INSTITUTIONS, PUBLIC DEBT AND HUMAN CAPITAL DEVELOPMENT IN NIGERIA

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Sani Yusra Abubakar
Auta Elisha Menson
Danlami Victor
Balogun O. Stanley
Abdul Bashir Y. Umar
Muhammad Hanifah
Department of Economics,
Faculty of Social Sciences, Kaduna State University. Corresponding Email*: autaelisham@gmail.com*

Abstract

This study examines the impact of institutions and public debt on human capital development in Nigeria spanning the period 1990-2022. The time series data were sourced from World Bank Governance indicators, World Development Indicators and International Monetary Fund Financial Statistics. The study employs autoregressive distributed lag (ARDL) model bound testing approach for model estimation. The series were stationary at levels I(0) and first difference I(1). The results of of ARDL estimation show that public debt and institutional indicators (government effectiveness, regulatory quality, control of corruption, voice and accountability) are statistically significant in influencing human capital development in Nigeria in both short run and long run. Results also show that institutions are essential for economic debt management and sustainability. The study concludes that budgetary measures are required to minimize the rising pubic debt and debt service by initiating policies geared towards increasing non-oil revenue in Nigeria. The study recommends appropriate measures to enhance institutional quality in Nigeria through anti-corruption measures that strongly support favourable investment environment, strengthen the rule of law by protecting property rights and independence of the judiciary.

Keywords: Institutions, public debt, human capital development, ARDL, rule of law
JEL Code: D02, H63, J24

Introduction

The fiscal space of developing economies is increasingly constrained due to their over reliance on mono or primary products. The revenue earned from the exports of these economies has been on the decline and not able to meet the social and economic needs of the society coupled with their inability to raise substantial revenue through taxes. To address the revenue gap amidst the quest to provide infrastructure for sustain growth and development, government in these countries have resorted to domestic and external borrowing that seems to be raising public debt (Ostrihon, Siranova & Tiruneh, 2022; Tarek & Ahmed, 2017). Budget deficits and public debt are integral parts of fiscal policy where significant fiscal expansion has implications for fiscal policy management and sustainability.

Fiscal policy management for results requires quality institutions. Economic and political institutions play vital role in achieving economic objectives including fiscal sustainability and human capital development (Farooq, 2022). The quality of institutions and public policies have substantial influence on debt-economic performance nexus. Effective policy framework and institutions are essential to promote investment in human and physical capital, long-term growth and development (Abbas, Junging, Ramzan & Fatima, 2021). This is largely because quality institutions act as catalyst for growth through efficient use of public resources including taxes and public debt in providing basic infrastructure like health and education that are key for human capital development. The unintended consequences of public debt can be reduced with quality institutions.

The Nigerian public debt as percentage of Gross Domestic Product (GDP) has been on steady rise in the last decade. For instance, the debt-GDP ratio that was 27.7% in 2017 rose to 36.5% and 39.6% in 2021 and 2022 respectively (World Bank, 2022). On Global Competitive Index (GCI) Nigeria ranks 125th out of 137 economies in 2017/2018. In recent measure of Global Innovative Index (GII), Nigeria was ranked 114 out of 132 economies in 2022 from 117 in 2020 (WEF, 2022). On human capital development, Nigeria ranks among the lower middle income economies like Togo, Mali, Niger, Benin or Dr Congo. Nigeria is ranked 29th among 39 lower middle income group and 13th among 27 economies in Sub-Saharan Africa (SSA) (World Bank, 2022). The human development index (HDI) in

Nigeria over the last ten years average 0.52 which place the country among the low human development category (UN, 2022).

The importance of human capital development cannot be overemphasized. However, Nigeria is constrained by the quality of institution and bourgeoning public debt. The economy is experiencing fiscal imbalance, low levels of human capital development and unpredictable growth performance (Mahmood, Hassan & Tanyeer, 2022). The adoption of counter-cyclical fiscal policies is limited by high government borrowing that has resulted in high debt levels, instability, and weaker future growth that tend to hamper more investment in social infrastructure that drives human capital development.

Therefore, the study seeks to investigate the relation among institutions, public debt and human capital development in Nigeria. The novelty of the study is that it explores the institutional factor in examining how debt influence human capital development which most of the studies ignored. To achieve this, the study is organized into 5 sections. Apart from section 1 which this part concludes, section 2 is literature review. Section 3 is methodology. Section 4 provides results and discussion. Section 5 is conclusion and recommendations.

Conceptualizing Institutions, Human Capital and Public Debt

Institutions are rules, regulations, principles and laws that guide the administration and operations of organizations. Institutional quality refers to the effectiveness and reliability of the economic, political, and social institutions within a country. It encompasses factors such as governance, rule of law, corruption control, democratic processes, and political rights (Chechenta-Westphal, Hughes & Rother, 2014). High institutional quality is associated with better economic and social outcomes, including attracting debt portfolio investment between countries, generating economic and social benefits, improving the efficiency of innovation inputs, and influencing the quality and appropriateness of education and healthcare services (Knack & Keefer, 1995). Overall, institutional quality plays a crucial role in shaping the performance and outcomes of various sectors within a country.

Effective and well-managed institutions contribute to increased efficiency and competition in interactions between public and private economic players. Essentially, this results in substantial increase in

the level of investments, national savings, and capital investment, as well as well-established management that impact on people's living standards (Acemoglu & Robinson, 2008). Mismanagement of institutions, corruption, and law and order would increase the budget deficit, which have a range of consequences for standard of living. To improve the country's economic system and raise living standards, the government place high priority on law-and-order administration as well as institutional quality (Olson, Sama & Swamy, 2000). This has implication for government effectiveness, regulatory quality, rule of law, control of corruption, ease of doing business.

Public debt also known as governmental debt is the overall outstanding debt of national or central government of a nation (Nawaz, 2015). It is usually stated as a proportion of GDP. Government's obligations to domestic creditors are referred to as internal or domestic debt, while obligations to foreign creditors are referred to as external debt. A government's public debt is an important source of resources for government to finance public spending and managing budget deficits. Public debt as a percentage of GDP is usually used as an indicator of the ability of a government to meet its future obligations.

Public debt is the total amount, including total liabilities, borrowed by the government to meet its development budget. It has to be paid from the Consolidated Fund of India. The term is also used to refer to overall liabilities of central and state governments, but the Union government clearly distinguishes its debt liabilities from the states (Alonso & Garcimartins, 2013). A country's gross government debt is the financial liabilities of the government sector. Changes in government debt over time reflect primarily borrowing due to past government deficits.

Human capital refers to the economic value of a worker's experience and skills. It is an intangible asset and includes assets like education, training, intelligence, skills, health, and other things employers value such as loyalty and punctuality (Lin & Nugent, 1995). It is perceived to increase productivity and profitability. Furthermore, the term was used to describe the labour required to produce manufactured goods. Knack & Keefer (1995) observed that human capital is like any other form of capital to improve the quality and level of production which require investment in education, training, and enhanced benefits of organization's employees.

Accordingly, human capital includes communication skills, education, technical skills, creativity, experience, problem-solving skills, mental health, and personal resilience (Ghosh, 2013). Human capital allows an economy to grow. When human capital increases in areas such as science, education, and management, it leads to increases in innovation, social well-being, equality, increased productivity, improved rates of participation, all of which contribute to economic growth. Increases in economic growth tend to improve the quality of life for a population.

Human capital development is the process of enhancing and improving the skills, knowledge, abilities and overall potentials of individuals within a society or organization. It recognizes that individuals are valuable assets and focuses on investing in their development to maximize their contributions and productivity. Human capital development encompasses various activities aimed at improving human resources such as education, training, mentorship, skill-building programs and career development initiatives. The goal is to equip individuals with necessary competencies and capabilities to thrive in their professional and personal lives. Investing in human capital development leads to increased productivity, innovation and competitiveness at both individual and organizational levels. It promotes economic growth, social mobility and improved quality of life.

Theoretically, public debt is linked to economic growth and by implication human capital development. The effect of public debt is likely that of crowding out or that of uncertainty about policy legitimacy which may aggravate the crowding out effect. Higher debt might have a detrimental impact in this instance, even in the near term. The traditional distinction between debt's immediate and long-term consequences ignores the prospect that prolonged recessions will limit possible future production since they expand the amount of disgruntled personnel, resulting in skill loss, and have a detrimental effect on corporate investment and development of new projects. Therefore, in this situation, maintaining budget deficit and rising debt may boost output in both short and long run. In fact, in a low-interest-rate situation, expansionary fiscal policy is expected to be self-financing (Ghosh, 2013).

Stefan (2001) analysed an overlapping-generation endogenous growth model of human capital accumulation with borrowing

constrained young individuals. On a small open economy's equilibrium growth path, production, human capital, and physical capital all grow at a uniform rate that depends, apart from a vector of parameters, only on the amount of time that decentrally optimizing, borrowing constrained private households allocate to education and training. An increase in public debt that is used to redistribute tax burdens from every individual's youth to his middle age raises the equilibrium growth rate of the economy and improves the intertemporal allocation of resources.

Knack & Keefer (1995) asserts that economic development is related to the knowledge accumulation process, which produces an institution or social capital represented by the average knowledge in a society. As a result, the production system interacts with this average knowledge resulting in increased productivity. Acemoglu & Robinson (2008) observed that knowledge is not a public good because patents grant monopoly power to innovators. Patents, therefore, serve as engines of knowledge creation as they provide the right incentives for those engaged in Research and Development (R&D) to make investments that will eventually lead to knowledge creation. This process greatly depends on the quality of institutions because "good institutions contribute to facilitate the process of registering new patents, to disseminate ideas and promote cooperation across researchers, to speed up diffusion of scientific knowledge, to improve enforcement of property rights and to reduce the uncertainty of new projects; all factors that stimulate R&D activities.

The importance of institutions for knowledge creation has been emphasized (Acemoglu, Gallero & Robinson, 2014), Countries with strong institutions experience a significant increase in the absorption of the international R&D spillover. Observed further that control of corruption, market-friendly policies, protection of property rights and a more effective judiciary system boost an economy's rate of innovation (Lucas & Carl, 2022). Knowledge creation is strongly dependent on human capital as institutions impact knowledge creation both directly and indirectly via human capital.

Empirical Review

There are studies that examined the relationship among institution, public debt and human capital development across the world using various data and materials and covering different regions and

economies. Ramzan, Yao, Qamar, Sumbal, & Rano (2023) investigated the mediating role of institutional quality on the relationship between public debt and economic growth in Pakistan spanning 1996–2020. The study employed Autoregressive Distributed Lag (ARDL) bounds testing technique and error correction method (ECM). The short-run results indicated that public debt has a favorable association with economic growth, while the relationship is found to be detrimental in the long run. Furthermore, the combined effect of public debt and institutional quality indicators revealed the significant positive association with economic growth, suggesting that better institutional quality can contribute to mitigate the negative impact of public debt on economic growth in Pakistan.

Lusa & Carl (2022) examined the relation among institutions, human capital and development. Panel data covering the period 1955–2010 and a novel indicator of property rights protection from Varieties of Democracy (V-Dem) was used to reinvestigate the relationships. The findings showed that both property rights, institutions and human capital are positively related to economic growth, although human capital is relatively more robust when accounted for country fixed effects. The cross-country evidence of panel data results suggested that broad-based property rights protection clearly and strongly enhances growth only in advanced economies.

Egungwu (2021) examined the impact of an increase in external debt stock and its servicing on human capital development in Nigeria covering the period 1986-2015. Ordinary Least Square (OLS) regression technique was used to analyse the data. The study found that both external debt stock and external debt servicing had a significant negative effect on human capital development. On debt servicing, all the creditors showed insignificant positive effect except London club that had a significant positive effect. The study concluded that economies could finance their budget deficits with external funds but should ensure that such funds are applied on priority projects that have the capacity to deepen the economy and improve the well fair of her citizens.

Atueyi (2020) examined the effect of external debt and human capital development in Nigeria using time series data spanning 1986-2017. Error correction model and causality test were employed for data analysis. The study found that external debt has a negative and significant effect while debt financing has negative insignificant effect

on human capital development. The gross fixed capital formation has positive insignificant effect on human capital development. Similar studies in Africa, Esefo (2020) studied the relationship between budget deficit and economic growth in 20 sub Saharan Africa countries from 1991 to 2018.Pooled Mean Group (PMG) estimated the variables. Results revealed budget deficit related negatively and significantly with economic growth in the long-run, while budget deficit related positively and significantly with economic growth in the short-run.

Vyacheslav, Andres and Constantine (2019) investigated the impact of debt on human capital. The study used random sample of the federal student loan borrowers in the US. The findings show negative relationship between the level of undergraduate student debt and graduate school enrolment. Identified variation in student debt within school by cohort, and induced by large tuition changes within the same school across cohorts. Similarly, Acemoglu, Gallego, and Robinson (2014) examined the relationship among institutions, human capital, and development. Their empirical model treats human capital as exogenous. Using cross-country and cross-regional regressions, their findings revealed that differences in human capital and control for the effect of institutions, the impact of institutions on long-run development is robust, whereas the estimates of the effect of human capital are much diminished and become consistent with micro estimates.

Joilson & Edinaldo (2012) developed a micro-foundation model linking institutions to human capital derived from an endogenous process. The theoretical model shows that improvements in the quality of institutions foster human capital accumulation, decrease income inequality and change the historical development path. Cross-country panel data covering the period 1965-2005 was used to estimate the model. The findings showed that deep structures or structural institutions which are persistent and rooted on the historical development path of an economy affect long-term economic performance, while political institutions are uncorrelated with productivity and long-term economic growth. Growth of physical and human capital instead of levels determines long-run economic growth.

On studies that estimates the relation between debt and human capital development, Nwokoye, Stephen, Onuoha, & Vitus, (2024) estimated the effect of external and domestic borrowings on human

capital development in Nigeria using data covering the period 1990-2021. The study employed the fully modified ordinary least squares and canonical cointegration regression as the main estimation technique and the robustness check, respectively. The findings of the study revealed that domestic and external debt, economic growth and debt servicing exert positive and significant influence on human capital development in Nigeria while environmental pollution has an inverse and significant impact on human capital development in Nigeria.

Mbanefo (2023) analyzed the impact of external debt on human capital development in Nigeria. The study used disaggregated model and employed Autoregressive Distributive Lag (ARDL) for model estimation. The study found no long run effect of external debt and HCD in Nigeria but the existence of a positive and significant short run effect on HCD. Also, Igudia (2021) investigated the impact of external debt stock and debt servicing on human capital development (HCD) in Nigeria covering the period 1960-2019. Ordinary Least Squares regression technique was used to estimate the model. The results revealed that external debt servicing has an inverse relationship with HCD whereas external debt stock has a significantly positive impact on HCD. All other variables in the model contributed to the increase in public spending on education and health.

Research Methodology

The theoretical framework used in this study is premised on Stefan (2001) analysed an overlapping-generation endogenous growth model of human capital accumulation with borrowing constrained young individuals. On a small open economy's equilibrium growth path, production, human capital, and physical capital all grow at a uniform rate that depends, apart from a vector of parameters, only on the amount of time that is optimizing, borrowing constrained private households allocate to education and training. An increase in public debt that is used to redistribute tax burdens from every individual's youth to his middle age raises the equilibrium growth rate of the economy and improves the intertemporal allocation of resources.

The model followed the approach by Egungwu (2021) and theoretical suggestion by Stefan (2001). The general empirical model is of the form:

The functional model is specified as:

$$HDIt = f(pds, goe, req, voa, rol, coc, psv) \quad (1)$$

The model can further be express for estimation as follows:

$$HDI_t = \beta_0 + \beta_1 pds_t + \beta_2 goe_t + \beta_3 req_t + \beta_4 voa_t + \beta_5 rol_t + \beta_6 coc_t + \mu_t \quad (2)$$

The variables in equation (1) and (2) are public debt stock (pds) as ratio of GDP; government effectiveness (goe); regulatory quality (req); voice and accountability (voa); rule of law (rol); control of corruption (coc); while 'μ' is the white noise and 't' is time trend. Aside from public debt stock other variables are institutional quality indicators.

The ARDL Bounds Test Approach to Co-integration

The ARDL Bounds test approach to co-integration is based on the ordinary least square (OLS) estimation of a conditional unrestricted error correction model (UECM) developed by Pesaran, Shin & Smith (2001). This approach is applied to ascertain the existence of a long run relationship and for the estimation of long and short run coefficients. From the ARDL approach, we derive a dynamic error correction model (ECM) following a simple linear transformation, where the ECM integrates short run dynamics with long run equilibrium without losing long run information. In order to implement the bounds testing procedure, it is necessary to model equation (3) as a conditional ARDL as in Pesaran & Shin (1995) in the following form:

The ARDL model specification of the above functional form is:

$$\Delta HDIt = \alpha_0 + \pi_1 HDI_{t-1} + \pi_2 lnpds_{t-1} + \pi_3 goe_{t-1} + \pi_4 req_{t-1} + \pi_5 voa_{t-1} + \pi_6 rol_{t-1} + \pi_7 coc_{t-1} + \sum_{j=0}^{k} \varphi_{1j} \Delta HDI_{t-j} + \sum_{j=0}^{k} \varphi_{2j} \Delta lnpds_{t-j} + \sum_{j=0}^{k} \varphi_{3j} \Delta goe_{t-j} + \sum_{j=0}^{k} \varphi_{4j} \Delta req_{t-j} + \sum_{j=0}^{k} \varphi_{5j} \Delta vaa_{t-} + \sum_{j=0}^{k} \varphi_{6j} \Delta rol_{t-j} + \sum_{j=0}^{k} \varphi_{7j} \Delta coc_{t-j} + \varepsilon_t \quad (3)$$

The long-run and short-run parameters of equation (4) below would be estimated once a cointegration relationship has been established. Hence, the error correction model can be used to capture the speed of

adjustment of human capital development model. This model is expressed below:

$$\Delta HDI_t = \varphi_i + \omega_i HDI_{t-i} + \vartheta_i lnpds_{t-i} + \gamma_i goe_{t-i} + \sigma ireq_{t-i} + \nu_i voa_{t-i} + \varphi_i rol_{t-i} + \lambda_i coc_{t-ii} + \delta ecm_{t-1} + \varepsilon_t \quad 4$$

Where: ecm_{t-1} is the error correction term lagged for one period and 'δ' is the coefficient for measuring speed of adjustment.

The ARDL approach to cointegration is applicable irrespective of whether the variables are I(0) or I(1), it is still necessary to conduct unit root tests such that no I(2) variable is involved. This is important since the presence of an I(2) variable renders the computed F-statistics for testing cointegration invalid. To this end, we apply the widely used ADF and PP unit root tests for establishing the variables' orders of integration.

The equations 4 is the ARDL specifications of equations 3. The bound test for investigating the existence of long run relationship can be done using the F-test. The critical values are obtained from the Narayan (2005) tables which allows for small sample estiamtion as in this study for a non-standardized distribution which depends on whether the variables are I(0) or I(1); the number of independent varaibles and whether the ARDL model contain a constant or trend. For cointegration to be established, the computed F-statistics must be greater than the upper bound critical values and the null of no cointegation rejected. For a lower computed F-statistics compared to the upper bound critical values, the result failed to rejected the null of no cointegration. However, if the existence of cointegration is established, the next stage is the estimation of short run and long run coefficients of the cointegrated equations.

Our model is based on annual data covering the period 1990-2022. Much of the data is extracted from World Bank development indicator (WDI, 2022) of the World Bank. The human capital development data is extracted from WDI. The data on public debt stock is extracted from IMF. However, the data on world governance indicators (WGI) showing as institutional quality, was collected from the World Bank, comprising six indicators: government effectiveness; regulatory quality; voice and accountability; rule of law; control of corruption; and political stability and violence. The values of all six measure of institutional quality are range from −2.5 to +2.5. Using these values, we construct an index range from 0 to 10, indicating lower to higher quality of institutions. The control variables data including inflation, gross

fixed capital formation, total exports and total government spending are source from WDI.

Results and Discussions

Table 1 presents descriptive statistics of the variables of the study. The mean, median, standard deviation, Variance, minimum, maximum, Skewness and Kurtosis have been used to describe the data. In Table 1, we calculate the descriptive statistics of all the variables used in this study. Institutional quality variables are range from 0.012 to 4.40, we can see that these values are below 5, which means that all six variables of institutional quality are at the lower level or below the mid value which is considered to be the average level. Nigeria needs to improve its institutional quality as country is considered to be at high risk for the values lower than 50%. The public debt as a ratio of GDP has the mean value of 0.927 considered to be relatively high.

Table 1: Descriptive statistics

Variable	Obs.	Mean	Median	Max	Min	Std. Dev.
HDI	32	0.449	0.338	0.5893	0.3672	0.035
Pds	32	0.801	0.469	8.621	0.365	1.581
Goe	32	3.200	2.953	4.216	2.367	0.971
Req	32	4.005	3.137	4.045	3.012	1.431
Voa	32	3.719	1.413	4.403	2.554	0.526
Rol	32	3.284	4.390	4.375	3.063	0.269
Coc	32	2.257	2.249	3.78	1.996	0.273

Results of unit root tests

We investigate the stationary of variables before using ARDL Bounds testing to identify their integration order. According to Pesaran, Shin & Smith (2001) for variable integration on the ARDL technique, variables must be stationary at I(0) or I(1). We utilized Dickey and Fuller (1981; 1979) and Phillip-Perron (1988) tests. The result is presented in Table 2 which shows that the variables are integrated at level I(0) and at first difference I(1) and exhibit long run linear combination.

Table 2: Results of unit root tests

Variables	ADF		PP	
	At Level	At First Difference	At Level	At First Difference
HDI	−2.564	−4.983*	−2.761	−6.83**
Pds	−1.795	−3.962***	−1.217	−3.833***
Goe	−1.618	−4.113**	−1.918	−4.306***
Req	−1.587	−5.284***	−1.959	−4.697*
Voa	−2.019	−4.630*	−1.482	−6.239***
Rol	−2.532	−5.821***	−2.527	−5.704***
Coc	−2.072	−4.845***	−3.696***	−6.919**

Notes: **, ** and *** indicate significance levels at 10%, 5% and 1% respectively.*

Bound test

Given different order of integration [I(0) and I(1)], bounds test is also applied. Table 3 provides results of the bound test where the computed *F*-statistic of 13.16412 is greater than the lower and upper critical bound value at 10%, 5% and 1%, respectively, thus indicating the existence of a long-run relationship among the variables under study.

Table 3: Bounds test result

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	13.16412	10%	2.2	3.09
K	4	5%	2.56	3.49
		2.5%	2.88	3.87
		1%	3.29	4.37

Source: Authors Computation using E-view 10

Lag selection criterion

The study conducted a VAR lag order selection criteria test to determine the optimal lag. The results in Table 4 show that LR, FPE, SC and HQ suggested 2 optimal lag for the study.

Table 4: Optimal lag selection criteria

VAR Lag Order Selection Criteria						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-289.826	NA	0.015067	9.994098	10.17016	10.06283
1	30.07810	574.7428	6.89e-07	-0.00265	1.053728	0.409719
2	41.17313	18.05293*	1.12e-06*	0.468707	2.405395*	1.224712*
3	79.16586	55.37923	7.59e-07	0.028276	2.845276	1.127919
4	120.9975	53.88478	4.71e-07	-0.54229	3.155025	0.900994
5	168.4381	53.06916	2.58e-07	-1.302986*	3.274639	0.483934
* indicates lag order selected by the criterion						
LR: sequential modified LR test statistic (each test at 5% level)						
FPE: Final prediction error AIC: Akaike information criterion SC: Schwarz information criterion HQ: Hannan-Quinn information criterion						

Source: Authors Computation using E-view 10

ARDL long-run estimate

Considering that the variables under study are of mixed order of integration as shown by the unit root test in Table 1, the study employed the Autoregressive Distribution lag (ARDL) model for the analysis of the data. This method was employed because it is suitable for variables that are either I(0) and I(1) or both. The ARDL long run estimate is presented in Table 5.

Table 5: ARDL Long Run Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Pds	-1.866279	2.855413	-1.901864	0.0553++
Goe	0.718240	0.023490	1.997202	0.0500*
Req	2.994415	3.561782	0.089221	0.9302
Voa	1.110971	1.786201	1.454316	0.1679
Rol	4.525585	6.487328	1.030777	4.3740
Coc	-1.453002	0.895642	-2.056511	0.0473**
C	308727.725353	69502.316490	4.441977	0.0006**

Source: Author's Computation using E-Views 9

The long run ARDL estimate in Table 5 shows that while public debt stock (pds) is negative and statistically significant at 5% level of

significance. Government efficiency (goe) and control for corruption are positive and negative (respectively) and statistically significant. However, regulatory quality (req), voice and accountability (voa) and rule of law (rol) are not statistically significant.

Dynamic short-run estimate

To estimate the model, the study chooses automatic lag selection using Akaike Information Criteria. Table 6 below presents the result of the ARDL short-run estimate.

Table 6: ARDL Short Run Estimate

Variable	Coefficient	Std. Error	t-Statistic	Prob.
pds	2.073426	3.890114	0.817139	0.4138
goe	-0.522182	0.368026	-1.418873	0.1678
req	0.487354	1.897627	1.483256	0.3214
voa	0.394462	1.207269	1.501313	0.0856
rol	1.333681	1.735481	0.680948	0.1326
coc	3.100024	1.894067	3.892110	0.0005
R-squared	0.917109	F-Stat		0.0000
Adjusted R-squared	0.905896			

Source: Author's Computation using E-Views 9

The short run ARDL estimate in Table 6 shows that public debt stock (pds) is positive but not statistically significant. Control for corruption and voice and accountability are statistically significant. However, regulatory quality, rule of law and regulatory quality are not significant (Table 6). Therefore, we can conclude that while debt may not impact on human capital development in the short run it has implication for the economy in the long term. The institutional quality should serve as a check of debt related issues including debt stock and debt service.

Diagnostic test

Table 7 shows the results of diagnostic test. The diagnostic test indicates no evidence of Serial Autocorrelation, the Breusch-Godfrey with the null hypothesis of no serial Autocorrelation is accepted, while the Breusch Pagan Godfrey test for Heteroskedasticity also indicates

no evidence of Heteroskedasticity. The test for checking the model specification that is, the Ramsey RESET for model specification also indicates that the model has no evidence of any misspecification.

Table 7: Diagnostic test

Test	Results	Prob
Ramsey RESET Test	*0.019130*	*0.8913*
Heteroskedasticity Test	*0.336347*	*0.5669*
Breusch-Godfrey LM Test	*1.091212*	*0.3550*

Source: E-views 10 Output: Author's Computation

Conclusion and Recommendations

The study examines the impact of institutions and public debt on human capital development in Nigeria spanning the period 1990-2022. The study employs autoregressive distributed lag (ARDL) model to estimate the impact of institutions and public debt on human capital development in Nigeria. The series were stationary at levels I(0) and first difference I(1). Cointegration was established with 2 optimal lag. The results of indicates that public debt and institutional indicators (government effectiveness, regulatory quality, control of corruption, voice and accountability) are significant in influencing human capital development in Nigeria.

The study recommends that budgetary measures are required to minimize the rising pubic debt and debt service by initiating policies geared towards increasing non-oil revenue. Appropriate measures are desirable to enhance institutional quality. Anti-corruption measures that are already in place, as well as those that are being developed, should be strongly supported in order to create a favourable investment environment in which the private sector can thrive. Strengthen the rule of law as it is seen as a crucial aspect in protecting property rights, such as the check and balance of governments and the independence of the judiciary.

References

Abbas, Q., Junqing, L., Ramzan, M. & Fatima, S. (2021). Role of governance in debt-growth relationship evidence from panel data estimations. *Sustainability*, 13(11), 5954.

Acemoglu, D., Gallego, F.A., & Robinson, J.A., (2014). Institutions, human capital, and development. *Annual Review of Economics*, 6, 875-912.

Acemoglu, D. & Robinson, E.R. (2008). Persistence of power, elites, and institutions. *American Economic Review*, 98(1), 267-293.

Alonso, J.A. & Garcimartin, C. (2013). The determinants of institutional quality. More on the debate. *Journal of International Development*, 25(2), 206-226.

Atueyi, C.L. (2020). Effect of external debt on human capital development in Nigeria (1986-2017), *International Journal of Business and Economics*, 7(1), 49 - 58.

Checherita-Westphal, C., Hughes, H. A. & Rother, P. (2014). Fiscal sustainability using growth maximizing debt targets. *Applied Economics*, 46(6), 638-647.

Dickey, D.A. & Fuller, W.A. (1981). Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica*, 1057-1072.

Dickey, D.A. & Fuller, W.A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of American Statistical Association*, 74 (366a), 427-431.

Egungwu, I.C. (2021). Impact of external debt on human capital development in Nigeria. *Journal of Current Issues in Social Sciences*, 4(1): 1-33.

Farooq, F. J. (2022). How does institutional quality moderates the impact of public debt on economic growth? Startling evidence from OIC countries. *International Journal of Management and Emerging Sciences*, 12(3), 10.56536.

Ghosh, A. R. (2013). Fiscal fatigue, fiscal space and debt sustainability in advanced economies. *Economic Journal*, 123 (566), F4-F30

Igudia, P. (2021). Impact of external debt servicing on human capital development in Nigeria (1980-2029). *Journal of Development and Policy*, 3(1), 38-55.

IMF (2022). International Statistics. International Monetary Fund International Statistics.

Johansen, S. (1988). Statistical analysis of cointegration vectors. *Journal of Economic Dynamic Control*, 12(2–3), 231-254.

Joilson, D. & Edinaldo, T. (2012). Institutions, human capital, and growth: The institutional mechanism. Structural Change and Economic Dynamics, 23(3), 300-312. https://doi.org/10.1016/j.strueco.2012.04.003

Knack, S. & Keefer, P. (1995). Institutions and economic performance: cross-country tests using alternative institutional measures. Economic Policy, 7(3), 207-227.

Lin, J.Y. & Nugent, J.B. (1995). Institutions and economic development. Handbook of Development Economics, 3, 2301-2370.

Mahmood, H., Hassan, S. & Tanveer, M. (2022). Rule of law, control of corruption and CO2 emissions in Pakistan. *International Journal of Energy Economic Policy*, 12(4), 72-77.

Masuch, K., Moshammer, E. & Pierluigi, B. (2017). Institutions, public debt and growth. *Europe Public Sector Economics*, 41(2), 159-205.

Mauro, P. (1995). Corruption and growth. *Quarterly Journal of Economics*, 110(3), 681-712.

Mbanefo, P. A. (2023). Analyzing external debt impact on human capital development in Nigeria. *International Journal of Economics and Financial Management*, 8(1), 70-80.

Nawaz, S. (2015). Growth effects of institutions: A disaggregated analysis. Economic Modelling, 45, 118-126.

Nwokoye, E.S., Stephen, K.D., Onuoha, F.C. & Vitus, C. M. (2024). Does public debt maters for human capital development? Evidence from Nigeria. Journal of Development, 9(3), 143-152.

Olson, M., Sarna, N. & Swamy, A.V. (2000). Governance and growth: A simple hypothesis explaining cross-country differences in productivity growth. *Public Choice*, 102 (3–4). 341-364.

Ostrihon, F., Siranova, M. & Tiruneh, M.W. (2022). Reassessing the public debt threshold in the EU: do macroeconomic conditions matter? *Panoeconomicus*, 57(3), 1-27.

Pesaran, M.H., Shin, Y. & Smith, R.J. (2001). Bounds testing approaches to the analysis of level relationships. Journal of Applied Economics, 16(3), 289-326..

Pesaran, M.H. & Shin, Y. (1995). An Autoregressive Distributed Lag Modelling Approach to Cointegration Analysis. Department of Applied Economics, University of Cambridge, Cambridge, UK.

Phillips, P.C. & Perron, P. (1988). Testing for a unit root in time series regression. *Biometrika*, 75(2), 335-346.

Ramzan, M., Yao, H., Qamar, A., Sumbal F., & Rano, Y. (2023). Role of institutional quality in debt-growth relationship in Pakistan: An econometric inquiry. *Heliyon*, 9(8), 218574.

Stefan, D.J. (2001). National debt, borrowing constraints, and human capital accumulation in an endogenous growth model. *Public Finance Analysis*, 58(3), 317-338.

Tarek, B.A. & Ahmed, Z. (2017). Governance and public debt accumulation: quantitative analysis in MENA countries. *Economic Annals Policy*, 56, 1-13.

Tetsuo, O. & Yuki, U. (2020). Human capital, public debt, and economic growth: A political economy analysis. *Journal of Macroeconomics*, 57, 1-14.

UN (2022). Human Development. United Nations Development, 2022 Report.

Vyacheslav, F., Andres, L. & Constantine, Y. (2019). Debt and human capital: Evidence from student loans. *Journal of Development*, 63, 190-212.

WEF (2022). Global Innovative Index. World Economic Forum Report 2022.

World Bank (2022). World Development Indicators 2022. Washington DC: World Bank.

World Bank. World Governance Indicators. World Bank.