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Impact of Economic Globalization on Human Capital: Evidence from Nigerian Economy

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ABSTRACT

Investment in human capital in relation to global world is to achieve an optimum return in terms of a gainful employment, productivity and high standard of living. This paper uses autoregressive distributed lag model to determine the cointegration, long run and short run elasticities among human capital, economic growth, economic globalization and foreign direct investment (FDI), for the period 1980-2011. The empirical results reveal that there is a long run relationship among the variables tested in this study. Also, economic growth and FDI show a positive impact on human capital and economic globalization indicates a negative impact on human capital in Nigeria.

Keywords: Human Capital, Economic Globalization, Autoregressive Distributed Lag, Nigeria

JEL Classifications: F02, F66, J24, J61

1. INTRODUCTION

As defined by Shangquan (2000), economic globalization refers to the increasing interdependence of world economies as a result of the growing scale of cross-border trade of commodities and services, flow of international capital and wide and rapid spread of technologies. To this end, the process of increasing the mutual market frontiers across the globe, the availability of information particularly in the productive, advertising and marketing services are the three major factors driving force of economic globalization. At the same time, the fast growing of economic globalization in the recent times could also be drawn from the increasing rate of improvement in technology. The growing and development in technology has done a lot in terms of facilitating the movement of labour across the globe. For instance, labour anywhere in the world can apply for a job through internet (technology), submit all the necessary documentations for assessments and even be interviewed through online application (skype). This is part of what globalization has offered the world as a whole. It is a known fact that there is shortage of high skilled manpower in the country while high records of high skilled Nigerians are working abroad especially in Europe and United State of America. Workers in Africa particularly in Nigeria which is the most populous country in

Africa are increasing in competing for jobs availability in the world labour market. The competition is as a result of the wider scope in economic globalization of the world. In view of this agitation for free movement and global networking of people, goods and services and improvement in the tools of economic globalization such as; internet, cell phones and so forth have made it easy for labour to relocate from one region to another. Also, the increasing networking of the world at large has encouraged the operations of multinational corporations to further integrate both and national human capital across the globe. As noted by Held and McGrew (1993) that “the boundaries between local matters and world affairs is becoming increasing fluid.” Meanwhile, in the on-going debate on the impact of economic globalization on human capital, the effect has not been fully ascertained *per se* particularly in the Nigeria context. However, the previous studies have been focusing on the impact of economic globalization on economic growth as a whole (Rousseau and Sylla, 2003; Dreher, 2006). In light of this, the current study focused on how economic globalization affects human capital in Nigeria.

2. LITERATURE REVIEW

In the review of the relationship between economic globalization and human capital, the classical school of thought has opined

that skills gained by human are also form of capital while some economists concluded that the human himself is a capital on its own. In the work of Cristian and Laura (2008), they noted that there are two forms of raising human capital stock that is; raising the basic level for all the workers and having a reduced number of highly skilled workers. They further emphasized that the first form would be applicable in the developing countries while the second is for the purpose of innovation. Also, the country's specific is one of the factors that determine the level of human capital in a country. For instance, the possibilities of acquiring new abilities and knowledge may depend on the organization of the educational system and efficiency in the implementation of educational policies in a country. In Nigeria for example, the inconsistencies in the educational system may attributed to one of the reasons why there is high rate of mobility of human capital from the country to other countries for greener pastures. As noted by Zweig et al. (2004), "individuals who possess new ideas, technologies and information that abets globalization become imbued with transnational human capital, making them more valuable to the societies." Another factor that determines the mobility of human capital is health status of a country. In this case, the level of economic growth and development in a particular country determines her health status and this might significantly affect the mobility of human capital from one nation to another.

It is also important to discuss briefly the previous empirical studies related to this subject. In the empirical study by Noorbakhsh et al. (2001), the relationship between human capital and foreign direct investment (FDI) was conducted for developing countries and the empirical tests were carried out on how the geographical distribution of FDI could affect the level of human capital in developing countries. The empirical evidence from their results shows that human capital is a statistically significant determinant of FDI inflows and in fact, it becomes the most important factor of human capital according to their results.

Also, in Oketch (2006), the relationship between human capital and economic productivity for African region was conducted in the study. The econometrics of two-staged least square was used to determine the relationship between human capital and its determinants. In his analysis, per capita gross domestic product (GDP) growth was used to proxy economic growth and a two-way link was achieved between human capital and per capita GDP growth in the empirical results. Moreover, the study concluded that the sources of labor productivity growth in the medium term in African countries are high investment in physical capital and in human capital. The evidence result shows that per capita GDP growth is an important factor that determines both industrial and human capital development in African nations.

3. METHODOLOGY

3.1. Model and Data

In addition to globalization, there are several determinants of human capital index such as real GDP, FDI, government expenditure on health and education, institutional development and economic freedom. However, due to data constraint, we focus our attention on three determinants of human capital development

including globalization, real GDP and FDI. The following model is considered:

$$H_t = f(G_t, Y_t, F_t) \quad (1)$$

Here, H_t is human capital development index (school enrolment rate) Y_t is real GDP (constant 2005 US\$), G_t is the globalization index. In this study we use two indexes. The first is the "Economic Globalization," or EG_t . The second globalization index is total trade ratio or total trade (export plus import) divided by GDP or WG_t . F_t is FDI ratio or FDI divided by the GDP. Our dataset is for the period 1980-2011. The data for human capital development index were extracted from the database of the World Bank. The data for trade, FDI and GDP are obtained from the United Nations Database We collect the data for FDI from the database of United Nations Conference on Trade and Development. The data for "Economic Globalisation" is extracted from the KOF Swiss Economic Institute Website.

3.2. Cointegration Test

Using the autoregressive distributed lag (ARDL) methodology as proposed by Pesaran et al. (2001), the following error correction model is estimated:

$$\Delta \ln H_t = \alpha_1 + \sum_{i=1}^k \alpha_2 \Delta \ln H_{t-i} + \sum_{i=1}^k \alpha_3 \Delta \ln Y_{t-i} + \sum_{i=1}^k \alpha_4 \Delta \ln G_{t-i} + \sum_{i=1}^k \alpha_5 \Delta \ln F_{t-i} + \alpha_6 H_{t-1} + \alpha_7 Y_{t-1} + \alpha_8 G_{t-1} + \alpha_9 F_{t-1} + \nu_t \quad (2)$$

The null hypothesis of no-cointegration $\alpha_6 = \alpha_7 = \alpha_8 = \alpha_9$ is tested against the alternative hypothesis of $\alpha_6 \neq \alpha_7 \neq \alpha_8 \neq \alpha_9$. Subsequent to testing for long run relationship between the series and finding the long-run coefficients, the researchers investigated the short run coefficients. The short-run model of Equation (1) is specified as follows:

$$\Delta \ln H_t = \alpha_1 + \sum_{i=1}^k \alpha_2 \Delta \ln H_{t-i} + \sum_{i=1}^k \alpha_3 \Delta \ln G_{t-i} + \sum_{i=1}^k \alpha_4 \Delta \ln Y_{t-i} + \sum_{i=1}^k \alpha_5 \Delta \ln F_{t-i} + \alpha_6 ECT_{t-1} + \nu_t \quad (3)$$

α_6 is the speed of adjustment parameter and ECT in Equation is the residuals obtained from the estimated cointegration model of Equation (1). For the ECT to be valid, it must produce statistically significant negative coefficients.

4. EMPIRICAL RESULTS

Prior to the estimation of the long-run equilibrium relationship, it is vital to determine the integrational properties of our variables because cointegration techniques are based on different assumptions of unit root properties. The ARDL method becomes invalid once any of the variables is I(2) or beyond. To ensure that no variable is stationary in second difference or beyond, we have applied the Said and Dickey (1984) or augmented Dickey-Fuller (ADF) test and Phillips and Perron (1988) or PP test. The estimations include both intercept and trend. The results in Table 1 shows that with the ADF test, we cannot reject the null

hypothesis of unit root for all the variables. However, when the variables are expressed in first difference, we can reject the null hypothesis of unit root for all the variables. Subjecting the series to the PP test, we cannot reject the null hypothesis of unit root for all the series at level. However, when the series are expressed in first difference, we can reject the null hypothesis of unit root for all the series.

Having established that the variables are $I(1)$, the bound test approach to cointegration is applied to examine the incidence of cointegration. Table 2 presents the ARDL results, which involve four models. In this first model, human capital is the dependent variable, while the independent variables are "Economic Globalisation" index, real GDP, and FDI ratio. The F -statistics (5.267) is greater than the upper critical value at 5% significance level (4.306) in this model. In this second model, we replace the real GDP with real GDP per capita (YPC). The results show that the F -statistics (5.109) is greater than the upper critical value at 5% significance level (4.306). As a robustness check, we use the total trade ratio as a proxy for globalization¹. In Model 3, human capital is the dependent variable, while the independent variables are total trade ratio, real GDP, and FDI ratio. The results show that the F -statistics (3.731) is greater than the upper critical value at 5% (3.586). In this fourth model, we replace the GDP with real GDP per capita. The results show that the F -statistics (4.227) is greater than the upper critical value at 5% significance level (3.506). In summary, all these results suggest that there is at least one cointegrating relationship when human capital development is entered as the dependent variables in all the models.

1 Moreover, foreign direct investment is included in the construction of "Economic globalisation" index, which may cast some doubts over our results because foreign direct investment ratio is included in the independent variables.

Table 1: Unit root test

Variable	Panel A: Series at level		Series at first difference	
	t -statistics		t -statistics	
	ADF	PP	ADF	PP
H_t	-2.607 [0]	-2.607 [0]	-3.257* [0]	-3.257* [0]
EG_t	-1.272 [1]	-1.710 [3]	-7.174*** [0]	-7.177*** [3]
WG_t	-2.396 [0]	-2.207 [3]	-6.489*** [0]	-6.849*** [3]
Y_t	-1.924 [0]	-1.924 [0]	-4.116** [0]	-4.116** [0]
YPC_t	-2.004 [0]	-2.004 [0]	-4.110** [0]	-4.110** [0]
F_t	-1.236 [1]	-0.863 [1]	-3.663** [0]	-3.535* [4]

*****Imply 1%, 5% and 10% levels of significance. The optimal lag length of the ADF test is determined through the Akaike Information Criterion. The spectral estimation of PP is based on Bartlett with Newey-West bandwidth selection. [] is the optimal lag length. ADF: Augmented Dickey-Fuller, PP: Phillips-Perron, YPC: real GDP per capita

Table 2: Cointegration test

Model	Model 1	Model 2	Model 3	Model 4
Equation	$H_t=f(EG_t, WG_t, Y_t, F_t)$	$H_t=f(EG_t, YPC_t, F_t)$	$H_t=f(WG_t, Y_t, F_t)$	$H_t=f(EG_t, YPC_t, F_t)$
F -statistics	5.267**	5.109**	3.731*	4.227*
Optimal lag length	(3, 3, 4, 3)	(4, 4, 1, 4)	(3, 0, 0, 0)	(4, 1, 2, 4)
χ^2 SERIAL	0.164 [1]	0.835 [1]	0.358 [1]	0.194 [1]
χ^2 ARCH	0.993 [1]	0.710 [1]	0.544 [1]	0.892 [1]
χ^2 NORM	0.534 [2]	0.803 [2]	0.557 [2]	0.896 [2]

*****Imply 1%, 5% and 10% levels of significance. The lower and upper critical values at 1% are 4.614 and 5.966; while the lower and upper critical values at 5% are 3.272 and 4.306. The lower and upper critical values at 10% are 2.676 and 3.586. [] is the optimal lag length

Having established that the variables are cointegrated, the next step is to investigate the long- and short-run elasticities. The results, which are reported in Table 3, involve four models. In the first model, it is shown that "Economic Globalisation" index has positive impact on human capital index at 5% significance level. Real GDP has negative impact on human capital development index at 1% significance level. FDI has a positive but insignificant influence on human capital development index. In Model 2, the pattern of the relation remains unaltered, but only real GDP per capita has a significant positive impact on human capital development at 1% significance level.

Proceeding with the regression with total trade ratio as a proxy for globalisation in Model 3, we observe that globalisation has a negative but insignificant impact on human capital development. Moreover, real GDP has a positive effect on human capital at 1% significance level and FDI ratio has positive influence on human capital development at 5% significance level. In Model 4, real GDP is replaced by real GDP per capita. Total trade ratio has a negative influence on human capital at 5% significance level, while real GDP per capita has a positive effect on human capital at 1% significance level. FDI ratio has negative effect on human capital development. The short run results are not materially different from the long run outputs. The coefficients of error correction terms in all the models are negative and significant. This means long run link among the variables, thus rendering our long run estimates valid. Moreover, it also means that disequilibrium in the previous year is corrected in the current year.

In summary, the foregoing results indicate that globalisation has an adverse influence on human capital development, while economic growth and FDI have positive effects on human capital development. The positive impact of economic growth on human capital development is line with the study of Oketch (2006). Also, the positive impact of FDI is in agreement with the works of Noorbakhsh et al. (2001).

The negative impact of globalisation on human capital development is not too surprising. Recently, Nigerian government as well as educational policy makers has pinpointed the increasing numbers of Nigeria skilled labour relocating abroad for expatriate job. To this end, the influence of globalization of the world at large has increased the movement of Nigerian labour to the global market. The essence of this relocation maybe due to the consciousness that life is better abroad with basic needs of life and high pay, other factors such as; changing of environment, getting better infrastructures outside their country and moving to

Table 3: Long run and short run elasticities

Variables	Model 1	Model 2	Model 3	Model 4
Panel A: Long run elasticities				
Dependent variable: H_t				
EG_t	-0.499** (-2.692)	-0.056 (-0.138)	-	-
WG_t	-	-	-0.177 (-1.558)	-0.371** (-2.362)
YPC_t	0.700*** (9.122)	-	0.663*** (7.603)	-
F_t	-	0.768*** (5.351)	-	1.046*** (7.238)
	0.018 (0.445)	0.004 (0.038)	0.180*** (4.143)	0.123** (2.952)
Panel B: Short run elasticities				
Dependent variable: ΔH_t				
Period				
EG_t	0.073 (0.394)	0.050 (0.210)	-	-
WG_t	-	-	-0.109 (-1.640)	-0.094 (-1.125)
Y_t	0.634** (2.765)	-	0.409*** (4.283)	-
YPC_t	-	0.484 (1.421)	-	0.732** (2.611)
F_t	-0.114 (-1.410)	0.009 (0.092)	0.111*** (3.277)	0.156 (1.396)
ECT_{t-1}	-0.740*** (-3.487)	-0.567** (2.356)	-0.617*** (-4.022)	-0.793*** (-4.111)
R^2	0.881	0.768	0.571	0.752
Adjusted- R^2	0.709	0.431	0.449	0.485

****. *Imply 1%, 5% and 10% levels of significance. () is the optimal lag length

other countries for greener pastures may also influence Nigerian labour to relocate. In view of this, the increasing globalization is now allowing most companies in the world particularly the industrialized economies to now have the database that contains the pool of human capital across the globe. With this development, skilled workers such as doctors, engineers and other technical professions are now becoming scarce in Nigeria. It is a known fact that the increasing mobility of talents from the country through globalization may have enormous effects on the economic system at large.

5. CONCLUSION

The aim of this research was to use the ARDL bound testing approach to determine the impact of economic globalization on human capital in Nigeria for the period 1980-2011. The cointegration results show that a long run equilibrium relationship was established among the variables. Also, in the long run elasticities results, economic globalization indicated a negative effect on human capital in Nigeria. This might be as a result of high mobility of workers from Nigeria to abroad. But, economic growth and FDI revealed a positive and significant relationship on human capital. The paper recommends that a favourable trade policies that would encourage friendly business environment should be consistently embark on by the government in order to attract more foreign investors to the country. Also, diversification and improved exportation should be encouraged by the government in order to boost the country's GDP and positively promote the human capital in Nigeria.

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