



An Empirical Analysis of The Impact of Investment in Human Capital on Nigerian Economy

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ABSTRACT

There is a paradigm shift in what constitutes the major growth driver among developing countries. Past efforts at trying to achieve growth through dependence on exploitation of natural and physical resources without commensurate and complimentary investment in human capital have proven ineffective. Consequently, the emphasis is on leveraging on human capital to fast track development. Nigeria being the most populous Black Country in the world with abundant economic potentials but still rated as one of the less developed countries (LDCs) is a clear indication that she has not been able to channel her material capital to optimum use. This work sets out to empirically analyze the impact of investment in human capital on Nigerian economy. The study employed the econometric method of Ordinary Least Squares (OLS) using data spanning between 1980 and 2008 to construct a multiple regression function. Expenditures on education (EXEDU) and health (EXHE); domestic investment (DOM_INV); foreign direct investment (FDI) and government fiscal investment (GF_INV) formed the regressors, while Real Gross Domestic product (GDP) is the regressand. The results show that the variables of interest (expenditures on education and health) are yet to be significant enough, at both 1% and 5% level of significance, to influence the general output (RGDP). Recommendations demand that human capital development should be planned, adequately funded and genuinely and sincerely managed in line with the needs of the economy in order to attain high growth and standard of living.

Keywords : Human Capital, Gross Domestic Product, Endogenous Growth, Expenditures on Education, Expenditures on Health, Training, Research and Development (R&D)

1.0 INTRODUCTION

There has been a recent shift in the literature in the way the subject of human capital or resources is being viewed especially among scholars from the developing countries. In the past attention was mainly on how highly developed capital has moved out of Less Developed Countries (LDCs) to support and fast track the development of OECD countries. During these dispensations concepts like 'reparation', 'brain drain', underdevelopment and in some cases, imperialism were used to capture the evils associated with such developments (Tickly, 2001; Adei, 2004; Stillwell et al, 2004). While the attention and sentiments captured by such thinking has not abated, there has been clear noticeable shift in the way human resources are viewed. Current emphasis has been on how to maximize and utilize well developed human resources either at home for improved productive activities or abroad through effective use of the funds remitted by these human resources for domestic development (Mohapatra and Ratha, 2010).

The strategic place of human capital in development seems to have been accentuated since 1990 by the annual publication and ranking of nations by the United Nations Development Programme's (UNDP) 'Human Development Report'. The basic objective of development according to UNDP Report (1990: 9-10) is "to create an enabling environment for people to enjoy long, healthy and creative lives; and defined human development as a process of enlarging people's choice". The Human Development Report which has consistently ranked Nigeria among other LDCs very poorly has provoked thinking and studies as to how to improve development of human capital.

Thoughts and agitations on the need for more investment in human capital formation in developing economies like Nigeria have been made obvious from the fact that despite the availability of abundant natural capital (resources) and the massive import of physical capital, they have not been able to accelerate their growth rates and the pace of development because of the existence of under-developed or undeveloped human resource. Another premise in focusing development on human capital is that in the face of expansion of economic activity and diffusion of knowledge and technology, strategies that focus on natural and technological resources will certainly be unsustainable ((Chaykowski, 2002). And for Nigeria, with over 160 million population and a sixth of the world black population, leveraging on human capital will no doubt enhance its competitive advantage in the comity of nations ((Appelbaum and Batt, 1994; Bae and Rowley, 2002; and Locke and Kochan, 1995)

However, some fundamental problems were identified as militating against human capital development in Nigeria. It is evident that public funding of education and health in Nigeria are far below 26% and 15% respectively recommended by United Nations Education Scientific and Cultural Organization (UNESCO) to meet the Millennium Development Goals (MDGs). As the government's allocation, in any economy, to human capital development declines so also the qualities of human inputs in the production of goods and services greatly deteriorate. Whatever the difficulties associated with the problems of investment in human capital are, it is obvious that the growth of Nigeria is held back not by shortage of physical capital as by the shortage of

human capital which in turn limits the capacity of the economy to absorb the available physical capital stock.

It is in against the following backdrop that the objectives of this study are: to empirically analyze the impact of investment in human capital on Nigerian economy; to assess the impact of expenditures on education and health (as investment in human capital) on Nigeria's economic growth between 1980 and 2008; to identify and evaluate human capital development in Nigeria; and to determine the relationship between human capital and economic growth in Nigeria.

2.0 THE CONCEPT OF HUMAN CAPITAL INVESTMENT

Typically, Economists regard capital as one of the factors of production and represents the stock of previous investments made in the economy, which, in turn, requires the substitution of current consumption for future consumption (Laroche et al 1999). In the conventional economics literature capital is seen as one of the factors of production. With time the concept of human capital has evolved to underscore the difference between people as human beings and as assets for productive engagements. This is best captured in US General Accounting Office document on Human Capital Assessment below:

"Two key principles are central to the human capital idea. First, people are assets whose value can be enhanced through investment. As with any value of people increases, so does the performance capacity of the organization, and therefore its value to clients and other stakeholders. Second, an organization's human capital policies must be aligned to support the organization's "shared vision"—that is, the mission, vision for the future, core values, goals and objectives, and strategies by which the organization has defined its direction and its expectations for itself and its people. All human capital policies and practices should be designed, implemented, and assessed by the standard of how well they help the organization pursue its shared vision." (US GAO, 2000:1-2)

Human capital is represented by the aggregation of investments in activities, such as education, health, on-the-job training, and migration that enhance an individual's productivity in the labour market (Becker, 1964; Schultz, 1961). It means the productive skill and degree of knowledge possessed by an individual worker. In order to perform productive work efficiently, a worker must have a number of specialized skills which he/she has developed through education and training (Gbosi, 2006)

This type of investment entails an initial cost. It is made with the expectations that the investments will pay-off well into the future. To differentiate it from other types of investments, it is usually referred to as 'Investment in Human Capital'. This type of investment is very imperative for economic development. This is why Kalu (2001) posits that for a country to develop, investment in human capital must keep pace with investment in material capital.

Investments in human capital for the purposes of this study consist of:

- (i) Expenditures on education;
- (ii) Expenditures on health care; and
- (iii) Expenditures on research.

Hence the capital stock of a country should be broadly defined to include the physical capital on the one hand and the body of knowledge, skills, quality of healthcare possessed by the nation on the other. The expected returns to human capital investments are benchmarked by higher level of earnings; greater job satisfaction over one's life times and greater approximation of market activities. Such investments are clearly related to the supply of labour in particular occupation or different occupations. One of the ways through which workers can enhance their earning capacity include attendance to schools such as secondary schools, vocational schools, colleges of education, special science schools, universities, polytechnics, etc.

2.1 THEORETICAL FRAMEWORK

The anomalous behaviour of developing-world (LCDs) capital flows (from poor to rich nations) helped provide the impetus for the development of the concept of endogenous growth theory which represents a key component of the new growth theory. Endogenous growth theory is a response to criticisms of neoclassical models of growth that assumed that technological change was independent of production function (exogenously determined), leading to pessimistic conclusion that government policies could do nothing to increase economic growth in the long-term.

The poor performance of neoclassical theories in illuminating the sources of long-term economic growth has led to dissatisfaction with traditional growth theory. Any increase in Gross National Income (GNI) that cannot be attributed to short – term adjustments in stocks of either labour or capital are ascribed to a third category, commonly referred to as the Solow Residual. This residual is responsible for roughly 50% of historical growth in the industrial nations. In a rather *ad hoc* manner, neoclassical theory credits the bulk of economic growth to an exogenous or completely independent process of technological progress. Though intuitively plausible, this approach has at least two insurmountable drawbacks: First, using the neoclassical framework, it is impossible to analyze the determinants of technological advancement because it is completely independent of the decisions of economic agents; and second, the theory fails to explain large differences in residuals across countries with similar technologies, (Todaro & Smith, 2009). The most significant theoretical differences of the endogenous model stem from discarding the neoclassical assumption of diminishing marginal returns to capital investment, permitting increasing returns to capital investment, permitting increasing returns to scale in aggregate production, and frequently focusing on the role of externalities in determining the rate of return on capital investment.

The endogenous growth model developed by Arrow (1962), Romer (1990), Lucas (1988) and other economists does not simply criticize the neoclassical growth theory; rather it extends the latter by introducing endogenous technical progress in growth models (Jhingian, 2007). By assuming that public and private investments in human capital generate external economies and productivity improvements that offset the natural tendency for diminishing returns; endogenous growth theory seeks to explain existence of increasing returns to scale and the divergence long-term growth patterns among countries. Technological change is a function of the production of ideas in endogenous growth theory. New ideas lead to new and better goods and services as well as better production techniques and higher quality of older products. Technological change thus can be increased by providing monopoly power through patents and copyrights to speed the pace of innovation. Technological change can also be increased through proper investment in human capital, which is the sum of all of a country's human knowledge. Through investment in education, health, training, research and development, and other human capital determinants, a country can increase and enhance the productivity of labour and promote economic growth. Endogenous growth theory also predicts that spillover from investment in value-added products and knowledge will itself be a form of technological progress and lead to increased growth.

Obviously from the endogenous theory a poor country with little human capital cannot become rich simply by acquiring more physical capital and/or possessing more natural capital. So investment in human capital is one essential approach to achieving desired growth.

3.0 MODEL SPECIFICATION

Thus, the general theoretical representation of the impact of investment in human capital on Nigerian economy for a given period (1980 – 2008) can be put symbolically with expected signs stated below each variable as:

$$GDP_t = \delta_0 + \delta_1 EXEDU_t + \delta_2 EXHE_t + \delta_3 DOM_INV_t + \delta_4 FDI_t + \delta_5 GF_INV_t + U_{t...}(1)$$

Taking the log transformation of the equation above we have:

$$\text{Log } GDP_t = \delta_0 + \delta_1 \text{Log } EXEDU_t + \delta_2 \text{Log } EXHE_t + \delta_3 \text{Log } DOM_INV_t + \delta_4 \text{Log } FDI_t + \delta_5 \text{Log } GF_INV_t + U_{t...}(2)$$

Where:

- GDP = Gross Domestic Product;
 - EXEDU = Expenditure on Education;
 - EXHE = Expenditure on Health;
 - DOM_INV = Domestic Investment;
 - FDI = Foreign Direct Investment;
 - GF_INV = Government Fiscal Investment;
 - t = Unit of time.
- $\delta_0 > 0$; $\delta_1 > 0$; $\delta_2 > 0$; $\delta_3 > 0$; $\delta_4 > 0$; $\delta_5 > 0$.

4.0 ANALYSIS

We therefore present our empirical results thus in a compact form as follows:

$$RGDP = 198285.785 + 0.459(EXEDU) + 0.682(EXHE) + 0.188(DOM_INV) + 0.129(FDI) + 0.179(GF_INV)$$

$$S(b) (13947.542) (1.328) (0.333) (0.077) (0.436) (0.153)$$

$$t(b) (14.217) (0.346) (2.044) (2.423) (2.956) (1.167)$$

- R² = 0.791; *R² = 0.745
- D.W = 0.952; dl = 1.050; du = 1.841 at 5%
- dl = 0.855; du = 1.611 at 1%
- F-ratio = 50.784
- F_{0.05} = 2.64; F_{0.01} = 3.94
- t_{0.025} = 2.069; t_{0.005} = 2.807

4.1 INTERPRETATION OF RESULTS

From the empirical results, the parameters δ_0 , δ_1 and δ_2 (i.e 198285.785, 0.459 and 0.682 respectively) have the expected theoretical signs and sizes. Specifically on the signs ($\delta > 0$), it mean that expenditure on education (EXEDU) and expenditure on health (EXHE) have positive influences on the national output (RGDP). From the empirical results, 0.459 and 0.682 are each greater than zero. It implies that a unit percentage increase in national income (RGDP) above 198285.785 that expenditure on education (EXEDU) and expenditure on health (EXHE) account for 45.9% and 68.2% respectively.

However, the parameter estimates of EXEDU and EXHE are not statistically significant at both 5% and 1% level of significant since at 5%, 2.069 is greater than each of 0.346 and 2.044. Also at 1% of significant, 2.807 is greater than each of 0.346 and 2.044. Also based on the statistical criteria, with the calculated valued of F (F-ratio) greater than the theoretical value at both 5% and 1% level of significant (i.e 50.784 > 2.64; and 50.784 > 3.94 respectively), we reject the null hypothesis (H₀) and accept that the entire model is statistically significant. And lastly on the statistical criteria, with the adjusted coefficient of determination (R²) of 0.745 indicating that the regressors (explanatory variables) have 74.5% impact on the regressand (RGDP), it implies that the variation in Real Gross Domestic Product (RGDP) that is explained by changes in expenditure on human capital (EXEDU and EXHE) and other variables (DOM_INV, FDI, and GF_INV) is 74.5%. With the F-ratio of 50.784, which means that the model is statistically significant implies that the variables used are the desirable ones. Hence the model can be used for economic policy making.

Finally on the econometric criteria, there is no danger of the existence of multicollinearity. This is because the correlation coefficients between the explanatory variables are not equal or equivalent to 100%. Also, the Durbin-Watson (D.W) d* Statistics confirmed that the model is stable enough to sustain a very long-term desired impact of the regressors used in explaining a particular economic problem in an economy.

5.1 CONCLUSION

Following the result of this study, one fact that has been established is that investment in human capital has been weak in contributing to the economic growth in Nigeria. Expenditures on education and health as observed, though have positive (direct) relationship with real gross domestic product (RGDP), are yet to be significant enough in contributing to economic growth and development. These can be attributed to neglect in human capital growth and development in the country and the endemic systemic corruption in the economy that most of the resources mapped out for human capital development were siphoned and/or mismanaged by the administrators of the country.

In conclusion, investment in human capital remains crucial in the process of economic development and as a result effort should be made to ensure its viability in order to further enhance its contributions to the overall development of the economy.

5.2 RECOMMENDATIONS

An examination of the Nigerian human capital stock as gleaned from the empirical results and findings definitely suggests that it still has a long way to go in order to attain optimum efficiency. Based on that we therefore make the following recommendations:

- (i) Human capital development should be planned, adequately funded and genuinely and sincerely managed in line with the needs of the economy in order to put out higher quantum of productivity.
- (ii) Government should channel health finances towards the provision of health infrastructures like building of health centers, provision of equipment and improved incentives to health personnel to enable the majority (if not all) of the population have access to quality health care. As observed by Okowa (1996:62), "we need to note the vital necessity to introduce new statistics in the area of health to indicate the degree of absence of ill-health in the course of a life or per annum".
- (iii) Increased funding on education is not the sole panacea for the education system. New approaches to primary, secondary, tertiary and special education are necessary if the country is to solve her human capital development problems which were made manifest by structural imbalance in education, low level of enrolment, shortage of all grades of teaching staffs, the lopsided distribution of educational literacy, the poor state of special education for the handicapped and the almost total neglect and poor funding of technical-vocational education. Also there is the need to adopt a strategy to infuse Nigeria's education development strategy with the guiding philosophy based on self-reliance.
- (iv) There is a great need for encouraging and financing Research and Development (R&D) by both the public and private sectors. There should be timely release of budgetary allocation for this. This will enable research institutions and agencies carry out research activities regularly and the findings of such research activities should be published disseminated as soon as possible.
- (v) Government policies should include such things as subsidies for research and development, the strengthening of intellectual property protections, and increase the incentives for innovations. All these can lead to higher rates of growth.
- (vi) The variables used in our model for this research work proved to be policy variables. Therefore attention should be given to these variables for economic growth and development.

a. All request variables entered.

Model Summary^b

Model				
	R	R square	Adjusted R Square	Std. Error of the Estimate
1	.889 ^a	.791	.645	48860.82412 ²

- a. Predictors: (Constant), GF_INV, DOM_INV, EXEDU, FDI, EXHE
- b. Dependent Variable: RGDP

Model Summary^b

Model	Change Statistics					
	R Square change	F Change	df1	df2	Sig. F change	Durbin-Watson
1	.791	50.784	5	23	.000	.952

Coefficients^b

model		Correlations			Co linearity Statistics	
		Zero-order	Partial	Part	Tolerance	VIF
1	EXEDU	.927	.072	.021	.021	37.179
	EXHE	.929	.392	.123	.123	87.760
	DOM-INV	.892	.451	.146	.146	74.086
	FDI	.932	.525	.178	.178	61.214
	GF-INV	.874	.236	.070	.070	12.056

- a. Dependent Variable: RGDP

Residual Statistics*

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	200355.5156	703631.0625	321387.9483	1.47141E5	29
Residual	-1.68809E5	68759.81250	.00000	44283.8854	29
Std Predicted Value	-.823	2.598	.000	1.000	29
Std. Residual	-3.455	1.407	.000	.906	29

- a. Dependent Variable: RGDP

Collinearity Diagnostics*

Model Dimension		
	Eigenvalue	Condition index
1	5.178	1.000
2	.632	2.862
3	.114	6.749
4	.061	9.211
5	.012	20.821
6	.003	39.017

- a. Dependent Variable: RGDP

Collinearity Diagnostics*

Model Dimension	Various Proportions					
	(Constant)	EXEDU	EXHE	DOM INV	FDI	GF INV
1	.01	.00	.00	.00	.00	.00
2	.56	.00	.00	.00	.00	.00
3	.26	.00	.00	.00	.00	.27
4	.00	.14	.01	.03	.03	.01
5	.12	.13	.20	.04	.30	.28
6	.04	.55	.78	.66	.66	.43

- a. Dependent Variable: RGDP

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