Human Capital and Economic Growth in Nigeria

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ABSTRACT: The paper examined the impact of human capital on economic growth in Nigeria, with the aim of providing additional evidence on the relationship between human capital and economic growth. A health adjusted education indicator is used as proxy for human capital which was calculated by taking enrolment rate at primary level and then multiplied the value with expenditure on health as percentage of GDP. The study employed Nigeria annual data, from 1980 to 2011 and Generalised Method of Moment(GMM) techniques in the analysis. Sargan test of over-identifying restrictions was conducted to verify the results obtained from Generalised Method of Moment and the Sargan test showed that the results obtain is valid and reliable. The estimated results provide evidence of positive relationship between human capital and economics growth in Nigeria. The health adjusted education indicator used was found to be highly determined economic growth in Nigeria. The study concluded that special attention should be given to health and education sectors simultaneously in Nigeria, such as increased budgetary allocation to the two sectors and to ensure proper implementation of programs in these two sectors in other to increase returns from these two sectors.

KEYWORDS: School Enrollment, Health, Government Spending, Gross Domestic Product, Education.

1   INTRODUCTION

Human capital theory has being of the most influential theory in setting the framework of Government policies since the early 1960's among the countries. The concept of human capital recognizes that labour is equal and the quality of labour can be improved by investing in them. The greater the society invests in human capital, the greater the economic growth of that society. Human capital is not only a major growth determinant but also, a channel to ease poverty and improve quality of human beings in general.[7]

The impact of human capital on economic growth has been studies extensively in the literature. The long list includes; {2; 5; 6; 11}. The existing studies employed either education or health related indicators or both as a proxy for human capital development. However, the variable of human capital is measure through different method and there is slight difference in the conclusion drawn from these studies from each other, since conclusion was based on the measure of human capital used. The differences in the result may be as a result of measure of human capital used. For example, a variable school was taken as proxy of human capital which was constructed through taking the percentage of working age population (12 to 17) enrolled in secondary schools. This percentage was multiplied by working age population that is of school age (15 to 19). This measure of human capital was found to be positively related to economic growth.[8]

Enrolment rates at primary, secondary, and higher schooling levels were also taken as proxies for human capital in a study conducted for Pakistan and India, Whereas, to study the effect of human capital on economic growth. The results of the study varied with different proxies of human capital taken in the study. Enrolment rate in primary school was found to be positively related and significance only in India, while higher education only bound to be positively related and significant in Pakistan.[2]. Another proxy for human capital in the literature is the stock of human capital which was calculated through the perpetual inventory method using the secondary enrolment. The measure was found to be positively impacted growth.[1]

Human capital was also, captured by health adjusted education indicator, which was calculated by taking enrolment rate at primary level and then multiplied the value with expenditure on health as percentage of GDP. This measure was used to

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empirically investigate the relationship between human capital and economic growth in Pakistan economy. The measure of human capital was found to be positively related to economic growth in Pakistan.[5]

In Nigeria the study on the relationship between human capital and economic growth is not a new idea. Just like the studies mention above, the existing studies in Nigeria used both education and health indicators to captured human capital. Indicators such as Government's expenditure on education, primary school enrolment rate, secondary school enrolment rate, tertiary enrolment rate, life expectancy at birth, fertility rate and government expenditure on health were used as proxy for human capital. The empirical evidences from these studies are not robust supporting positive impact of human capital[4;8;10]. From the studies the entire variable used except secondary enrolment rate to captured human capital in Nigeria are not significant, this is contrary to the existing studies. Using different method of measurement may likely to have different effect. Therefore, this study will follows Faisal et al[5] by using health adjusted education variable to examine the effect of human capital on economic growth in Nigeria. According to them, this measurement is a better measure of human resources development, since health is an important factor of determining the return from education and improvement in health tends to increase the learning from a given level of education. With this study additional evidence of the relevance of human capital in economic growth in Nigeria will be provided.

The rest of the paper is divided into four sections, model specification is presented section two, measurement of variable is presented in section three, while section four cover the analysis of the estimated results and section five is conclusion.

2   MODEL SPECIFICATION

To explore the relationship between human capital and growth in Nigeria, the study follows the existing work by adopting standard Cobb-Douglas production function with labor, physical capital and human capital as input factors. In line with these scholars, the formulation below was employed.

$$GDP_t = A_t GCF_t^{\propto} LBF_t^{\propto 1} HC_t^{\propto 2}$$ (1)

Converting the above equation in log form will give;

$$logGDP_t = logA_t + \propto logLBF_t + \propto_1 logGCF_t + \propto_2 logHC_t + \mu_t$$ (2)

Where logGDP is the log of Gross Domestic Product as dependent variable, and logGCF is the log of Gross Capital Formation proxy for physical capital and the variable logLBF is log of labour force, logHC is the measure of human capital and μ is error term. A-priori one expects a positive sign for all explanatory variables.

3   MEASUREMENT OF VARIABLES AND SOURCES OF DATA

The Gross Domestic Product is measured as GDP per capital, LBF is the labour force and is measured as total number of age 15 and older who is economical active, GCF is the gross capital formation and is measured by divide Gross Capital Formation over GDP, and HC is the human capital variable and is constructed by multiply primary school enrollment rate with government expenditure on health divide by GDP, following Faisal et al[5]. The data on the entire variables used in this study are obtained from secondary sources. Data on Gross Domestic Product, Gross Capital formation and labour force are obtained from world development indicators(WDI,2012). Primary school enrollment rates and expenditure on Health data are sources from CBN Annual Report and Statement of Accounts (several issues).

The sample period is 1980-2011 and the model estimated by Generalized Method of Moments (GMM) which takes into accounts the possible endogeneity of the explanatory variables. The lagged values of labour force, gross capital formation and Human capital variable and dependent variables act as instruments.

4   ESTIMATED RESULTS

4.1   DESCRIPTIVE STATISTICS

This section presents summary statistics of the parameters in the model. Tables 1 report summary statistics for the variables of interest. All the variables used for the econometric investigation in this study covers the period 1980-2011. All the series display a high level of consistency as their mean and median values are within the range of maximum and minimum values of the series. The deviations of actual data from their mean value are very small.

Table 1: Descriptive statistics of data(Sample 1980- 2011)

Variables	LOG(LBF)	LOG(HC)	MOR	LOG(GCF)
Mean	17.35885	1.120077	8.090663	2.384702
Meadian	17.35092	4.317916	7.971871	2.371529
Maximum	17.76037	5.327116	8.584335	3.561650
Minimum	16.96631	-4.591042	7.810521	1.697265
Std. Dev	0.248164	4.100527	0.233175	0.426864
Skewness	0.052375	-0.144281	0.862983	1.058737
Kurtosis	1.679617	1.078632	2.294095	4.096241
Jarque-Bera	2.339177	5.033229	4.636346	7.580587
Probability	0.310495	0.080732	0.098453	0.022589
Observations	32	32	32	32

This table reports the summary statistics of the main regression variables

4.2 EMPIRICAL ANALYSIS

In an attempt to examine the relationship between human capital and growth in Nigeria, this study employed Generalised Method of Moment(GMM). GMM is known to be robust to heteroskedasticity and autocorrelation of unknown form and it has several advantages over other estimation techniques such as OLS. Table 2 report regression results for Generalised Method Moments estimate for the model. The reliability of the GMM estimate depends on the validity of the instruments. To test for the validity of the instrument used, we examine the value of the J- statistic and instrument rank of the GMM estimate. Table 2 shows the results of estimated models. From table 2 the instrument rank is greater than the number of estimated coefficients therefore, we may use it to construct Sargan test of over-identifying restrictions. The Sargan statistic is distributed as (p - k), where k is the number of estimated coefficients and p is the instrument rank. Constructing the Sargan test of over- identifying restrictions which is computed using 'scala pval = @chisq(P-K)' under the null hypothesis that over-identifying restrictions are valid. In this case a higher P-value indicates that instruments used are valid. The Probability values for the sargan test carried out using J- Statistic and instrument rank for the model estimated in table 2 is 0.99999 which indicates rejection of null hypothesis. Therefore, the instruments used in table 2 are valid, which shows that the results in table 2 are reliable. From the results in table 2, signs of estimated coefficients move in line to their prior expectations and all the variables of the model are statistically significant. The main variable adjusted human capital is positive and significance at 1 percent level of significance, other variables used in the analysis(LBF, GCF) are also positive and significant.

In conclusion, the results obtained shows that the measure of human capital used played a significant role in economic growth in Nigeria. Unlike other empirical studies in Nigeria that focused on human capital development and growth, evidence from these studies are not robust supporting positive relationship. Though these studies used either education or health indicator variables as the measure of human capital

Table 2: Estimated Result

Dependent variable: logGDP per capital

Independent Variables	Coefficient
LOG(LBF)	0.385774*** (19.35068)
LOG(GCF)	0.564741*** (3.989678)
LOG(HC)	0.049962*** (3.876578)
J- Statistics	12.4
Instrumental Rank	5

*, **, *** indicate 10%, 5%, and 1% level of significance. Figures in parenthesis are t- statistic

Sources: Author's Computations

5   CONCLUSION

In this study our main aim was to provide additional evidence on the relationship between human capital and economic growth. The proxy of human capital in this study was health adjusted education indicator following Faisal et al[5]. Based on the examination of the relationship between human capital and economic growth, the study found that proxy for human capital used play important role in explaining the growth process in Nigeria. Therefore, policy makers should pay special attention on health and education sectors simultaneously, such as increased budgetary allocation to the two sectors and to ensure proper implementation of programs in these two sectors in other to increase returns from these two sectors in Nigeria.

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