

Impact of Public Debt on Human Capital Index in Nigeria

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Abstract

This study ascertained the effect of public debt on human capital index in Nigeria. The study extracted the data from the Central Bank of Nigeria (CBN) Statistical Bulletin and World Bank data spanning the period from 1999 to 2022. Descriptive analysis was used to analyze the data multiple regression was employed to test the hypotheses. The study found that both external debt and domestic debt were statistically significant on human capital index. Given the predictive relationship between the human capital index and public debt, it is evident that as the country's economy expands, external and domestic debts also tend to increase. However, this scenario should be avoided. Based on this, it was advice that government is advised to focus on enhancing local productivity and utilizing local financial resources more effectively.

Keywords: *Public Debt, External Debt, Domestic Debt and Human Capital Index*

1.0 Introduction

Public debt is one of the essential tenets of the financial balance and macroeconomic overall performance of any state (corporation for economic Co-operation and development - OECD, 2012). As referred to with the aid of the OECD (2012), public debt can transmit immediately or accentuate shocks via monetary sellers' reactivity to changes in macroeconomic situations. consequently, the manner of gathering public debt as well as its compensation processes have an effect on financial savings tradition, human capital development, consumption fashions, funding climate, the kind of worldwide family members and the monetary area overall performance (Karazijienè, 2015; OECD, 2012; Saungweme & Odhiambo, 2020). For the reason that starts of the worldwide monetary surprise from 2007 to 2015, public debt composition and structure in both evolved and developing nations have modified unexpectedly (Ostry, Ghosh & Espinoza, 2015). As an example, public debt extended from a mean of 36% to forty nine% of gross home product (GDP) in developing countries while in advanced nations, it rose from an average of 70% to one hundred and five% of the GDP (global monetary Fund, 2018). Nigeria became not excluded from public debt accumulation for the duration of this time. Much like various African nations, Nigeria has been borrowing actively from within and outside country to fund its fiscal gap (Onafowora & Owoye, 2017).

The consistent increase in public debt accretion which started within the 1980s remained unabated until 2005 whilst the Paris membership granted Nigeria a debt pardon totalling more or less \$18 billion (Onafowora & Owoye, 2017). However, the debt pardon granted to Nigeria spared the state from the burden of \$2.three billion in debt carrier yearly. This debt forgiveness prompted a minute appreciation of the united states's currency in assessment with the united

states dollar, from N132.2 and N128.6 in 2005 and 2006 respectively to N118.6 in 2008 (central bank of Nigeria - CBN, 2009). regrettably, the gains from this external debt cancellation had been unexpectedly weakened by way of the global economic shocks of 2009 because the naira exchange charge to america greenback improved from N118.6 in 2008 to more or less N150 in 2009 (CBN 2009). The monetary shocks also ended in a steep decrease in export earnings which reduced as a consequence of the iconic oil charges decline from \$147 in line with barrel in 2007 to \$forty five according to barrel in 2008 (CBN 2009).

Previous studies were conducted on public debt in Nigeria, such as; Nwokoye, et al (2024) examined the impact of external and domestic borrowings are considered timely for Nigeria, given the growing public debt profile amid deteriorating human capital development. Pitambar (2023) analyzed the effect of public debt dividing into internal and external debt on economic growth rate of Nepal using time series data from 1990 – 2021 A.D. Agu et al (2023) impact of Nigeria's public debt on economic growth was investigated in this study using data from 1990 through 2021. Matthew and Mordecai (2016) analyzed the impact of public debt on the economic development of Nigeria. Atueyi (2019) applied the OLS technique and confirmed that external debt hampers human capital development in Nigeria. Igudia (2021) assessed the implications of external debt and external debt servicing on Nigeria's human capital development between 1960 and 2019 using the OLS. Opara, Nzotta and Kanu (2021) appraised the implications of domestic debt on human development in Nigeria. Most of the prior studies have predominantly concentrated on the effect of public debt on economic growth and human development neglecting the significance of human capital index, besides, there study ended on 2021. The study ascertains the effect of public debt on human capital index in Nigeria from 1999 to 2022.

2.0 Review of Related Literature

2.1 Public Debt

Public debt is described as the suitable amount of money that the apex authorities owes to groups or organizations both inside and outside the use of a. external or domestic debt is referred to as public debt. Domestic debt is that which is owed to creditors inside a state, while external debt is that which is owed to establishments, corporations, or international locations placed outside the country (Agu, et al 2023). Nigeria is currently one of the Sub-Saharan Africa's countries with the best ranges of debt because of its slow GDP increase and excessive debt levels, high degrees of poverty, a short decline in profits in step with capita, and a gradual charge of export increase. The country's civil struggle, which lasted from mid-1967 to January 1970, became the first of three extensive factors that contributed to the indebtedness (Agu, et al 2023).

Generally, public debt is defined as any money owed by means of the imperative government. The present day idea of public debt emerged from awesome Britain after the wonderful revolution of 1688 A.D. within the British government, after 1688 advert, public borrowing changed into regularized, parliament gained massive rights within the location of public finance, and the financial institution of Britain became hooked up and received the debt for an prolonged time at decrease interest (Stasavage, 2003). These days, most developing countries, even Nepal, undertake a deficit financing policy due to the useful resource gap that is fulfilled with the aid of

3 essential approach printing new foreign money or the use of authorities reserve or debt. There is a hot debate concerning debt's nice and bad outcomes on economic growth. Excessive public debt inside the existing economic deficit state of affairs has a substantial terrible dating with the country's monetary pastime. It is miles because; high debt ends in upward pressure at the real interest fee that could crowd out non-public funding. While a central authority cannot finance its deficit by itself, it is compelled to reduce spending or improve the revenue to stabilize the economic system (Islam & Biswas, 2005). Nepalese financial system receives inner debt from diverse assets like the vital financial institution, banking, monetary institutions, and residents. Similarly, external debt is acquired from multilateral institutions like IMF, global financial institution, ADB, and many others. With a adulthood length for greater than 30 years at a meager interest fee and from its pleasant countries. the amount of public debt is sizable, however the monetary increase of Nepal is slow; it has raised the question within the case of developing nations whether or not the debt is useful or no longer for better economic growth (Sharma, 2014). Many economists like Keynes have favoured increasing authorities finance through debt and no longer via taxation because taxation will lessen earning and call for as properly, and debt will have not any such impact. Besides, debt allows the authorities to use idle and unutilized fund of the public.

Great attention has been dedicated to the research of public debt and economic consequences. The idea offers arguments for a bad, neutral and wonderful effect of public debt at the economy. As an example, from the Keynesian perspective, expansionary monetary coverage consequences in better stages of debt and concurrently accelerates financial growth, especially thru expenditure multiplier (Okere, Dimnwobi, Ekesiobi & Onuoha, 2023). Howbeit, this positive effect is normally expected in the brief time period. Further, the neo-classical theory avers the crowding-out effects of public debt. Public debt ought to result in higher interest fees and subsequently decrease investment and consequently countrywide earnings by using a multiplier, amongst different bad monetary outcomes (Onuoha, Dimnwobi, Okere & Ekesiobi, 2023a). Conversely, the Ricardian equivalence argues that public debt does no longer impact boom and other financial outcomes. The idea argues that debt reimbursement can be funded thru destiny taxation as people are spurred into enhancing their savings (Onuoha, Dimnwobi, Okere & Ekesiobi, 2023b). Accordingly, the effect of public debt remains neutral as future accrued taxes would be funded via individual savings (Barik & Sahu, 2020).

Regarding the empirical literature, numerous studies have assessed the hyperlink between public debt and financial growth (Barik & Sahu, 2020; Saungweme & Odhiambo, 2020 for specific review) while others have documented the determinants of human capital development (Nwokoye, Onugha & Kalu, 2020; Shuaibu & Oladayo, 2016). But, for precision and concision, the evaluation is centered on studies on the public debt-human capital development relationships. For multi-nations studies, Lora and Olivera (2007) hooked up that debt has a deleterious impact on social costs in a pattern of fifty-seven international locations cutting throughout diverse continents. Similarly, in a panel of thirty-5 sub-Saharan African (SSA) international locations, Fosu (2007) and Fosu (2008) concluded that external debt burdens hurt education and health spending respectively. Shabbir and Yasin (2015) employed the generalized method of moments (GMM) and found that external debt reduces social region spending particularly on fitness and

training.

Debt can be described as debts by using the debtor to the creditor, who may be a financial institution, an organization that offers payday loans, an individual or some other individual. A rustic, business, or individual may be the debtor. Debt is the complete amount of money a rustic owes, whether it was produced with the aid of its residents or external our bodies. Debt is received so as to pay for expenses that may adversely boom production and the growth of the economic system (Agu et al, 2023). The amount of debt that the government borrows from each internal and external resource to cowl its deficit is called public debt. Public debt is the unique amount that the apex authorities owe to groups or businesses both outside and inside the country. The preference to build institutional, infrastructural, and human capital capability reasons public debt in emerging countries. Most often, these efforts result in high authorities spending, inadequate revenue production, and improved debt burden.

External Debt

External debt consists of debt from foreign financial institutions or other nations. The discrepancy between domestic savings and investment is the cause of external debt. The nation is forced to borrow money at ever-rising rates in order to stay afloat as debt grows as the gap widens (Agu et al, 2023). The debt owed by the public and private sectors of the Nigerian economy to nonresidents and citizens, repayable in foreign money, goods, and services, was further defined by him as Nigeria's external debt.

Domestic Debt

Domestic debt is the portion of a country's debt that turned into borrowed from within its borders. Domestic debt, additionally known as internal debt, can state to be debt that the authorities owe to its very own people or financial establishments (Agu et al, 2023). The authorities borrows cash with the aid of issuing financial gadgets within the shape of securities, such as Treasury bills for short-time period borrowing, which usually have maturities among 30 and 360 days, development inventory, which commonly have maturities between 5 and 25 years, and Bonds with maturities between 10 and above.

Empirical Studies

Nwokoye (2024) examined the effect of external and domestic debt is considered timely for Nigeria, given the growing public debt profile amid deteriorating human capital improvement. The usage of statistics from 1990 to 2021, the studyhired the absolutely modified ordinary least squares (FMOLS) and canonical cointegration regression (CCR) as the principle estimation method and the robustness test respectively. The look at determined that home and external debt, economic growth and debt servicing exert nice and significant effect on human capital improvement in Nigeria at the same time as environmental pollution has an inverse and enormous impact on human capital development in Nigeria. Pitambar (2023) analyze the impact of public debt dividing into internal and outside debt on monetary growth rate of Nepal the use of time series statistics from 1990 – 2021 A.D. The Autoregressive distributed Lag (ARDL) model is employed to research the effect as well as lengthy – run and quick – run courting among economic boom and public debt. Similarly, the long term effect of external debt upon the financial growth charge is superb and extensive. Furthermore, the effects display that there is also the longer term relationship between the monetary boom price (i.e. RGDPgr) and internal

debt, external debt. Agu et al (2023) impact of Nigeria's public debt on economic growth was investigated in this study using data from 1990 through 2021. Furthermore, the Auto-regressive Distributed Lag (ARDL) model was used to test for co-integration. Findings showed that while external debt had a negative effect on GDP growth rate on the short-run, it indicated long-run positive effect on GDP growth rate. Domestic debt exerted a negative influence on GDP growth rate both in the short and long run. Debt Service payment had a negative impact on GDP growth rate both in the short-run and the long-run. Results of Granger causality tests indicated a unidirectional causality between external debt and GDPGR, as well as debt service payment and GDP growth rate in Nigeria. Salmon (2021) also reviewed 40 existing economic literature published from 2010 to 2020 in the context of the relationship between public debt levels and economic growth by considering the debt threshold. For the 40 studies reviewed, 36 studies identify a statistically significant (linear or non-linear) negative effect of public debt on growth. Of the four remaining studies, two studies found that the adverse effects of public debt on growth can be primarily reduced by good quality institutions and good policy. At the same time, the other two studies found some weak evidence for the existence of a negative debt-growth relationship. Bhatta and Mishra (2020) estimated the debt-growth relationship. The results suggested that Nepal achieved higher growth rates when the public debt to GDP ratio was around 30 to 35 percent. The point estimate of the public debt threshold for Nepal is 33 percent, which is too low compared to the conventional benchmark of 90 percent, as Reinhart and Rogoff (2010) reported. The result mainly provides evidence for a non-linear relationship between economic growth and public debt. Upadhyaya and Pun (2022) investigated the effect of public debt on economic growth. It is found that in Nepal, public debt does not cause economic growth. The study also found that there is no significant unidirectional causal relationship between public debt and the economic growth of Nepal. . Igudia (2021) assessed the implications of external debt and external debt servicing on Nigeria's human capital development between 1960 and 2019 using the OLS. The study concludes that external debt boosts human capital development while external debt servicing undermines human capital development. In another study, Opara, Nzotta and Kanu (2021) appraised the implications of domestic debt on human development in Nigeria. Employing OLS and data between 1981 and 2018, the authors discovered that internal debt stimulates human development. Wang, Bui, Zhang, Nawarathna and Mombeui (2020) examined the role of public debt in the nexus between renewable energy and human development in Brazil, Russia, India, China and South Africa (BRICS) nations between 1990 and 2016. The study reported, among other things, that public debt lessens human development. Whajah, Bokpin and Kuttu (2019) utilized the fixed effect model to unearth the nexus between public debt, government size and inclusive growth in Africa and the authors discovered that inclusive growth is negatively influenced by public debt. In another study for Nigeria, Atueyi (2019) applied the OLS technique and confirmed that external debt hampers human capital development in Nigeria. In a sample of 95 developing economies, Zaghdoudi (2018) applied a panel smooth threshold regression model to evaluate the connection between external debt and human development. The author concluded that the connection between both variables is non-linear and the study established an optimal external debt threshold of 41.7775%. Below the threshold, external debt drives human development while above the debt threshold, human development is hampered. Saungweme and Odhiambo (2019) reviewed the literature on the

impact of public debt on economic growth from the period 18th century. The review of the study presented that the impact of public debt on economic growth is not given and varies depending on a set of heterogeneous factors, like the level of development of the sampled countries, institutional quality, the relative size of the public sector, the composition and structure of government debt and others. Matthew and Mordecai (2016) analyzed the impact of public debt on the economic development of Nigeria. The result of ECM showed that external debt and external debt service payment have an insignificant and adverse relationship with per capita GDP. But, the domestic debt stock has a positive and highly significant relationship with per capita GDP. Dahal (2016) analyzed the Public debt stock, Education-centric human capital, and economic growth in Nepal in a Cobb-Douglas production function framework using the ARDL model. The study concluded that there is a positive impact of public debt on Nepal's economic growth, relying on the Keynesian proposition.

Methodology

The study adopted an *ex-post facto* research design and utilized the method to analyze the time series, data for the study were extracted from the Central Bank of Nigeria (CBN) Statistical Bulletin and World Bank data spanning the period from 1999 to 2022.

Model Specification

This study adapted the model of Agu et al (2023). The functional relation of the model is generally given as:

$$GDPGR = f(DDEBT, EDEBT, DSP, INFL, EXCH, INT) \text{ (1)}$$

The econometrics model is specified as follows:

$$GDPGR_t = \beta_0 + \beta_1 LDDEBT_t + \beta_2 LEDEBT_t + \beta_3 DSP_t + \beta_4 INFL_t + \beta_5 EXCH_t + \beta_6 INT_t + \mu \text{ (2)}$$

Where:

GDPGR = GDP growth rate;

LDDEBT = Log of Domestic Debt;

LEDEBT = Log of External Debt;

DSP = Debt Service Payment;

INFL = Inflation;

EXCH = Exchange Rate and

INT = Interest Rate.

$\beta_0, \beta_1, \beta_2, \beta_3$ and β_4 = parameters and μ = Stochastic error term.

This study modified the model by using only two independent variables and human capital index as the dependent variable which gives us the following functional model

$$HCI_t = f(EXDt, DMDt) \text{i}$$

Hence, the economic model is given by the following equation;

$$HDI_t = \beta_0 + \beta_1 EXDt + \beta_2 DMDt + \mu_t \text{ii}$$

Where:

HDI is the Human CAPITAL INDEX index,

EXD is external debt

DMD is domestic debt

β_0 is the intercept while

$\beta_1 - \beta_2$ are the coefficients,

μ_t represents the white noise assumption.

Method of Data Analysis

This paper used regression analysis as the data analysis method. However, it incorporated multivariate co-integration and error correction in order to undertake a thorough examination of the characteristics of time series economic data.

Decision Rule

If the computed F value exceeds the critical F value at the chosen level of significance, we reject the null hypothesis; otherwise, we do not reject it.

Presentation and Analysis

Data analysis

Table 1: Descriptive Statistics

	HCI	EXD	DMD
Mean	6.961935	2.75E+10	9.57E+12
Median	6.450000	2.22E+10	2.61E+12
Maximum	13.20000	8.45E+10	3.84E+13
Minimum	3.260000	2.05E+09	5.76E+10
Std. Dev.	3.018688	2.45E+10	1.13E+13
Skewness	0.563310	0.700921	0.950322
Kurtosis	2.219366	2.471781	2.669345
Jarque-Bera	2.426606	2.898725	4.807298
Probability	0.297214	0.234720	0.090388
Sum	215.8200	8.53E+11	2.97E+14
Sum Sq. Dev.	273.3743	1.80E+22	3.82E+27
Observations	31	31	31

Source: E-Views 9.0 Descriptive Output, 2024

Interpretation

Table 1 presents the descriptive statistics for the dependent variables (HCI) and the independent variables (EXD and DMD). The mean serves as a tool for setting benchmark. The median ranks and takes the central tendency. While the maximum and minimum values help in detecting problem in a data. The standard deviation shows the variation from the mean. It is a measure of risk, the higher the standard deviation, the higher the risk. The standard deviation is a measure that summarizes the amount by which every value within a dataset varies from the mean. It is the most robust and widely used measure of dispersion. The standard deviation in the debt for the period 1999-2022 is 3.02, 2.45 and 1.13 for HCI, EXD and DMD respectively, showing percentage of values that are less than one standard deviation (1SD) away from the mean values of these. Skewness and Kurtosis are contained in Jarque-Bera. Positively skewed is an indication of a rise in performance while positive skewed is an indication of loss or backwardness. Jarque-bera is used to test for normality; to know whether the data are normally distributed.

Test of Hypotheses

Table 2: Panel Least Regression analysis showing the relationship between HCI, EXT and DMD

Dependent Variable: HCI
Method: Least Squares
Date: 11/09/24 Time: 19:21
Sample: 1999 2022
Included observations: 31

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	30.45550	89.50329	0.340272	0.7364
EXD	3.15E-09	6.81E-10	4.629066	0.0001
DMD	7.41E-12	1.57E-12	4.733645	0.0001
R-squared	0.898809	Mean dependent var		224.9000
Adjusted R-squared	0.883241	S.D. dependent var		175.2955
S.E. of regression	59.89860	Akaike info criterion		11.16987
Sum squared resid	93283.91	Schwarz criterion		11.40116
Log likelihood	-168.1330	Hannan-Quinn criter.		11.24527
F-statistic	57.73466	Durbin-Watson stat		1.063339
Prob(F-statistic)	0.000000			

Source: E-Views 9.0 Panel Regression Output, 2024

Interpretation of Regression Result

Table 2 reveals an adjusted R^2 value of 0.88. The adjusted R^2 , which represents the coefficient of multiple determinations imply that 88% of the total variation in the dependent variable (HCI) of Nigeria debts is explained by the explanatory variables (EXD and DMD). The adjusted R^2 of 88% did not constitute a problem to the study because the F- statistics value of 57.73466 with an associated $\text{Prob.} > F = 0.0000$ indicates that the model is fit to explain the relationship expressed in the study model and further suggests that the explanatory variables are properly selected, combined and used. The value of adjusted R^2 of 88% also shows that 12% of the variation in the dependent variable is explained by other factors not captured in the study model. This suggests that apart from EXD and DMD, there are other factors that mitigate HCI of public debt. EXD and DMD has a significant positive relationship with HCI as reported by the beta coefficient (β_2) = 3.15 and 7.41, t- value = 4.629066 and 4.733645, p-value = 0.000 and 0.000 respectively, a unit increase in EXD and DMD will exert 3% and 7% respectively units increase in HCI; In addition, Durbin-Watson test is implied to check the auto correlation among the study variables. The Durbin-Watson value is 1.063339 which is less than 2 provide an evidence of no auto-correlation among the variables.

Decision

Based on the empirical evidence, this study upholds that a significant and positive relationship exist between external debt, domestic debt and human capital index at 5% level of significance, whereas Prob(F-statistic) value is 0.000000. The study hence H_1 is accepted; showing that financial development has a significantly affected human capital index in Nigeria.

Conclusion and Recommendations

This study ascertained the effect of public debt on human capital index in Nigeria. The study extracted the data from the Central Bank of Nigeria (CBN) Statistical Bulletin and World Bank data spanning the period from 1999 to 2022. Descriptive analysis was used to analyze the data multiple regression was employed to test the hypotheses. The study found that both external debt and domestic debt were statistically significant on human capital index. Given the predictive relationship between the human capital index and public debt, it is evident that as the country's economy expands, external and domestic debts also tend to increase. However, this scenario

should be avoided.

Based on this, it becomes recommendation that authorities are suggested to cognizance on improving local productivity and making use of neighborhood economic assets more correctly. Moreover, since the study found out a positive correlation between public debt and human capital index, it is crucial for the kingdom's hastily developing debt profile to be carefully controlled to save you future debt burdens.

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