

Globalization and Economic Growth. An Econometric Dimension Drawing Evidence from Nigeria

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Abstract

The growing integration of economies and societies all over the world has been one of the most discussed topics in international economics for several years. Globalization has many dimensions and with it a variety of social, political and economic implications. This paper examines the causal relationship between globalization and economic growth in Nigeria from 1981 to 2012. Time series data was used and sourced from the CBN Statistical Bulletin and Annual reports. The stationarity of the variables were tested using the Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) unit root tests. They were found to be integrated of order I (1). Hence, the null hypotheses of having a unit root were rejected and all the series were used in our cointegration test after first difference. The variables used in the model were GDP, Financial integration, human resource development (HRD) and trade openness (OPEN). Cointegration result indicates the existence of a long run equilibrium relationship. The regression results show a positive and insignificant relationship between financial integration, human resource development and trade openness while gross fixed capital formation was negative and insignificant. Granger causality shows a unidirectional causal relationship between financial integration and gross fixed capital formation. There is also a unidirectional causality between trade openness and gross fixed capital formation. The insignificant relationship could be as a result of insufficient capital inflow into the economy and so many negative factors bedeviling the Nigerian economy, for example corruption. The private sector should have a greater control of the economy so as to enhance its contribution towards the economic growth of Nigeria.

Key Words: Globalization, Economic growth, Cointegration, Causality.

Introduction

The growing integration of economies all over the world has been one of the most burning issues in international economics over the past two decades. Economic “globalization” is a historical process, the result of human innovation and technological progress. It refers to the increasing integration of economies around the world, particularly through the movement of goods, services, and capital across borders. The term sometimes also refers to the movement of people (labor) and knowledge (technology) across international borders. There are also broader cultural, political, and environmental dimensions of globalization (IMF, 2008). The process of globalization means growing integration of the national economies, openness to trade, financial flows, foreign direct investment and increased interaction of people in all works of life. Globalization also implies the internationalization of production, distribution and marketing of goods and services.

The policy reforms undertaken by the Nigerian government since the 1980s had the objectives of making the entire economy more efficient, technologically up-to-date and competitive. This was done with the

expectation that efficiency improvement, technological upgrade and competitiveness would ensure that the Nigerian economy will achieve rapid growth. In view of greater openness of the Nigerian economy due to trade liberalization, private sector can build and expand capacity with less regulation. Advocates of globalization believe that policy reforms so far has improved economic growth and performance significantly while critics argue that the total withdrawal of restrictions on several matters have had negative effects on future growth and performance of the economy. They are also of the view that globalization has worsened inequalities across and within the countries, environmental degradation and vulnerability of the poor nations have increased and that developed countries have established dominance over developing countries culminating in neo-colonization.

Several studies have revealed unsettled controversies concerning the contribution of globalization to the economic growth of less developed countries (LDCs). Such studies which argued in favor of globalization for LDCs include (Nzekwu, 1999; Levine and Renelt, 1992). Those who argued that globalization has contributed negatively to the economic growth of LDCs include (Ayres, 1998; Gyimah-Brempong, 2007). This paper is set to contribute to the extant literature by investigating econometrically the existence (or not) of a long-run relationship between globalization and economic growth in Nigeria and more precisely the direction and causality of the relationship. The rest of this study is organized as follows. Section 1 is introduction while section 2 is review of empirical literature. Section 3 is the methodology adopted for the study. Section 4 is presentation of results and analysis of data. Section 5 is conclusion, summary and policy implications.

Review of Empirical Literature

The effect of globalization on growth has been frequently analyzed with various data, measures and methods. Chanda (2001) uses index of capital account openness to show that more developing countries have suffered from globalization than not, while Rodrik (1998) as well as Alesina et al (1994) found no effect of capital account openness on economic growth. With respect to foreign direct investment (FDI), there is evidence of a positive growth effect in countries which are sufficiently rich (Blomstrom et al, 1992) and a negative relationship in low-income countries (Garrett, 2001). While Borensztein et al (1998) provide evidence of a positive growth effect given a minimum threshold stock of human capital, Dollar (1992) analyzed the relationship between economic performance and trade openness. Frankel and Romer (1996) studied those between growth and actual flows. Their results show that both trade openness and actual trade flows are robustly related to growth. These studies present only cross-sectional estimates. Moreover, they do not adequately control for endogeneity. Their results might therefore reflect unobserved characteristics which do not vary over time instead of being the consequence of globalization or might reflect reverse causality. Kay (1997) studied the impact of globalization on peasant agriculture in Chile and observed that globalization had a negative effect on peasant farmers in the countryside. Streeten (1999) observes that economic liberalization, technological changes, competition in both labor and product markets contributed to economic failure, weakening of institutions and social support systems, and erosion of established identities and values.

Greenway et al (1999) reported a strong relationship between trade and growth. Dollar and Kraay (2001) found that an increase in trade flows and foreign direct investment resulted in higher growth rates. Carkovic and Levine (2002) to the contrary, did not find a robust influence of foreign direct investment on growth. A detailed analysis of the impact of several indicators of financial integration and growth is provided by Edison et al (2002a). Their results show that no robust relationship exists. As observed by Aluko (2003), statistics showed that the third world poor countries representing eighty per cent of total world population accounted for twenty one per cent of world income in 2000 but about eighty five per cent of international capital investment was made in Europe, North America and Japan (called the Triad) in the last decade compared with similar investments in 1980. His position is that globalization is rather destructive to the developing countries. Aluko (2003) observed further that of the world's gross domestic product (GDP), which was about 25 trillion US dollars in 2000, only about 5 trillion US dollars was produced in the developing countries where about 85 per cent of the world population reside.

In a study based on stylized facts and econometric methods, Uwatts (2003), observed that globalization could potentially benefit the African economy. He concluded that potential benefits derivable by African countries depended largely on how fast they could be integrated into the rest of the world and their preparedness to meet the global financial shocks resulting from globalization. Akinboyo (2003), study on Nigeria appeared to support the need for preparedness on the part of African countries. This view was supported by Olayiwola and Ogundiran (2003). Akinlo (2003) examined the impact of globalization on the stock market and observed that globalization through foreign direct investment (FDI) has significant positive effect on stock markets in Africa. The study further revealed that FDI stock has a significant impact on capital formation and factor productivity. Dollar and Kraay (2004) studied the effects of globalization on poor developing countries and noted that over half of them that experienced globalization gained large increases in trade and considerable reduction in tariffs. These countries are catching up with the developed ones while the remaining ones are losing. They reported that increase in economic growth lead to a proportionate increase in the income of the poor.

Methodology

Data

To achieve the objectives of this paper we intend to investigate the impact of various factors of globalization on the Nigerian economy as well as the dynamics of the relationship between globalization and economic growth using annual data from 1980 to 2012 which represents 32 observations. The data are time series for the sample period and were obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin and Annual Reports of various years for the sample period.

Variables

Gross domestic product (GDP) is used as proxy for economic growth. Economic growth is influenced by a variety of factors. The importance and relevance of these factors may differ from one country to another and may also change over time. Difficulty in obtaining capital stock series for Nigeria necessitated the use of gross fixed capital formation to appreciate their relative significance for economic growth. Two measures of openness are used to measure the degree of integration of the Nigerian economy. Openness is the sum of imports (IMP) and exports (EXP) and the financial integration is the sum of capital inflow and capital outflow (Obaseki, 1999). For capital inflow, we use the sum of foreign direct investment and foreign portfolio investment in Nigeria. Since consistent and regular time series data are not available for capital outflow, we use debt servicing as proxy for capital outflow. We use the expenditure on education including medical expenses and health expenditure as proxy for HRD (Human Resource Development). It is the human resources of a nation that ultimately determine the character and pace of its economic and social development because education makes not only efficient workers but also good citizens.

Model Specification

The functional form on which our econometric model is based is given as:

$$Y = F(X_1, X_2, X_3, X_4)$$

This can be specifically stated as follows:

$$GDP = F(FININT, GFCF, HRD, OPEN)$$

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4$$

Econometric Specification: Ordinary Least Square Method (OLS)

The empirical implementation of our model makes use of Ordinary Least Squares (OLS) technique. Our choice of this technique is premised on the Gauss-Markov theorem which portends that the least squares technique is the best linear unbiased estimator (BLUE) with which a straight line trend equation could be

estimated (Gujarati and Porter, 2009). The identified model is a five variable (multivariate) model which hypothesizes that economic growth is a function of globalization. This can be econometrically stated as follows:

$$GDP_t = \beta_0 + \beta_1 FININT_t + \beta_2 GFCF_t + \beta_3 HRD_t + \beta_4 OPEN_t + U_t$$

Where

GDP = Gross domestic product (Dependent variable)

FININT = Financial integration (Capital inflow + Capital outflow)

GFCF = Gross fixed capital formation

HRD = Human resource development

OPEN = Trade openness

β_0 = constant intercept

$\beta_1, \beta_2, \beta_3, \beta_4$ = coefficient of the explanatory variables

U_t = stochastic or error term

All the variables were expressed in logarithms, so as to easily achieve stationarity of the data (Hondroyannis and Papepetrou, 2001; Maysami et al 2004).

$$\ln GDP_t = \beta_0 + \beta_1 \ln FININT_t + \beta_2 \ln GFCF_t + \beta_3 \ln HRD_t + \beta_4 \ln OPEN_t + U_t \quad \text{Eq. 2}$$

The following are a priori or expected signs of all the coefficients of the model.

$\beta_1, \beta_2, \beta_3, \beta_4 > 0$.

Stationarity of the variables and Unit Root Test

When dealing with time series data, a number of econometric issues can influence the estimation of parameters using OLS. Prior to testing for cointegration and implementing the Granger Causality test, econometric methodology demands the examination of the stationarity for each individual time series. A series is said to be stationary if the mean and variance are time invariant. This simply implies that the mean and variance remain constant over time for all t ; hence the correlation between any two values of Y taken from different time periods depends on the difference apart in time between the two values for all t s. A non-stationary time series will have a time dependent mean or variance and most macroeconomic data are non-stationary i.e., they tend to exhibit a deterministic and/ or stochastic trend. Standard regression analysis requires that time series data be stationary, it is obviously important that we first test for this requirement to determine whether the series used in the regression process is difference stationary or trend stationary. Secondly, if the variables are not stationary the standard assumptions for asymptotic analysis in the Granger causality test will not be valid.

Several tests of non-stationarity called unit root tests have been developed over the years in time series econometric literature. In most of these tests the null hypothesis is that there is a unit root, and it is rejected only when there is strong evidence against it. We use the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests. By testing both the unit root hypothesis and the stationarity hypothesis, one can distinguish series that appear to be stationary, series that appear to have a unit root, and series which data (or the tests) are not sufficiently informative to be sure whether they are stationary or integrated.

Testing for Cointegration

There are two methods to examine co-integration relationship, one is Engle and Granger two-step procedure, put forward in 1987, the other is the (Johansen (1988) and Juselius 1990) multivariate co-integration test, based on Vector Autoregression (VAR). The Johansen multivariate co-integration technique was adopted rather than the Engle-Granger technique based on three reasons. First, the model is a multivariate model as specified in equation (2) above; consequently there is the possibility of having more than one co-integrating vector in the model. This is against the Engle-Granger technique which is only suitable for testing co-integration between two variables. Second, the Johansen procedure uses full information maximum likelihood (FIML) to estimate the linear space spanned by the cointegrating vectors.

This method is preferred to Engle-Granger, as it has less bias when the number of variables is greater than two, and it seeks the most stationary linear combinations whereas the Engle-Granger test seek the linear combination having minimum variance.

Johansen Multivariate Approach

Johansen and Juselius developed two test statistics: the trace test and the maximum eigenvalue test. Trace statistic tests the null hypothesis that $r=0$ (no co-integration) against a general alternative hypothesis of $r>0$ (co-integration). The statistic tests the null hypothesis that the number of co-integrating vectors is r against the specific alternative of $r+1$ co-integrating vectors. The test statistics obtained from the trace and maximum Eigen tests are compared against the asymptotic critical values of the two test statistics by Johansen and Juselius. Co-integration exists between n integrated series if there is at least one co-integrating vector. The greater the number of co-integrating vectors found the greater the co-dependency between the processes and the smaller the number of common trends. Assuming there are n variables, there are a maximum $(n-1)$ spread vectors that span the co-integrated space.

Granger Causality Test

Granger causality test is a technique for determining whether one time series is significant in forecasting another (Granger, 1969). The standard Granger causality test (Granger, 1988) seeks to determine whether past values of a variable helps to predict changes in another variable. The Granger causality technique measures the information given by one variable in explaining the latest value of another variable. In addition, it also says that variable Y is Granger caused by variable X if variable X assists in predicting the value of variable Y . If this is the case, it means that the lagged values of variable X are statistically significant in explaining variable Y . The null hypothesis (H_0) that we test in this case is that the X variable does not Granger cause variable Y and variable Y does not Granger cause variable X .

Presentation of Results and Analysis of Data

Variables	ADF Test-Stats	PP Test-Stats	Status
	-3.782356	-3.729368	
D(LOGGDP)			
1%	-3.670170	-3.670170	
5%	-2.963972	-2.963972	I (1)
D(LOGFININT)			
1%	-7.032276	-7.054256	
5%	-3.724070	-3.724070	
	-2.986225	-2.986225	I (1)
D(LOGHRD)			
1%	-1.896915	-4.915546	
5%	-3.679322	-3.670170	
	2.967767	-2.963972	I (1) FOR PP
D(LOGGFCF)			
1%	-3.893937	-3.732516	
5%	-3.670170	-3.670170	
	-2.963972	-2.963972	I (1)
D(LOGOPEN)			
1%	-6.305163	-6.636079	
5%	-3.670170	-3.670170	
	-2.963972	-2.963972	I (1)

Source: Authors compilation from Eviews 7.0 printout

This study commences its empirical analysis by first testing the stationarity of the time series data used in the model to guard against spurious results. This is done via the Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) unit root tests. The unit root test results also provide us with a reliable guide on how to incorporate the variables into the Johansen multivariate cointegration technique.

As observed from table 4.1 all estimating variables were found to be integrated in order I (1), implying that some of these variables were non-stationary at level but became stationary after first differencing. Hence, the null hypothesis of having a unit root was rejected in all the series. Following our results, we feed all the variables into the model at their first differences.

Cointegration

Table 4.2 Johansen Multivariate Test for Cointegrating Vectors

Hypothesis	Trace Statistic λ_{trace}	Critical Values (95%)	Max Eigenvalue Statistic λ_{max}	Critical Value (95%)
$r = 0$	105.2338	69.81889	47.76819	33.87687
$r \leq 1$ $r > 1$	57.46560	47.85613	31.84962	27.58434
$r \leq 2$ $r > 2$	25.61597	29.79707	15.42789	21.13162
$r \leq 3$ $r > 3$	10.18808	15.49471	9.361496	14.26460
$r \leq 4$ $r > 4$	0.826584	3.841460	0.826584	3.841466

Source: Authors compilation from Eviews 7.0 software

From table 4.2, the null hypothesis of no cointegration for $r=0$ and $r \leq 1$ in the model was rejected in both the trace statistics and the maximum eigenvalue statistics. The statistical values of these tests were greater than their critical values. However, the null hypothesis of no cointegration, that is $r \leq 2$, $r \leq 3$ and $r \leq 4$ could not be rejected in both the trace statistics and the maximum eigenvalue statistics, because their values were less than the critical values. This indicates that there are two cointegrating equations among the variables. The implication of this result is that a long-run equilibrium relationship exists between gross domestic product (GDP) and the globalization variables used in the model.

Based on the regression equation estimation result after adjustment, the overall performance of the model was good. Both the R-squared (99.7 percent) and the adjusted R-squared (99.5 percent) were satisfactory. The coefficient of determination R^2 measures the percentage of the variation of the dependent variable (GDP) that is explained by the variation of the independent variables. The Durbin-Watson statistics (1.583046) was a little lower than the traditional benchmark of 2.0 in the model and the F-stat (F-stat 561.1703, $p=0.00000$) of the model was also significant at five percent indicating that the model has a good fit.

Also the coefficients of the individual variables were examined to determine the nature of the relationship between gross domestic product (GDP) and other globalization variables. The coefficient of financial integration (FININT, 0.015195) was positive and insignificant ($p=0.2241$). This might be as a result of insufficient foreign direct investment coming into the country coupled with the huge amount of money spent in servicing public debt. The coefficients of gross fixed capital formation (GFCF, -0.046358 $p=0.1847$) was negative and insignificant contrary to a priori expectation. Human resource development (HRD, 0.018962, $p=0.8974$) and trade openness (OPEN, 0.005753, $p=0.8101$) were positive and insignificant respectively.

Granger Causality Test

Table 4.4: Summary of causality among the variables

LOGFININT	→	LOGGFCF	0.0447
LOGOPEN	→	LOGGFCF	0.0149

Source: Authors compilation from Eview 7.0 printout

Result indicates a unidirectional causality from financial integration to gross fixed capital formation and from trade openness to gross fixed capital formation.

Conclusion and Recommendations

The insignificant relationship between these variables and GDP could be as a result of so many factors bedeviling the Nigerian economy. Among them are too much dependence on oil; dominance of fiscal measures especially government expenditure in stimulating the economy; security and corruption. Corruption has had a corrosive effect on The Nigerian growth prospects. It scares off potential investment by undermining the credibility and legitimacy of the government and creating an uncertain business environment. It also results in misallocation of capital and other factors of production as resources are moved based on personal relationship rather than return on investment. It has quashed entrepreneurship and harmed the poor at the same time.

This study therefore recommends that there should be greater attention on human capital development since the opportunities in financial integration would be duly exploited if the appropriate quality and quantity of loaned capital could be developed. Furthermore, more efforts should be geared towards fighting corruption which tends to scare away foreign investors or worse still attract the wrong specie of foreign investors whose contributions to the economy would be less than optimum. More should be done to give the private sector a greater control of the economy so as to enhance its contribution towards economic growth in Nigeria.

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