Empirical Analysis of Poverty and Human Capital Development in Nigeria

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Abstract

This study quantitatively measures the impact of poverty on human capital development and further examines the extent to which poverty undermines human capital development in Nigeria. Also, the study undertakes empirical reviews of relevant literature on the impact of poverty on human capital development, showing gaps identified from the reviews. While majority of the studies reviewed found a positive unidirectional link between human capital development and poverty level, only few studies invert that logic. The Augmented Dickey-Fuller test was used to investigate the existence of unit roots in the data and the Ordinary Least Square (OLS) technique was employed. However, since all the variables were stationary at first difference. The study also applied the Johansen co-integration technique to establish a long-run relationship among the variables. The results showed that GNI per capita and Life expectancy are positively related to per capita income (PCI), that is to say, an increase in GNI per capita or Life Expectancy will lead to an increase in the per capita income of the citizens, while School Enrolment showed a negative relationship with PCI. However, the suggestions that government should invest more in schools and health institutions to improve human capital development are simplistic in that they assume that government has limitless resources. Accordingly, the study recommends among others that policymakers should not just focus on the overall amount of government spending on human capital development but examine all investment inputs including the competencies of those implementing policy and managing resources.

Keywords: Co-integration, Development, Human capital, OLS, Policy and Poverty.

Introduction

Human capital is a core source of economic growth and development in modern societies (Fleischhauer, 2007). Quite often, it is the factor that separates developed countries from developing ones (World Bank, 2018). Several economic models consider capital formation the preeminent determinant of economic growth, and the more capital accumulation takes place in an economy, the faster its growth rate (Adelakun, 2011; Ogujiuba, 2013; Bowen, 2018).

While the growth of physical capital seems inversely correlated with less consumption and more savings, at the micro-level, too little consumption can make human capital accumulation difficult or unlikely. This is because human capital consists in building a mass of the highly educated and skilled population, that is well-nourished and in good health, capable of delivering productivity (Currie, 2020; Pedro *et al,* 2021). The task of human capital accumulation invariably requires the individual to commit to their self-development, and a community, organisation, nation or state to support the individual by providing the right

physical, social and economic climate for the individual to thrive and maximise their economic potentials both in terms of productivity and agency (Ukeje, 2020; Dobson, 2013). Where the individual is unable to invest in self-development, and the state is ineffective in amassing human capital, a cycle of poverty emerges with proven negative outcomes for both the individual's and state's socio-economic outlook.

Experts continue to debate the philosophical foundations of what it means to be poor. What is clear is that compromise and approximation have been critical to defining poverty (United Nations, 2005). It suffices at this stage to define poverty as a state of lack, insufficiency, inadequacy and a general want of a desired or necessary factor considered essential to wellbeing or functionality. Poverty undermines human capacity in myriad ways. To be absolutely poor in material terms is to be incapable of affording the basic needs of human existence such as food, clothing and shelter. And yet, poverty can be relative in terms of comparing an individual's material conditions with that of another (Sen, 2004; UNDP, 2004).

Poverty is highly correlated with the presence of disease, and both work to undermine human capital development (World Health Organisation, 2002; Idike *et al*, 2021). Societies often experience famines and poor nutrition, wars, and high rates of criminality which often create widespread diseases and poor health outcomes particularly for the poor. Some have also equated poverty to disease (WHO, 2002). While this sentiment could prove problematic for intentionally or unintentionally stigmatising broad populations of human beings (Gubrium, Pellissery & Lødeme, 2013; Janky *et al*, 2014), the implications of material poverty for brain development, mental health, and their consequences for economic agency makes this topic worthy of academic enquiry.

Nigeria is the most populous country in Africa with approximately 206 million people (Statista, 2020). The country's gross domestic product (GDP) is about $448 billion, and per capita income is roughly $2, 174 (World Bank, 2020). These indices place Nigeria in the ranks of lower-middle-income countries by the World Bank's national income measurement. In comparison to South Africa with a population of about 58 million people, a GDP of $351 billion, and per capita income of $6, 051 (World Bank, 2020), Nigeria's economic performance is underwhelming. Among other factors, economic productivity is low in Nigeria.

The implications of low human capital formation for national economic performance are well known. But the process by which poverty frustrates human capital formation and its ramifications in a country like Nigeria is less clear. It is against this trend of thought that this study seeks to examine the link between poverty and the challenge of harnessing human capital for much needed economic development in Nigeria. The paper is organised into five sections, the first section is the introduction, followed by a review of relevant empirical literature. The third section stipulates the research methodology while results and discussion are presented in section four. Section five concludes the paper and makes useful recommendations.

Literature Review

Global poverty remains an ongoing challenge, particularly in developing countries. According to the World Data Lab (2018), Nigeria is the country with the most significant number of extremely poor. Poverty presupposes a low level of an underlying welfare measure, and the

poverty line adopted determines the proportion of the population that is reported poor primarily (Eigbiremolen, 2018).

Human capital is construed to pertain to the contributions of humans in the form of combinations of knowledge, abilities, skills, and competencies as a factor of production (Idike *et al*, 2021). According to the World Bank (2020), human capital consists of the knowledge, skills, and health that people accumulate over their lives. People's health and education have undeniable intrinsic value, and human capital also enables people to realize their potential as productive members of society. Consequently, more human capital is associated with higher earnings for people, higher income for countries, and stronger cohesion in societies (Kraay, 2018; World Bank, 2020). It is a central driver of sustainable growth and poverty reduction. The human capital theory assumes that education determines the marginal productivity of labour and this determines earnings (Marginson, 2019).

Empirical results from studies on the link between government expenditure, poverty and human capital development are not entirely consistent. By employing a dynamic model based on the system generalised method of moments (SGMM) and analysing balanced panel data covering 35 countries from 1980–2008, Ogundari and Awokuse (2018) showed empirically that government expenditure on human capital has positive effects on economic growth.

Adejumo *et al* (2021) employing the Autoregressive estimates and an unrestricted VAR approach to analyse the dynamic interrelationships among the school enrolment rates and the rate of employment (via unemployment rates) in Nigeria, lend credence to the new-growth theory (i.e. endogenous models) that more investments in human capital, through education especially at higher levels, will allow human capital to evolve dynamically and increase long-run growth in Nigeria.

In contrast, some economists measured the effect of human capital investment (precisely, public expenditure) on economic growth, and found a negligible correlation between government investment and economic growth (Taban, 2010). Using Fully Modified Least Squares and Granger Causality test in addition to augmented Dickey-Fuller unit root and Johansen-Juselius test to analyse data on human capital development in Nigeria from 1990-2016, Brown (2018) showed a weak but positive long-run relationship between human capital expenditure and life expectancy.

Holden and Biddle (2017) provide a historical account of how 'human capital' grew from a suggestive phrase in economics with no role in discussions of education policy before 1958 to a grand agenda of public spending on education as a form of investment with a demonstrably high rate of return, in terms of its capacity to fast-track economic growth and reduce poverty. Sharma and Sahni (2015) explored the causality relationship between human capital investment and India's economic growth. They used co-integration, Granger Causality analysis and Vector Error Correction Mechanism (VECM) and time-series data running from 1991-92 to 2012-13 to test the hypotheses about the presence of causality and co-integration among the variables. The co-integration test confirmed that human capital investment and GDP are co-integrated, indicating the existence of a long-run equilibrium relationship which is also confirmed by the Johansen co-integration test results. The Granger causality test confirmed the presence of two-way causality between human capital investment and GDP. The study concludes that human capital investments affect the economic growth of India in the same way economic growth provides a platform for the growth of human capital.

Confirming this finding, Ogunleye *et al* (2017) employ the ordinary least square regression analysis to examine annual time series data from 1981 to 2015, showing that human capital development has a significant impact on economic growth, as a proxy by the gross domestic product.

Mehrara and Musai (2013) investigate the causal relationship between human capital and GDP in developing countries by using panel unit root tests and panel co-integration analysis for the period 1970-2010. Using a three-variable model with capital formation as the third variable, they showed that it is the GDP that drives human capital development, not vice versa. Similarly, Aransi (2019) examined the direction of causality between human capital investment and economic growth in Nigeria from 1981 to 2017. Using secondary data on economic growth, government capital and recurrent expenditures on health and education sourced from the Central Bank of Nigeria statistical bulletin, and subjected to econometrics tools in sequential order of stationary test (Dickey-Fuller Generalised Least Square), Co-integration and Granger Causality tests, the empirical findings revealed that there was, on aggregate, unidirectional causality which runs from economic growth to total government expenditure on human capital investment. This and other studies by Collin and Weil (2020) and Prasetyo and Kistanti (2020) conclude that economic growth is expected to play a crucial role in human capital investment.

In other words, it is higher economic growth that leads to higher education proxy. Since the main contention of this study is the specific influences of poverty on the trend of human capital development in Nigeria, the study will focus on investigating how investments in key human capital components have impacted human capital growth from 1986-2019, against the backdrop of Mehrara and Musai's (2013) conclusion that 'huge educational investments' in developing countries fail to generate higher growth.

Chikelu (2016) examines the impact of human capital development on poverty reduction in the Nigerian economy from the period 1986 to 2012 using the Ordinary Least Squares (OLS), Augmented Dickey-Fuller and Johansen Co-integration methods to estimate the model of one dependent variable (poverty rate) and four explanatory variables (primary school enrolment, secondary school enrolment, tertiary school enrolment and per capita income). The study revealed that there exists a relationship between human capital development and poverty reduction in Nigeria and recommended increased government expenditure on education and healthcare to improve the country's human capital.

Kairo *et al* (2017) empirically studied the relationship between human capital development and government expenditure over the period 1990-2014. The study adopted ARDL and impulse response function for the estimation while the Bound Test was used to show that a long-run relationship exists between human capital investment and government expenditure. Their results demonstrated that both in the long and short run, government spending has remained positive but to a very large extent insignificant to human capital development in Nigeria. The study concludes that Nigeria's per capita income has remained low for a long time in the world ranking for this reason. The study strongly recommends that government spending should largely be focused on human development through specialised high technology-driven schools and efficient and effective health facilities. Nwokoye (2017) employing the same methodology as Kairo *et al* (2017) also reached a similar conclusion that human capital development could be achieved through more efficient health spending in Nigeria.

One major gap in the literature is that while many of the empirical findings recommend that the government invest more in human capital development, they fail to address what happens if the government is too poor to invest (i.e. lacking money, a competent pool of policy experts, etc.). Therefore, the interesting assumption that governments have but are unwilling to spend is one that this study will explore, for example by exploring why many governments in developing countries have not met UNESCO recommendation for the education budget.

Methodology

Theoretical framework and model specification

The Human capital theory of poverty approach to welfare and poverty determination provides a suitable theoretical framework for the analysis of poverty and human capital development in Nigeria. It holds that the differences in welfare are largely the function of disparities in education and training. Thus, by providing education and training to the poor, their earning potential rises, which will in turn help to improve their welfare (World Bank, 2020). This theory, therefore, implores government intervention to make the cost of education and training affordable for poor individuals.

Following Adekoya (2018), the model is specified below;

$$PCI = f(GNI, LE, SER) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 1$$

$$PCI = \beta_0 + \beta_1 GNI + \beta_2 LE + \beta_3 SER + \mu \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 2$$

Where

GNI = Gross National Income (GNI Per Capita)

PCI = Per Capital Income

LE = Life Expectancy

SER = School Enrollment

However, Per Capital Income (PCI) which is a proxy for Poverty Rate depends on Human Capital Development (HCD) for which Gross National Income (GNI Per Capita), Life Expectancy and School Enrollment are used as proxies. This study considers the annual time series data on poverty rate and human capital development indices covering the period 1986-2019. The data for this study were obtained from a secondary source notably the Central Bank of Nigeria Statistical Bulletin, World Bank Development Indicators, United Nations Development Programme Data, and the National Bureau of Statistics.

Estimation Technique

The empirical analyses are presented in three stages; unit root test, ordinary least square and co-integration test. Central to the framework of analysis is the examination of the unit root characteristic of the variables to ascertain the stationarity of the variables. The Augmented Dickey-Fuller (ADF) unit root test was adopted for this study. The Johansen (1995) co-integration test was employed to examine the long-run relationship between the variables.

Results of the Findings

The Regression results show that GNI per capita and Life expectancy is positively related to per capita income, that is to say, an increase in GNI per capita or Life Expectancy will lead to an increase in the per capita income of the citizens, while School enrollment shows a negative relationship with PCI. All the variables are said to be statistically significant stating from their various probability values at a 5% level of significance. This is presented below;

$$PCI = -8666.38 + 0.549GNI + 193.63LE - 0.856SE. \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3$$

(2014.28) (0.122) (44.99) (0.174)

Based on the findings of a positive relationship between GNI per capita, life expectancy and per capita income, this study concludes that the capacity of individual citizens to excel on the core components measured by the Human Capital Index, namely education and healthcare is not independent of the national income level. The study's finding of a negative relationship between school enrolment and the poverty proxy is open to several interpretations. First, it is consistent with the findings of Dessus's (1999) and Wedgwood's (2007) that an increase in school enrolment is possible despite low national income or low investment capacity. In the context of Nigeria, this partly explains why many classrooms at all educational levels are overcrowded due to limited classrooms and low academic staffing levels. It also explains why many students get away with plagiarism as teachers are often overworked and made to work without necessary assistive technology.

From the regression result, the Coefficient of Determination (R^2) is given as 0.985475, which shows that the explanatory power of the variables is very high and/or strong. This implies that 98% of the total variations in PCI is being accounted for or explained by the variations/changes in LE, SER and GNI per capita. While other determinants not captured in the model explain just 17% of the variation in PCI.

The Adjusted R^2 supports the claim of the R^2 with a value of 0.984023, indicating that 98% of the total variation in the dependent variable (Per Capita Income) is explained by the changes in the independent variables (the regressors). Thus, this supports the statement that the explanatory power of the variables is very high and strong.

The F-test is applied to check the overall significance of the model. The F-statistic is instrumental in verifying the overall significance of an estimated model. The F-statistic of our estimated model is 678.4723 and the probability of the F-statistic is 0.000000. Since the probability of the F-statistic is less than 0.05, the result indicates that the overall regression is statistically significant and can be used for meaningful analyses.

With the manifestation of the variables being stationary at the first difference I(1), which is a precondition for the existence of a long-run association between dependent and independent variables, the Johansen (1995) co-integration technique was utilised. This analysis generates two likelihood ratio tests, known as Trace tests and Maximum Eigenvalue to determine the number of co-integrating vectors using the maximum-likelihood estimation procedure.

The Johansen co-integration result is presented in Table 1 below;

Table 1: Co-integration Test Result

Hypothesized No. of CE(s)	Trace Statistic	5% Critical Value	Max-Eigen Statistic	5% Critical Value
None*	52.27218	27.58434	29.91199	21.58434
$r \leq 1$	19.28358	21.79707	9.811767	21.13162
$r \leq 2$	9.471817	15.49471	8.871869	14.26460
$r \leq 3$	0.599948	3.841466	0.599948	3.841466

Note: r represents the number of co-integrating vectors. Trace test and Max-eigenvalue test both indicates 1 co-integrating equation at the 5% significance level. *denotes rejection of the hypothesis at the 5%significance level.

The Johansen co-integration result reveals that there is a long-run equilibrium relationship among the variables under consideration.

Conclusion

The study investigates the impact of poverty on human capital development in Nigeria using annual time series data for the period 1986-2019. Findings revealed a positive relationship between GNI and per capita income as well as Life expectancy and per capita income (PCI), that is to say, an increase in GNI per capita or Life Expectancy will lead to an increase in the per capita income while school enrolment shows a negative relationship with PCI. Furthermore, the result indicated that educational institutions which are important factory houses of human capital continue to churn out a high number of graduates unfit for the workforce. Since the workforce must recruit from the available pool of graduates in a highly corrupt and nepotistic climate, the study finds out that a lot of public sector employees are incompetent to do the work of formulating and executing public policy effectively to improve the economic fortunes of the populace. These human capital externalities, including unskilled and under-skilled workforces, are often left out of purely quantitative results from regression-based studies.

Recommendations

Based on the findings of this study, the following recommendations are made;

i. There is need for the government to invest in more schools and health institutions to improve human capital development are simplistic in that they assume that government has limitless resources.
ii. Policymakers should not just focus on the overall amount of government spending on human capital development. Rather they should examine all investment inputs including the competencies of those implementing policy and managing resources.
iii. In addition, the government should adopt a networked approach to its budgeting, expenditures, and monitoring at the three tiers and in the three arms. Priority setting is critical given our wide human capital gap and limited finances.

References

Adejumo, O.O., Asongu, S.A. & Adejumo, A.V. (2021). *Education Enrollment Rate vs Employment Rate: Implications for Sustainable Human Capital Development in Nigeria.* African Governance Development Institute Working Paper WP/21/013.

Adekoya, O.D. (2018). Impact of Human Capital Development on Poverty Alleviation in Nigeria. *International Journal of Economics and Management Sciences 7*, 544.

Adelakun, O. J. (2011). Human capital development and economic growth in Nigeria. *European Journal of Business and Management*, 3(9), 29-38.

Aransi, W.O. (2019). Direction of causality between human capital investment and economic growth in Nigeria: Lesson for policy makers. *International Journal of Academic Management Science Research*, 3(2), 19-26.

Bowen, H. (2018). Investment in learning: The individual and social value of American higher education. Routledge.

Brown, E.D. (2018). Economic Planning and Human Capital Development in Nigeria. *International Journal of Business Management and Finance Research*, 1(1), 9-20.

Chikelu, J.C. (2016). *Impact of Human Capital Development on Poverty Reduction in Nigeria.* Retrieved 15 August 2021 from https://mpra.ub.uni-muenchen.de/74696/

Collin, M. & Weil, D.N. (2020). The Effect of Increasing Human Capital Investment on

Economic Growth and Poverty: A Simulation Exercise. *Journal of Human Capital* 14(1), 43-83.

Currie, J. (2020). Child health as human capital. *Health Economics*. *29*, 452– 463.

Dessus, S. (1999). Human capital and growth: The recovered role of education system. *World Bank Policy Research Working Paper No. 2632*.

Dobson, W. & Boodoo, M.U. (2013). Human Capital Formation and Growth: Microeconomic Dimensions. In Dobson, W. (ed.,) *Human Capital Formation and Economic Growth in Asia and the Pacific*. PAFTAD (Pacific Trade and Development Conference Series) (First). London: Routledge, 1-18.

Eigbiremolen, O.G. (2018). Poverty trends and poverty dynamics: Analysis of Nigerian's first-ever national panel survey data. *Journal of International Development,* 30, 691–706.

Fleischhauer, K.J. (2007). *A review of human capital theory: Microeconomics*. Discussion Paper no. 2007-01.

Gubrium, E.K., Pellissery, S. and Lødeme, I. (2013). *The shame of it: Global perspectives on anti-poverty policies*. Bristol: Policy Press.

Holden, L. & Biddle, J. (2017). The introduction of human capital theory into education policy in the United States. *History of Political Economy,* 49(4), 537-574.

Idike, A.N., Ukeje, I.O. and Ogbulu, U. (2021). The Practice of Human Capital Development Process and Poverty Reduction: Consequences for Sustainable Development Goals in Ebonyi State, Nigeria. *Public Organization Review.* 21**,** 263–280.

Janky, B., Janky, B., Bakó, B., Szilágyi, P., & Bognár, A. (2014). Stigmatising the poor without negative images: Images of extreme poverty and the formation of welfare attitudes. *Sociological Research Online, 19*(3), 246-255.

Johansen, S. (1995). A Statistical Analysis of Co-integration for I(2) Variables. *Econometric Theory 11*(1), 25-59.

Kairo, C., Innocent, M.N.J., Okeke, A. & Aondo, D.C. (2017). Government expenditure and human capital development in Nigeria: An auto-regressive distributed lagged model approach (ARDL). *International Journal of Advanced Studies in Economics and Public Sector Management, 5*(1), 143-158.

Kraay, A. (2018). *Methodology for a World Bank Human Capital Index*. World Bank Policy Research Working Paper No. 8593.

Marginson, S. (2019). Limitations of human capital theory. *Studies in Higher Education, 44*(2), 287-301.

Mehrara, M. & Musai, M. (2013). The relationship between economic growth and human capital in developing countries. *International Letters of Social and Humanistic Sciences, 5*, 55-62.

Nwokoye, E. (2017). Does government human capital spending contribute to human capital development? Evidence from Nigeria. *Ponte Multidisciplinary Journal of Sciences and Research,* 73(8), 135-156.

Ogujiuba, K.K. (2013). The Impact of Human Capital Formation on Economic Growth in Nigeria. *Journal of Economics* 4(2):121-132.

Ogundari, K. & Awokuse, T. (2018). Human capital contribution to economic growth in Sub-Saharan Africa: Does health status matter more than education? *Economic Analysis and Policy, 58,* 131-140.

Ogunleye, O.O., Owolabi, O.A. Sanyaolu, O.A & Lawal, O.O. (2017). 'Human Capital Development and Economic Growth in Nigeria'. *Journal of Business Management,* 3(8); 17-37.

Pedro, C., Kraftman, L. and Mason, G. (2021). "The Impacts of a Multifaceted Prenatal Intervention on Human Capital Accumulation in Early Life." *American Economic Review,* 111 (8): 2506-49.

Prasetyo, P.E. & Kistanti, N.R. (2020). Human capital, institutional economics and entrepreneurship as a driver for quality & sustainable economic growth. *Entrepreneurship and Sustainability Issues,* 7(4), 2575-2589.

Sen, A. (2004). 'Elements of a theory of human rights'. *Philosophy & Public Affairs, 32*(4), 315 -356.

Sharma, P. & Sahni, P. (2015). Human capital and economic growth in India: A co -integration and causality analysis. *Ushus J B Mgt, 14*(2), 1-18. https://doi.org/10.12725/ujbm.31.1

Statista (2020). *Gross Domestic Product (GDP) of Nigeria from the 1st quarter of 2019 to the 1st quarter of 2021.* Retrieved 15 August 2021 from https://www.statista.com/statistics/1207926/quarterly-gdp-of-nigeria/#:~:text=In%202020%2C%20Nigeria's%20GDP%20amounted,the%20largest%20GDP%20in%20Africa.

Taban, S. (2010). An examination of the government spending and economic growth nexus for Turkey using the bound test approach. *International Research Journal of Finance and Economics, 48*(1), 184-193.

Ukeje, I.O., Ogbulu, U. and Amaefula, V.C. (2020). Human Capital Intervention and Poverty Reduction. In A. Farazmand (ed.), *Global Encyclopedia of Public Administration, Public Policy, and Governance.* Springer: Cham

United Nations (2005). *Report on the World Social Situation, 2005*. New York: United Nations A/60/117.

UNDP (2004). *Human Development Report 2004: Cultural Liberty in Today's Diverse World.* New York: UNDP.

Wedgwood, R. (2007). Education and poverty reduction in Tanzania. *International Journal of Educational*, 27(4), 383-396.

World Bank (2018). *Human Capital: A Project for the World.* Retrieved 15 August 2021 from http://documents1.worldbank.org/curated/en/793421540087227031/pdf/Human-Capital-AProject-for-the-World.pdf

World Bank (2020). GDP (current US$) – Nigeria. Retrieved 15 August 2021 from https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=NG

World Data Lab (2019). World Poverty Clock: Methodology. Retrieved November 29, 2020, from https://worldpoverty.io/methodology.

World Health Organisation (2002). *The World Health Report 2002: Reducing Risks, Promoting Healthy Life.* Geneva: WHO.