

Globalization and Economic Growth in West Africa (1990 - 2019)

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ABSTRACT

This study investigated the impact of overall and economic globalizations on economic growth in West Africa between 1990 and 2019. Data were sourced secondarily from the World Development Indicators (WDI) and Konjunkturforshungsstelle (KOF) data base. The study employed Pooled Ordinary Least Square (OLS) and Fixed effect OLS for data analysis. The result obtained from Pooled OLS revealed that overall globalization had significant and positive impact on economic growth in West Africa while the result from Fixed effect showed otherwise. Further, the result from Pooled OLS also showed positive and significant effect of economic globalization on economic growth while the result from the Fixed effect showed no impact of economic globalization on economic growth in West Africa. Therefore, the study recommended that Government policy should adopt overall globalization as a major factor of economic growth. Also, Government should formulate policy to encourage trade openness, Foreign Direct Investment (FDI) and capital inflows which are the major platform upon which economic globalization rested.

Keywords: Overall globalization, Economic globalization, Pooled OLS, Fixed effect, Foreign Direct Investment, Capital inflows

BACKGROUND TO THE STUDY

The contributions of globalization to economic growth of countries have over the years attracted the attention of academia, economists, policy makers and governments worldwide. This is not unexpected consequent upon the preponderance of poverty, starvation, hunger and malnutrition which have been ravaging developing countries. Globalization and economic growth-nexus has been one of the most contentious and important theoretical issues of economic development that is complex, hotly debated and contested (Olimpia and Stella, 2017; Radulovic and Kostic, 2020).

Globalization, which is aptly referred to as overall globalization, and its relationship with economic growth is not a current phenomenon in economic discourse (Ajudua and Okonkwo, 2014; Titalessy, 2018). However, the recent phase of globalization process has been enhanced by unprecedented technical progress and innovations, and the expectation is that this progress will exert consequential effect on economic growth. Globalization is a process driven by international trade and investment and aided by information technology (Hauge and Magnusson, 2011). It is multidimensional in nature encompassing economic, political, social,

informational and cultural dimensions (Dreher, 2006; Dreher, Gaston, Martens and Boxem, 2008; Gygli, Haelg and Sturm, 2018; Bataka, 2021).

Globalization as an economic concept is not only a deeply controversial term (Hauge and Magnusson, 2011; Ahmad, 2018), but its relationship with economic growth has been more controversial and ambiguous, as well as attracting unending debates without any consensus. . This thus gives birth to globalization rampants and globalization skeptics (Anyanwu, 2006), anti-globalists and globalists (Konyeasso, 2016) when discussing about its relationship with economic growth.

The controversies as enunciated above is not limited to overall globalization alone, but has extended to economic globalization and all the other sub-components of globalization.. Economic globalization, as one of the major sub-components of globalization is all-encompassing. It includes trade openness, foreign direct investment (FDI) and capital flows. As a matter of fact, the pioneer theories defined globalization with reference to these sub-divisions of economic globalization thereby lending credence to the importance of economic globalization. However, studies have revealed the ambiguous nature of each of this sub-divisions with economic growth. This relationship, no doubt, may exert influence on the relationship between economic globalization and economic growth.

The above scenario described, not only what is happening throughout the world, but what is happening also in West Africa. But more worrisome and controversial is that West Africa is an agrarian economy producing non-value added agricultural commodities, the price of which fluctuated uncontrollably in the international market. This made West African countries to be at crossroad of whether to adopt globalization partially or wholly. This study therefore evolved to investigate the impact of overall and economic globalizations on economic growth in West Africa. To achieve these objectives, the study is divided to five sections with introduction as section one. Literature review is in section two while methodology is in section three. Result and discussion takes place in section four while conclusion and recommendation are made in section five.

LITERATURE REVIEW

The relationship between globalization and economic growth has been a heated and highly debated topic. It has generated controversies and different results among academia and policy makers. Radulovic and Kostic (2020) investigated the link between globalization and economic growth in Euro-zone countries. Pooled Mean Group estimator was used for data analysis. The study revealed that in the short-run, economic and social globalizations had positive effects on economic growth while political globalization had negative effect. In the long run however, economic globalization had positive effect while social and political globalizations had negative effects.

Hassan (2019) examined the relationship between globalization and economic growth in Asian countries between 1971 and 2014. Pooled Mean Group was applied for analysis. It was shown that overall, economic and political globalizations accelerated economic growth in the long run but no significant effect in the short-run. Olimpia and Stela (2017) also examined the link between globalization and economic growth in Romania between 1990 and 2013. Data were sourced through the KOF globalization index. Regression analysis, including granger causality

tests were carried out. The results of the analysis revealed a strong and positive link between GDP and overall globalization index and also, a strong and positive link between GDP, economic and political globalizations, but a negative link with social globalization.

While examined the effects of globalization on the manufacturing sector of Ghana between 1985 and 2013, Ofori-Atta (2017) employed the Simple Ordinary Least Squares (OLS) regression. FDI was used as a proxy for globalization. The study found a negative correlation between FDI and manufacturing sector in Ghana. Mohanty (2017) analyzed the effect of economic globalization on income inequality, applying panel data techniques and policy simulations. Sample of 115 countries were used for the period 1993-2012. The result revealed that globalization helped in reducing income inequality in advanced countries but has the opposite effect in low income economies. Also, while trade worsens income distributions, FDI have impact in reducing income inequality.

Dogan (2016) examined the effects of globalization on employment in Turkey using the Bounds Test Approach. The data was between 1970 and 2011. The study revealed that globalization has positive effect on employment in the long run. Using a panel data set of 44 developing countries between 1980 and 2014, Miraju, Iftikhar and Iftikhar (2016) investigated the effect of globalization on income inequality. The GMM estimation technique was used for data analysis. The result showed that in overall globalization could not explain income inequality, but insights for the positive relationship could be found between economic globalization and income inequality in the sampled countries.

Konyeaso (2016) examined the impact of globalization on Nigerian economy between 1986 and 2013 applying the multiple regression analysis. The result established a positive relationship between globalization and economic growth. Neagu, Dumiter and Braica (2016) empirically analyzed the link between economic growth and income inequality on one hand and the link between trade openness and income inequality on another. Panel data analysis was done for ten countries from Eastern and Central Europe between 2000 and 2014. The result showed a positive association between increase in economic growth and increase in income inequality. Also, trade openness increased income inequality.

Kilic (2015) investigated the effects of globalization on economic growth for developing countries between 1981 and 2011. Fixed effects least squares method and Granger causality test developed by Dimitrescu-Hurlin (2012) were used for analysis. The result revealed that economic and political globalizations had positive effects on economic growth while social globalization affected economic growth negatively. The result also showed two-way causality between economic globalization and economic growth while there was one-way causality between social globalization and economic growth.

Rahmon (2015) analyzed the impact of globalization on economic growth using selected South Asian countries for the period 1981 to 2011. The study applied descriptive, ordinary least square method and Granger causality for data analysis. The result showed a unidirectional and bidirectional relationship between globalization and economic growth in some of these countries. Shahid-Li et al (2015) also examined the relationship between globalization and macroeconomic stability in Pakistan between 1980 and 2014. ARDL was used for data analysis.

The short-run result showed that globalization negatively affects instability while the long run result was ambiguous.

METHODOLOGY

The study area for this study is West Africa and the sampled period was between 1990 and 2019. West Africa is made up of 16 countries which include the Republic of Benin, Burkina Faso, Cape Verde, Ghana, Gambia, Guinea, Guinea Bissau, Mali, Mauritania, Nigeria, Niger Republic, Togo, Ivory Coast, Liberia, Senegal and Sierra Leone.

Data for this study were collected from secondary sources. Data on real GDP, human capital, inflation were obtained from the World Bank World Development Indicators (WDI).. Data on Overall and Economic globalization indices were obtained from the KOF globalization index (updated version). The variables' definitions, measurement and sources are summarized in Table 1 below:

Table 1: Definition, Measurement of variables and Sources of Data

Variables	Definitions	Measurement	Source
Economic Growth (<i>rgdp</i>)	Sustainable increase in outputs in the economy in real term.	GDP (constant 2010 US\$)	World Development Indicators (WDI) data base
Overall Globalization Index (<i>ogi</i>)	This comprises all globalization components or index.	KOF Globalization Index	KOF data base
Economic Globalization Index (<i>egi</i>)	The Economic globalization is subdivided to Actual flows and Restrictions.	KOF Globalization Index	KOF data base
Inflation (<i>inf</i>)	This is the rate at which the prices of goods and services rise in the economy.	Consumer Price Index (CPI)	WDI data base
Human Capital (<i>humc</i>)	This refers to the availability of human resources possessing requisite skills, knowledge, education and intelligence.	Primary School Enrolment	WDI data base

Source: Author's Compilation (2022)

Theoretical Framework

The extended Solow growth model referred to as Solow Model with an endogenous framework was adopted in this study. The extension estimated the Steady State Growth Rate (SSGR) using the estimated parameters of the production function specified by Rao, Tamazian and Valdanammati (2008) as:

$$Y_t = A_t K_t^\alpha \quad (1)$$

where $0 < \alpha < 1$ and

Y = per worker's output; A = stock of technology;

K = capital per worker; t = time

SSGR in Solow model equals the rate of growth of A. The Model assumed that the evolution of technology is given by:

$$A_t = A_0 e^{gT} \quad (2)$$

Therefore, substituting equation 2 to equation 1 becomes:

$$Y_t = A_0 e^{gT} K_t^\alpha \quad (3)$$

where A_0 is the initial stock of knowledge and T = time. Therefore, the steady state growth of output per worker equals g . The log-linear specification of the production function in equation 3 with the above assumption on the evolution of technology of equation 2 is:

$$\ln Y_t = \ln A_0 + gT + \alpha \ln K_t \quad (4)$$

However, it is assumed that:

$$A_t = f(T, Z_t) \quad (5)$$

Where Z is a vector of TFP-improving variable like Globalization index. Based on this, equation 5 becomes

$$A_t = f(T, glo) \quad (6)$$

where $f(T)$ and $f(glo) > 0$

Applying a simple linear specification, the extended production function is expressed as:

$$Y_t = A_0 e^{(g_1 + g_2 Z_t)T} K_t^\alpha \quad (7)$$

The Growth model with the modified production function implied that $SSGR$ is

$$\Delta \ln y^* = SSGR = rgdp + g_1 + g_2 glo_t \quad (8)$$

Where:

$\Delta \ln y^*$ is $SSGR$ or $rgdp$ and g_1 is interpreted as the parameter capturing the growth effect of other trended but ignored variables. g_2 captured the growth effects of glo which contains Overall Globalization Index and Economic Globalization Index.

Some other variables that have been identified in the literature as affecting growth were introduced. These include Human Capital (*humc*) proxied by Primary school enrolment and inflation (*inf*) which is used to capture macroeconomic stability. It should be noted that *humc* and *inf* are growth affecting and control variables. These control variables were used in order to avoid misspecification and to ensure that it conforms to standard growth literatures. More so, these variables have been found to have impact on growth. Previous studies have also used some of these variables (Sghaier and Abida, 2013; Samimi and Jenatabadi (2014); Boris and Vladimir, 2017 and Savrul and Incekara, A, 2017).

Model Specification

Following from the above discussion, the impact of Overall Globalization on economic growth was captured in equation 8. The equation was re-specified into a model of the form:

$$rgdp_{it} = \beta_0 + \beta_1 ogi_{it} + \varepsilon_{it} \quad (9)$$

The control variables that might impact on output were included which were *humc* and *inf*. In order to incorporate these control variables, we introduced (x) into equation 8 to represent all control variables. Therefore, equation 9 becomes:

$$rgdp_{it} = \beta_0 + \beta_1 ogi_{it} + \beta_2 x_{it} + \varepsilon_{it} \quad (10)$$

Incorporating these control variables into equation 10 becomes:

$$rgdp_{it} = \beta_0 + \beta_1 ogi_{it} + \beta_2 humc_{it} + \beta_3 inf_{it} + \varepsilon_{it} \quad (11)$$

Where:

$rgdp$ = Real Gross Domestic product; ogi = Overall Globalization Index;

$humc$ = human capital; inf = inflation

i = country; t = time

$\beta_1 - \beta_3$ are parameters to be estimated.

To capture the influence of Economic globalization on economic growth, the model is specified as :

$$rgdp = \beta_0 + \beta_1 egi_{it} + \beta_2 x_{it} + \varepsilon_{it} \quad (12)$$

Elaborating on the above sub-equation by incorporating the control variables into the equation becomes :

$$rgdp_{it} = \beta_0 + \beta_1 egi_{it} + \beta_2 humc_{it} + \beta_4 inf_{it} + \varepsilon_{it} \quad (13)$$

Where:

egi = economic globalization index

Estimation technique

Panel data regression is applied in this study. The panel data model can be Static or Dynamic panel methods. The static panel method comprised the Pooled Ordinary Least Square (POLS), the Fixed effects model and Random effects model. However, this study applied the use of Pooled OLS and the Fixed effect model. The panel regression for this type of model, according to Neagu et al (2016) is of the form:

$$Y_{it} = C + \beta_1 X_{it} + U_{it} \quad (14)$$

Where :

i denotes countries or identities

t denotes time

i denotes cross-section

t denotes the time-series dimension

c is a scalar

The Fixed effect model (static) is of the form:

$$Y_{it} = (C_0 + \theta_i \cdot D_i) + \beta \cdot X_{it} + \varepsilon_{it} \quad (15)$$

RESULTS AND DISCUSSIONS

Descriptive Statistics of the Variables

The descriptive statistics of the variables are presented in Table 2. The variables are reported in their natural logarithm forms. The variation between the maximum and the minimum values for most of the variables are not too large (mostly less than 5) except for RGDP. More so, all the variables displayed high level of consistencies because the mean and median of each series fall within the minimum and maximum of each series.

Table 2: Descriptive Statistics of the Data used for Regression Analysis

	<i>Rgdp</i>	<i>Ogi</i>	<i>Egi</i>	<i>Humc</i>	<i>Inf</i>
Mean	22.591	3.775	3.673	4.366	4.307
Median	22.498	3.804	3.710	4.414	4.438
Maximum	26.897	4.118	4.071	5.442	5.592
Minimum	19.584	3.242	3.145	3.265	0.771
Std. Dev.	1.512	0.194	0.202	0.375	0.707
Skewness	0.679	-0.446	-0.481	-0.890	-2.406
Kurtosis	3.539	2.485	2.350	3.614	11.201
Jarque-Bera	37.360	18.584	23.576	62.032	1582.028
	0.000	0.000	0.000	0.000	0.000
Probability					
Sum	9488.074	1585.498	1542.494	1833.859	1808.876
Sum Sq. Dev.	957.713	15.723	17.135	58.930	209.290
Observations	420	420	420	420	420

Source: Author's Computation (2022)

The Pair-wise correlation matrix presented in Table 3 indicated a positive and significant co-movement between overall globalization and economic growth in West Africa. All indices of globalization including human capital positively correlated with RGDP, inflation co-moved with RGDP negatively. Further, the pair-wise correlation matrix showed no evidence of multicollinearity as the independent variables are not highly correlated with one another.

Table 3: Correlation Matrix

	<i>Rgdp</i>	<i>Ogi</i>	<i>Egi</i>	<i>Inf</i>	<i>Humc</i>
<i>Rgdp</i>	1.000				
<i>Ogi</i>	0.343*	1.000			
<i>Egi</i>	0.083	0.683*	1.000		
<i>Inf</i>	-0.023	0.419*	0.196*	1.000	
<i>Humc</i>	0.010	0.477*	0.311*	0.226*	1.000

Note: Significant at 0.05 level Source: Author's computation (2022)

To avoid misleading regressions in panel data analysis, testing for cross sectional dependence in long Time (T) versus N (countries) cross-sections is essential. Given the extended time period (30years) and broad cross-sectional dimension (14 countries) of the variables in this investigation, the Pesaran (2004, 2013) CD-test for cross-sectional dependence was used to see if the series were correlated among panel members. The null hypothesis that the series reflect cross-sectional dependence was accepted for all variables as shown in Table 4

Table 4: Cross-Sectional Dependence Test (Pesaran, 2004; 2013)

	<i>CD</i>	<i>p – value</i>	<i>avg $\hat{\rho}_{ij}$</i>	<i>avg $\hat{\rho}_{ij}$</i>
<i>Rgdp</i>	48.77	0.00	0.93	0.93
<i>Ogi</i>	46.11	0.00	0.88	0.88
<i>Egi</i>	6.161	0.00	0.12	0.37
<i>Humc</i>	22.33	0.00	0.43	0.66
<i>Inf</i>	45.71	0.00	0.87	0.87

Source: Author's computation (2022)

Following the presence of cross-sectional dependency among the panel groups as revealed in Table 4, the Pesaran (2007) unit root test was used to test for the stationarity of each of the series. With a maximum lag order of 2 ($p = 0, 1, 2$), the test was run with both intercept, and then, intercept and trend specifications (Table 5).

Table 5: Pesaran (2007) Unit Root Tests Results.

PECAD F-Test	Level			First Difference		
Specification without trend (Intercept)	Lag 0	Lag 1	Lag 2	Lag 0	Lag 1	Lag 2
<i>Rgdp</i>	-1.762 (0.512)	-1.630 (0.705)	-1.506 (0.846)	-5.134 (0.000)	-3.530 (0.000)	-2.349 (0.000)
<i>Ogi</i>	-2.960 0.000	-2.792 0.000	-2.427 0.006	-5.388 (0.000)	-4.230 (0.000)	-3.129 (0.000)
<i>Egi</i>	-2.503 (0.002)	-2.293 (0.022)	-2.206 (0.046)	-5.539 (0.000)	-4.015 (0.000)	-3.100 (0.000)
<i>Humc</i>	-2.079 (0.117)	-2.329 (0.016)	-1.953 (0.240)	-4.047 (0.000)	-3.369 (0.000)	-2.250 (0.000)
<i>Inf</i>	-2.053 (0.137)	-2.058 (0.133)	-1.209 (0.046)	-4.472 (0.000)	-3.975 (0.000)	0.615 (0.731)
Specification with trend	Lag 0	Lag 1	Lag2	Lag 0	Lag 1	Lag 2
<i>Rgdp</i>	-1.910 (0.950)	-1.717 (0.992)	-1.447 (1.000)	-5.335 (0.000)	-3.760 (0.000)	-2.662 (0.000)
<i>Ogi</i>	-3.108 (0.001)	-2.799 (0.027)	-2.574 (0.154)	-5.503 (0.000)	-4.239 (0.000)	-3.271 (0.000)
<i>Egi</i>	-2.662 (0.084)	-2.526 (0.204)	-3.100 (0.000)	-5.596 (0.000)	-4.162 (0.000)	-13.214 (0.000)
<i>Humc</i>	-1.964 (0.924)	-2.241 (0.625)	-1.803 (0.981)	-4.212 (0.000)	-3.584 (0.000)	-2.539 (0.000)
<i>Inf</i>	-2.292 (0.544)	-2.422 (0.340)	-1.505 (0.999)	-4.553 (0.000)	-4.305 (0.000)	-4.343 (0.000)

Note: *, **, and * denote statistical significant at 1%, 5% and 10% respectively**

Source: Author's computation (2022)

As revealed in Table 5, when the model without trend ($p=2$) was applied, overall and economic globalizations indices were stationary at level and first difference. However, based on the analysis of stationarity with intercept and trend, *ogi* was not stationary at level but became stationary at first difference while *egi* was stationary at level and first difference.

Empirical Analysis and Results

In fulfilling the objectives of this study, the analysis was carried out using the Pooled OLS and OLS-Fixed effects methods. At first, we used the Least Square approach to make pool estimates of all the countries in the sample and then run the traditional Fixed Effects model. The OLS method implicitly assumed that countries possessed similar structural characteristics (the fact that are certainly not). The methodology cannot account for the unobserved country-specific effects, hence it could not account for the probable heterogeneity in the relationship between globalization and economic growth. For this reason, the OLS - Fixed effect was applied. In comparison to traditional OLS models, the fundamental advantage of fixed effects estimations is that potential sources of bias in the estimations are restricted.

The results of the static pooled OLS and fixed effects are presented in Table 7. The overall globalization showed a positive impact on RGDP by 0.03% at 5% significant level in the pooled OLS result. This implied that a 1% increase in the overall globalization index increased economic growth by 0.03% in West Africa between 1990 and 2019. In the Fixed effects estimate however, the coefficient of globalization was positive (0.17%) but not significant, confirming that there was no significant relationship between overall globalization and economic growth. The results obtained from pooled OLS confirmed a positive effect of overall globalization on economic growth in West Africa. These findings are consistent with many empirical studies in support of the beneficial effect of overall globalization on economic growth (see Dollar, 1992; Dreher, 2006; Cherkos, 2017; Hassan, 2020; Bataka, 2021).

Table 7: Result of Regression on the Impact of Overall Globalization on Economic Growth in West Africa

VARIABLES	(1) OLS	(2) Fixed Effect
<i>L.rgdp</i>	0.999*** (0.002)	0.910** (0.021)
<i>Ogi</i>	0.027** (0.019)	0.169 0.050
<i>Humc</i>	0.012*** (0.008)	0.021** (0.018)
<i>Inf</i>	-0.004*** (0.005)	0.013*** (0.006)
<i>Constant</i>	-0.0124 (0.084)	1.223*** (0.268)
<i>Observations</i>	406	406
<i>R-squared</i>	0.789	0.766

Note: *, **, and * denote statistical significant at 1%, 5% and 10% respectively**

Source: Author's Computation (2022)

Table 8 provided the estimates about the contribution of economic globalization to economic growth in West Africa. The OLS result revealed that economic globalization exerted significant influence on economic growth in West Africa by 0.02% at 5% significant level. This showed that a 1% increase in economic globalization brought about a 0.02% increase in economic growth. The R-squared result showed that 71% change in economic growth was explained by economic globalization. However, considering the estimate of the fixed effect, the coefficient of economic

globalization showed positive impact of 0.07% at 5% significant level. This implied that a 1% increase in economic globalization promoted economic growth in West Africa by 0.07 %.The R-squared result also reflected that 98% change in economic growth was explained by economic globalization.

These results are consistent with the findings of Tekbas (2021), Samimi and Jenatabadi (2014) and Ying et al (2014) .However, while Monika et al (2019) revealed a positive relationship between economic globalization and economic growth in the short run, a negative relationship was found in the long run. Radulovic and Kostic (2020) result also showed that in the short run, economic globalization had positive impact on economic growth.

Table 8: Result of Regression on the Impact of Economic Globalization on Economic growth in West Africa

VARIABLES	(1) OLS	(6) FE
<i>Lrgdp</i>	1.000*** (0.002)	0.943*** (0.016)
<i>Egi</i>	0.016** (0.015)	0.074** (0.021)
<i>Humc</i>	0.015* (0.008)	0.043** (0.018)
<i>Inf</i>	-0.003 (0.004)	0.015** (0.006)
<i>Constant</i>	-0.117 (0.087)	0.755*** (0.236)
<i>Observations</i>	406	406
<i>R-squared</i>	0.719	0.986
<i>Number of c-id</i>		14

Note: *, **, and * denote statistical significant at 1%, 5% and 10% respectively**

Source: Author's Computation (2022)

CONCLUSION AND RECOMMENDATION

This study investigated the effects of overall and economic globalization on economic growth in West Africa between 1990 and 2019. The pooled OLS and Fixed effect methods were applied for data analysis. The cross-sectional dependence test showed the existence of dependence among countries in West Africa. The results of the analysis also revealed that overall and economic globalizations had positive and significant impact on economic growth of West Africa between 1990 and 2019..Therefore,,it is concluded that overall and economic globalizations are parts of the significant driver of economic growth in West Africa. Deriving from this, it is recommended that efforts should be made by government to boost overall and economic globalizations through increasing export and trade, encouraging FDI and capital inflows

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