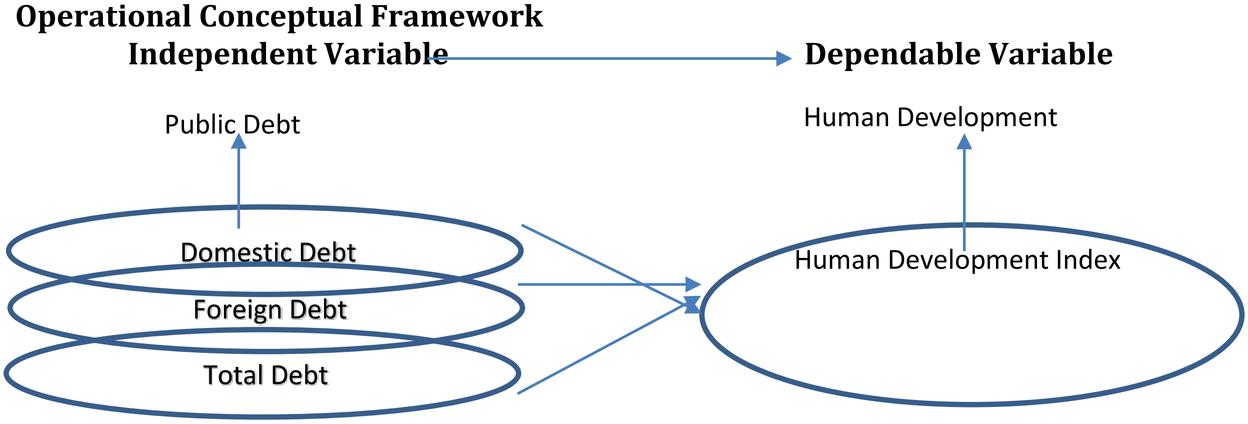

Fig.2.1: Operational Conceptual Framework

Concept of Public Debt

Public debt is a source of government revenue which is different from other sources of revenue due to the fact that borrowing requires repayment of both the debt and the interest at the period stated in the contract (Jinghan, 2010). According to Idenyi, Igbenyi and Anoke (2016), public debt refers to all the borrowing carried out by the arms of government which include federal, state and local governments in Nigeria. Public debt therefore refers to the total financial responsibilities acquired by governmental bodies of a nation, which includes money owed to individuals, mutual funds, pension funds, hedge funds and foreign creditors (Odo, Igberi & Anoke (2016). Borrowing by government becomes absolutely necessary to fill budget deficits or gaps, avert certain economic challenges such as price increases and for specific developmental projects which will benefit society. Though government borrowing helps to finance expenditures of government which span from provision of basic services to public goods such as basic infrastructure, Karazijiene (2015) argues that the most important reason for public debt in most nations is due to budget deficits.

Government deficits arise when government revenue is less than expenditure which usually indicates adverse economy. To nullify the situation, government sources for funds to augment revenue. Borrowing therefore balances revenue and influences the direction of economic activities (Ayuba & Mohd Khan, 2019). Debt incurred from external sources may be used to finance critical sectorial needs that would facilitate, increase investment and lead to the growth of the economy. On the other hand, debt incurred from domestic sources is deemed to mobilize savings which was either lacking or inadequate but which becomes attractive due to the interest payments from the bond market (Foncerrada, 2005; Thumrongvit, Kim & Pyum, 2013) cited in Ayuba & Mohd Khan (2019). Debt incurred by Nigerian government are grouped into domestic and external debt.

Domestic Debt

Also referred to as internal debt, domestic debt is owed to lenders within the confines of the country. Ozurumba and Kanu (2014) define domestic debt as the portion of a country's debt borrowed from within the confines of the country which are usually obtained from the Central Bank of Nigeria, deposit money banks, discount houses and non-bank financial houses. On reasons for government domestic debt, Alison (2003) cited in Mba, Yuni and Oburota (2013) contend that governments incur domestic debt for deficit financing; monetary policy implementation and development of the financial sector through the supply of tradable financial instruments that will deepen the market. Several reasons have been adduced for the high domestic debt profile which include high budget deficit; low output growth; large expenditure growth; high inflation; narrow revenue base and non-diversification of the economy (Rapu, 2003; Mba, Yuni & Oburota, 2013). They reiterated that inability to repay these debts in the long run may probably lead to debt overhang which if unattended to could lead to interest element rising higher than the principal. This could lead to capital shortage and crowding out of private investment in the economy.

Foreign Debt

Foreign debt occurs when government borrows from outside the boundaries of the country. Such debts are usually not denominated in the local currency. Countries engage in foreign debt when the domestic option becomes unrealistic to augment their meagre resources. Foreign creditors include agencies in the form of multilateral creditors and bilateral creditors. Multilateral creditors include the World Bank, International Monetary Fund (IMF), Africa Development Bank (ADB) and Islamic Development Bank (IDB). Bilateral creditors are single lenders and they include London group of creditors, Paris club of creditors, Japanese Aid Agency, China Exim Bank and French Development Bank while other types of creditors include foreign private investors in Nigerian Eurobonds (Essien, Agboegbulem, Mba & Onumonu, 2016). Foreign debt increases investments, closes the gap created by budget deficits while encouraging economic growth. External debt has the ability to promptly put a country on development pedestal but its misuse will lead to huge social and human costs which could gradually reduce the country's external assets and productive capacity of the national economy and negatively affect the macroeconomy (Adebiyi & Olowookere, 2013). There is no gainsaying the fact that Nigeria has depended on external debt over the years but the extent of dependence has increased the volume of external debt from N2,111.53 billion in 2015 to N15,855.23 billion in 2021 (DMB, 2022) which represents 86 percent increase. Reason for the increase has been attributed to rapid growth of public expenditure particularly capital projects; borrowing from the international community at non-concessional interest rates; decline in oil revenue from the late 1970s, dependence on imports which contributed to the emergence of trade arrears and over dependence on short and medium term loans before 1986 which made up about 80 percent of external debt stock (CBN, 2022). External debt repayment remains a challenge especially with the hike in exchange rate.

Concept of Human Development

Globally, human development measures progress in all areas of human endeavor which include economic and social aspects (NBS, 2016). Human development came to the fore as a result of heavy criticism of inequality which existed in countries even though they were included in countries with high economic growth (Sen, 1993). The human development approach considered the gaps in economic growth and development in arriving at the current major indices of decent standard of living, long and healthy life and access to education. Human development is the cumulative of different developmental approaches which include economic growth, basic needs and capability approaches (Bagolin & Comim, 2008). Human development seeks to improve the general living condition of people. According to Omodero (2019), human development improves human skills and creates avenues for people to make better decisions that will improve their lives. Human development is based on five recommendations which are central to all countries who desire development of the people. These include the fact that people are central to discussions on human development and should be part of the discussion; development refers to both the emergence of human capabilities and the use of the obtained capabilities; human development is the end and not a means to an end; human development is all encompassing and not limited to development in certain areas and people are the means and ends of the human development process (Ul Haq, 1999). Human development is therefore central to the well-being of the people.

Human Development Index

Human development is measured globally with the human development index which is a summary measure for assessing the long-term progress of a country in three core areas of human development which are a long and healthy life, access to education and income per capita (UNDP, 2022). The index was developed by the United Nations to measure economic development and welfare of people. Human development index of countries was first measured and reported in the UNDP 1991 report and ranks countries in four ranks which include low HDI, medium HDI, high HDI and very high HDI. Nigeria had her first HDI report in 2003 at 0.443 which fell within the low human development category with a ranking of 168 out of the 220 countries measured. The 2003 HDI report revealed that majority of the countries within the low human development category were from Sub Saharan Africa and included Mali, Burkina Faso, Niger and Sierra Leone. The human development report posits that to reverse decline, human development strategies must be channeled towards more equitable distribution of wealth and services (Africa Action, 2003). Nigeria has fluctuated between the low and medium human development categories over the years. Government activities are generally directed towards macroeconomic objectives which include social and economic upliftment of the citizens. Budget deficits which are economic policies of government create new avenues of recruiting funds for advancement of government objectives. Public debts therefore are incurred to obtain funds which are directed towards specific sectors of the economy in order to attain human development. The HDI is utilized to measure national policy choices which include debt strategies. Ability of government to utilize borrowed funds specifically for upliftment of people out of poverty in order to improve access to education and quality health care remains one of the core objectives of human development globally and in Nigeria specifically. Investment in people as well as economic and social improvement remain vital to human development.

Theoretical Review

Keynesian Theory

John Maynard Keynes (1883-1946) developed the Keynesian theory which posits that government can influence aggregate demand through decisions on debt and expenditure which positively stimulates the economy in the short-run. The use of public debt to augment government resources in order to meet public needs remains one of the best strategies that can encourage economic growth and development especially during times of recession (Salsman, 2017). Public borrowing leads to the use of private funds which does not affect consumption level since the funds are usually unemployed funds (Mathew & Mordecai, 2016). Investment of such funds in the economy increases aggregate demand which stimulates the economy in the short-run. The theory discourages savings as much as possible but encourages consumption and investment as boosters for the economy especially during periods of recession. Though the theory argues that optimal economic growth and performance could be achieved through government intervention which stabilizes the economy towards output and growth, the participation of the private sector is also key to improving aggregate demand. Keynes' theory further postulates that the influence on aggregate demand as a result of government influence will result to increase in output of goods and services which will have multiplier effect on the economy especially if savings is less than investment. Change in aggregate demand therefore encourages economic growth.

Human Development Theory

Human development theory stems from the ideas of Mahbub ul Haq (1990) and Sen (1990) who argue that development should reduce poverty, inequality, unemployment and the uneducated in the society. Human development theory posits that the purpose of development should be to enlarge people's choices while the most important will be to live long and healthy lives, access education and live decent lives (HDRO, 1990). The capability approach which originated from Sen and improved upon by Martha Naussbaum is referred to as the kind of freedom which enables an individual to achieve the things he values doing and being (Sen, 1999). Freedom on the other hand improves the ability of people to access opportunities that they value (Evans, 2002). Functioning which works with capabilities refers to both the physical and mental state as well as the activities that allow people to participate in the life of the community (Kuhumba, 2017). In some economies, the extent of functioning of capabilities is low yet the economies are equated with high economic growth or development. Sen (199) views development as being more complex than just economic well-being. Development is about people because "people are the real wealth of a nation" (HDR, 1990:p.1). Relying only on economic progress as measure for development does not give the comprehensive picture of human development. Sen argues that development should give people freedom from poverty, tyranny, starvation, famine, neglect of public infrastructure and systematic social deprivation. Freedom is linked to development which implies that democratic economies are expected to give citizens the right to achieve what they value. Freedom enables people to achieve the goals that they value. The pivot of human development should therefore be the scale of freedom or capability which determines the extent of functioning of the freedom or capabilities.

Empirical Review

Obademi (2012) utilized the ordinary least square approach to analyze the effect of public debt on economic growth in Nigeria. Public debt was proxied with external debt, internal debt, total debt and budget deficit while economic growth was proxied with GDP. Results revealed that the effect of all the independent variables on economic growth were negative and significant in the long run but positive and insignificant in the short run. The study concludes that the long run effect of public debt on the economy is due to inefficient management of borrowed funds.

Mathew and Mordecai (2016) carried out an empirical study on public debt and economic development in Nigeria. The study spanning from 1986 to 2014 utilized Johansen Co-integration test and Error Correction Model (ECM) to analyze the variables. Johansen co-integration test revealed that a long run relationship exists among external debt stock, domestic debt stock, external debt servicing, domestic debt servicing and economic development proxied with GDP per capita in Nigeria The ECM result showed that external debt stock and external debt servicing have insignificant negative association with economic development in Nigeria. Domestic debt stock has direct and significant relationship with economic development while domestic debt servicing has inverse and significant relationship to economic development in Nigeria.

Elom-Obed, Odo, Elom and Anoke (2017) empirically examined the nexus between public debt and economic growth in Nigeria utilizing the co-integration test, Vector Error Correction model (VECM) and the Granger Causality analyses technique for the period 1980 to 2015. The study revealed that domestic and external debt had negative and significant relationship with economic development proxied with real GDP. Also, Domestic debt and external debt both contributed to real GDP with causality from external to domestic debt.

Lucky and Godday (2017) examined the nexus between public debt structure and growth performance of Nigerian economy for the period 1990 to 2015. The study utilized simple and multiple regression analyses to ascertain the effect of public debt proxied with domestic debt, external debt and total debt while economic performance was proxied with GDP. Results from the simple regression showed that total public debt had positive and significant effect on GDP in Nigeria while results from the multiple regression showed that while external debt had negative and significant effect on real GDP, domestic debt had positive and significant effect on economic growth in Nigeria. Total public debt had positive and significant effect on GDP.

Ajayi and Edewusi (2020) investigated the effect of public debt on economic growth of Nigeria from 1982 to 2018. The study utilized vector error correction model to ascertain the relationship between domestic, external and total debt on economic growth proxied with GDP. Findings revealed that external debt had both negative effect in the short and long run while domestic debt had positive long and short run effect on economic growth in Nigeria.

Alli-Momoh, Fatimah, Oladele and Adediran (2020) empirically studied the nexus between public debt and development in Nigeria for the period 2003 to 2020. The variables include human development index, income per capita, growth rate and public debt proxied with foreign debt. The regression model developed by the University of Edinburg was utilized for analyses of the variables. Findings indicate that a negative and significant relationship exists between foreign debt and human development index while a positive and significant relationship exists between foreign debt and income per capita. Also, all the explanatory variables have a positive and significant effect on foreign debt in the short and long term.

Omodero (2020) investigated public debt and living condition of people in Nigeria from 2000 to 2018. The study utilized multiple regression technique to analyze the relationship between public debt and living condition of people in Nigeria. The independent variable was made up of domestic and external debt while living condition was proxied with per capita income (PCI). Findings revealed that while external debt was substantially harmful to PCI in Nigeria, domestic debt had a favourable impact on PCI.

Ezenwobi and Anisiobi (2021) empirically examined the effect of government borrowings on economic development in Nigeria. The independent variables were external debt, domestic debt, interest rate and inflation while the dependent variable was human development index. The study utilized multiple regression analyses as well as Augmented Dickey-Fuller unit root test, Johansen co-integration test and Error Correction Mechanism. Results showed a positive and statistically significant relationship between external debt and economic development in Nigeria as well as between domestic debt and economic development in Nigeria. Interest rate has negative and significant relationship with economic development while inflation showed a negative and insignificant relationship with economic development in Nigeria.

Naeem (2011) studied the effect of public debt on economic growth of Pakistan. The study utilized Auto Regressive Distributed Lag to evaluate the effect of both domestic and external debt on GDP and investment in Pakistan from 1972 to 2009. Findings revealed that domestic debt has negative relationship with GDP and investment while external debt also has negative effect on GDP and investment in Pakistan.

Khan, Rauf, Haq and Anwar (2016) utilized Augmented Solow Growth model and Bounds Co-integration test to analyze the effect of public debt on economic growth of Pakistan for the period 1972 to 2013. The study revealed that public debt had positive and insignificant effect on economic growth. Control variables revealed negative coefficient for population growth while human capital and private investment had positive signage. The results further revealed that human capital and private investment are statistically significant.

Ayuba and Mohd Khan (2019) carried out a study on domestic debt and economic growth in Nigeria for the period 1981 to 2013. The study utilized ARDL approach and discovered that domestic debt negatively affects economic growth in Nigeria.

Saungweme and Odhiambo (2019) empirically studied the contribution of domestic and foreign debt to economic growth in Zimbabwe for the period 1970 to 2017. The study utilized the ARDL to ascertain the effect of both variables on economic growth. Findings revealed a negative relationship between both domestic debt and foreign debt on economic growth in Zimbabwe with domestic debt having a more harmful effect than foreign debt both in the long and short run.

Mezni and Djebali (2021) examined the effect of external debt on human development index in Middle East and North Africa (MENA) region from 1990 to 2019. Six countries from both the Middle East and North Africa were the sample for the study. External debt is proxied with inflow from International Monetary Fund (IMF) on human development index (measured by the three components). Analyses of panel data determined the econometric approach for the study. Flows from IMF utilized for improving living conditions were found to have positive effect on HDI. Also, foreign direct investment and trade openness have positive and significant effect on HDI. Domestic private sector credits and gross capital formation however negatively affect HDI in MENA countries.

Zaghdoudi (2018) empirically examined the nexus between external debt and human development using a panel data of 95 developing countries for the period 2002 to 2015. The study utilized the Panel Smooth Threshold Regression (PSTR) approach. Findings revealed that external debt has a non-linear positive relationship with human development with a threshold of 41.775 percent for the developing countries. 1 percent increase in external debt ratio increases human development by 0.02 percent. The findings further indicate that countries with low external debt should not exceed the threshold while those with high external debt should reduce the debt ratio to the optimal ratio.

The empirical literature reviewed showed that few studies have been carried out on effect of public debt on human development in Nigeria with varying results. While few studies proxied human development with HDI, (Alli-Momoh, Fatimah, Oladele & Adediran, 2020; Ezenwobi & Anisiobi, 2021), the rest proxied development with GDP (Mathew & Mordecai, 2016; Elom-Obed, Odo, Elom & Anoke, 2017; Nwamuo & Agu, 2021; Ezenwobi & Anisiobi, 2021). Also, while Naeem (2011) found a negative relationship between public debt and economic growth, Mezni and Djebali (2021) found a positive relationship between foreign loan and human development. This study therefore intends to fill the gap by extending studies on public debt and human development in Nigeria.

Methodology

This study employed ex-post facto research design in which case existing data were collected from online published statistical data of Central Bank Statistical Bulletin (2021) and the United Nations Development Programme (UNDP) Human Development Report (2021) for the period under review. Public debt is proxied with domestic debt (DD), foreign debt (FD) and total debt (TD) while human development is proxied with human development index for the period 2003 to 2021. Linear relationship was established between the HDI (dependent variable) and the independent variables comprising of domestic debt (DD), foreign debt (FD), and total debt (TD). The model is specified thus:

HDI = f{DD, FD, TD}

The model is expressed in the econometric form below:
HDI = $\beta_0 + \beta_{1DD} + \beta_{2FD} + B_{3TD} + \mu_t$
Where
β_0 = Intercept of the model
β_1, β_2, β_3 = Parameter Estimates
HDI = Human Development Index
DD = Domestic Debt
FD = Foreign Debt
TD = Total Debt
U_t = Error term
The expected result is as follows:

A Priori Expectation

Public Debt	Human Development
Foreign Debt	Positive (+)
Domestic Debt	Positive (+)
Total Debt	Positive (+)

Data collected from online published statistical data of the Central Bank Statistical Bulletin (2021) and the United Nations Development Report (2021) for the period 2003 to 2021 were analyzed below.

Results

Unit Root Test

The Augmented Dickey Fuller (ADF) test was carried out to determine the existence of unit root or stationarity in each of the time series. The results are reported below.

Table 4.2: Augmented Dickey Fuller Test

VARIABLES	ADF STATISTICS	CRITICAL LEVEL 5%	P VALUE	ORDER OF INTERGRATION	REMARK
HDI	-3.543193	-3.773860	0.0125	1(1)	STATIONARY
DD	-6.379542	-3.052169	0.0001	1(1)	STATIONARY
FD	-4.596061	-3.052169	0.0025	1(1)	STATIONARY
TD	-3.819556	-3.052169	0.0114	1(1)	STATIONARY

Source E-View 10.

Results of table 4.2 showed that all the variables were stationary at first difference, 1(1). This is considering the fact that their ADF statistical values in its absolute terms (HDI, -3.543193; DD, -6.379542; FD, -4.596061 and TD, -3.819556) exceeded their critical value of -3.052169, at 5% level of significance while their p-values were all less than 0.05 respectively. The order of integration therefore necessities the application of Vector Error Correction Model.

Johanson Co- integration Analysis

Table 4.3: Co-integration Trace Test and Maximum Eigenvalue Test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.933893	83.54306	47.85613	0.0000
At most 1 *	0.800090	37.36278	29.79707	0.0056
At most 2	0.433375	9.994681	15.49471	0.2811
At most 3	0.019669	0.337710	3.841466	0.5612

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.933893	46.18028	27.58434	0.0001
At most 1 *	0.800090	27.36810	21.13162	0.0058
At most 2	0.433375	9.656971	14.26460	0.2354
At most 3	0.019669	0.337710	3.841466	0.5612

Source: 10

Trace test indicates two (2) Co- integrating equations at 5% level of significance, (P-values 0.0000, 0.0056 <0.05). The Maximum Eigenvalue statistics also indicates two (2) Co- integrating equations at 5% level of significance (P-values 0.0001, 0.0058 <0.05). The test statistics affirmed that the variables were co-integrated and there is existence of long run relationship among the variables.

Table 4.4: Vector Error Correction Model (VECM)

VECM was further employed sequent to Johansson co-integration analysis.

Error Correction:	**D(HDI)**

CointEq1	-0.868647
	(0.14790)
Tstatistic	[-5.87338]

The VECM result of the model in table 4.4 showed that the error correction from HDI is appropriately signed with a negative coefficient of -0.868647 and t-statistic value of -5.87338. This showed that about 0.86% of disequilibrium in the short run is adjusted every year by changes in the explanatory variables of the model. This consolidates that the long run relationship revealed from Johansson Co-integration test is sustained and adjustment from the short run can be corrected in the long run. Therefore, it could be concluded that there is long run causality from FD, DD and TD. The long-run causality test resulted in table 4.5

Table 4.5: Least Squares System Equation Result

Dependent Variable: D(HDI)
Method: Least Squares (Gauss-Newton / Marquardt steps)
Date: 01/01/2023 Time: 00:37
Sample (adjusted): 3 19
Included observations: 17 after adjustments
D(HDI) = C(1)*(HDI(-1) + 0.0140363915903*TD(-1) - 0.0088308168147
*FD(-1) - 0.0559691341944*DD(-1) + 1.12059211031) + C(2)
*D(HDI(-1)) + C(3)*D(TD(-1)) + C(4)*D(FD(-1)) + C(5)*D(DD(-1)) + C(6)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)HDI	-0.868647	0.147895	-5.873385	0.0001
C(2)	0.249506	0.198228	1.258679	0.2342
C(3)(TD)	0.006609	0.011001	0.600758	0.5602
C(4)(FD)	-0.006792	0.002302	-2.950576	0.0132
C(5)(DD)	-0.014357	0.011932	-1.203194	0.2542
C(6)	0.009417	0.002809	3.352874	0.0064
R-squared	0.780213	Mean dependent var	0.009916	
Adjusted R-squared	0.680310	S.D. dependent var	0.010940	
S.E. of regression	0.006186	Akaike info criterion	-7.062619	

Sum squared resid	0.000421	Schwarz criterion	-6.768543
Log likelihood	66.03226	Hannan-Quinn criter.	-7.033387
F-statistic	7.809695	Durbin-Watson stat	1.805567
Prob(F-statistic)	0.002327		

Source: E-View 10

Having confirmed a long run causality, the research further estimates system equation results of the model. C(1) represents coefficient (-0.868647) of the Co-integrated model for HDI and represents the speed of adjustment towards long run equilibrium. In addition, it must be negative to imply causality. The study indicates that Domestic Debt, Foreign Debt and Total Debt granger cause HDI in the long run. Other results emanating from the Least Square System Equation Test for short run relationship indicates that in the short run, direct but insignificant relationship was found between TD (C3) and HDI in Nigeria. This is affirmed by the positive coefficient value of 0.006609 for TD. The relationship is however insignificant with the probability value of 0.5602 >0.05. The finding led to acceptance of null hypothesis one which states that TD has no significant effect on HDI. Also, an inverse but significant relationship was found between FD (C4) and HDI in Nigeria. This is affirmed by the negative coefficient value, -0.006792 of FD, while the probability value of 0.0132 < 0.05 is significant. The finding led to rejection of the null hypothesis two which states that there is insignificant relationship between FD and HDI in Nigeria. An indirect but insignificant relationship was found between DD (C5) and HDI in Nigeria. This is affirmed by the negative value of -0.014357 which is also insignificant since the p-value is 0.2542. Results therefore led to acceptance of null hypothesis three.

Discussion of Findings

The study investigated the effect of public debt on human development in Nigeria using time series data from 2003 to 2021. Preliminary findings of the study were taken from the stationarity test. Stationarity of the time series data was determined using ADF statistics. The variables were integrated at order one (stationary at first difference). This necessitated the data for a long-run analyses.

Result from the Johansen cointegration test revealed that a long-run relationship existed among all the variables of the study. The Vector Error Correction Model (VECM) was employed. The results of the VECM showed that the error correction from HDI is appropriately signed with a negative coefficient of -0.868647. This showed that about 86 percent of disequilibrium in the short run is adjusted every year by changes in the explanatory variables of the model. This consolidates that the long-run relationship revealed from Johansen cointegration test is sustained and disequilibrium from the short-run can be corrected in the long-run. Therefore, it could be concluded that there is long-run causality from FD, DD and TD to HDI. The long-run relationship between FD, DD, TD and HDI reflects the potency of the variables as important conduit in transmitting policy impulses to the aggregate economy thereby increasing HDI in the long-run.

Against the a priori expectation, the Least Square System Equation was estimated from the regression results of the VECM in order to test the significance of each of the explanatory variables on the HDI in the short-run as well as the three hypotheses of the study. Results revealed direct but insignificant relationship between TD and HDI in Nigeria which led to acceptance of null hypothesis one. The finding led to the conclusion that TD has insignificant effect on HDI for the period in view. The result is in agreement with studies of Obademi (2012) as well as Khan, Rauf, Haq and Anwar (2016). With regard to the second hypothesis, a significant relationship was revealed between FD and HDI in Nigeria leading to the rejection of null hypothesis two. This finding is in line with the studies of Alli-Momoh, Fatimah, Oladele and Adediran (2020) and Ezenwobi and Anisiobi (2021) who revealed that foreign debt has significant effect on human development in Nigeria but not in agreement with the results of Alli-Momoh, Fatimah, Oladele and Adediran (2020). Foreign debt has the ability to put a country on development pedestal but its misuse will lead to huge social and human costs which could gradually reduce the country's external assets and productive capacity of the national economy and negatively affect the macroeconomy (Adebiyi & Olowookere, 2013).With respect to hypothesis three, findings showed an indirect but insignificant relationship between DD and HDI in Nigeria leading to the acceptance of null hypotheses three. Thus, as domestic debt increases, human development decreases in Nigeria. The finding is in agreement with Ayuba and Mohd Khan (2019) but did not align with Ezenwobi and Anisiobi (2021) who found a positive and significant relationship between domestic debt and economic development in Nigeria. This finding reveals that the high level of domestic debt utilized by government to augment budget deficits over the period has not significantly improved development of both the economy and the society. Domestic debt due to their short-term nature may have been directed at capital formation as well as other monetary policies of government. Their medium to short term nature and high interest payments may have also affected human development negatively. According to Johnny and Johnnywalker (2018), increasing public debts can constrict government developmental activities especially with regard to infrastructure, public health and education.

Conclusion

The study concludes that public debt variables captured in the study which are TD, FD and DD have the potential to achieve a significant level of HDI in the long-run but against a priori expectation, human development in Nigeria has only been directly and significantly affected by foreign debt. However, the effect of total debt and domestic debt has not been significant for the period in view.

Recommendations

The following recommendations were made for the study:

1. Domestic debt incurred by government appears to be harmful to human development in Nigeria. Government should reduce the volume of domestic debts which are usually short and medium term and of high interest while improving on other sources of revenue especially taxation.
2. Thorough evaluation of debts, projects to be implemented with the debts as well as repayment viability of such debts must be taken into consideration because debts must be repaid. Allowing debts to accumulate while more debts are incurred will destabilize the economy in the long run. Strategic debt management strategies must be inculcated.
3. Human development cannot be relegated to the background. Government must give sincere consideration to projects that will impact society economically and socially. Basics in education and health should be provided at the expense of world class infrastructure that will consume very large resources and may end up as abandoned projects.

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Appendices

Appendix 2a: Data showing Domestic Debt, Foreign Debt, Total Debt and Human Development Index of Nigeria from 2003 to 2021

YEAR	Domestic Debt (N'Billion)	Foreign Debt (N'Billion)	Total Debt (N'Billion)	Human Development Index
2003	1329.68	4478.33	5808.01	0.45
2004	1370.33	4890.27	6260.6	0.452
2005	1525.91	2695.07	4220.98	0.469
2006	1753.26	451.46	2204.72	0.477
2007	3169.64	438.89	3608.53	0.48
2008	2320.31	523.25	2843.56	0.484
2009	3228.03	590.44	3818.47	0.484
2010	4551.82	689.84	5241.66	0.482
2011	5622.84	896.85	6519.69	0.492
2012	6537.54	1016.72	7554.26	0.499

2013	8670.63	1373.57	10044.2	0.506
2014	9611.6	1631.52	11243.12	0.514
2015	10492.17	2111.53	12603.71	0.516
2016	13881.09	3478.92	17360.01	0.521
2017	15938.26	51787.51	21725.77	0.532
2018	16627.84	7759.23	24387.07	0.531
2019	18378.96	9022.42	27401.38	0.538
2020	20209.9	12705.62	32915.51	0.535
2021	23700.8	15855.23	39556.03	0.535

Source: CBN Bulletin 2021; HDR 2021.

Appendix 2b: Array of Processed Data

Year	LOGHDI	LOGEXD	LOGDDB	LOGTDEB
2003	-0.79851	8.407005	7.192694	8.666993
2004	-0.79407	8.495003	7.222807	8.742031
2005	-0.75715	7.899179	7.330346	8.347823
2006	-0.74024	6.112487	7.469232	7.698356
2007	-0.73397	6.084249	8.061373	8.191056
2008	-0.72567	6.260059	7.749456	7.952812
2009	-0.72567	6.380868	8.079627	8.247605
2010	-0.72981	6.53646	8.423282	8.564394
2011	-0.70928	6.798889	8.634592	8.782582
2012	-0.69515	6.924337	8.785316	8.929867
2013	-0.68122	7.225168	9.067697	9.214751
2014	-0.66553	7.397267	9.170726	9.327512
2015	-0.66165	7.655168	9.258385	9.441746
2016	-0.65201	8.154477	9.538283	9.761925
2017	-0.63111	10.8549	9.676478	9.986254
2018	-0.63299	8.956638	9.718834	10.10181
2019	-0.6199	9.107468	9.818962	10.21835
2020	-0.62549	9.4498	9.913928	10.4017
2021	-0.62549	9.671255	10.07326	10.58547