The Effects of Foreign Direct Investment Uncertainty on Financial Development in Nigeria: An Asymmetric Approach

The current paper is concerned with examining the impact of foreign direct investment uncertainty on financial development in Nigeria and the interactive role of financial inclusion and economic growth. The study utilizes data from the time series for the period 1970-2018. Gregory and Hansen (1996) co-integration strategy, Non-linear ARDL as the elasticity estimator and Diks and Panchenko (2006) causality test were deployed for the data set analysis. The outcome of the co-integration indicates that a long-run relationship existed between the variables. The result confirms the evidence of foreign direct investment uncertainty asymmetry with regards to financial development. The findings also show the presence of non-linear unidirectional causality between economic growth and financial development. It also displays a one-way causality between foreign direct investment uncertainty that leads to financial development. Likewise, a one-way causality of financial inclusion leading to financial development was observed. The author proposed the needed policy recommendations to strengthen the Nigerian financial sector.

Keywords: *Non-linear ARDL, Diks, and Panchenko, Gregory Hansen, Interaction, Financial Development*

Introduction

Theoretically, financial globalization promotes a legal distribution of foreign capital and enhances the spread of external threats. Meanwhile, the advantages are said to be more crucial for developing countries, and research on the matter still accommodates the debate of researchers as to the issue of which financial situation is pre-requisite to actualize the advantages of financial globalization. Whereas some part of scholars as well believe that financial globalization is a phenomenon that promotes global financial uncertainty with a significant negative impact on growth (Stiglitz, 2000; Bhagwati, 1998; Rodrik, 1998).

On the other hand, another class of scholars also sees financial globalization as a trend that fosters financial instability which allows for the development of domestic financial system Farouq (2020) and Asongu and Tchamyou (2015), this argument endorsed the notion that the uncertainty of financial integration is a camouflage advantage to the financial system of a country that made use of it, in anticipation of these uncertainties.

It appears that developing countries that had witnessed rises in external capital flows at one time had to battle with a decrease in the same capital flows during the global financial crisis of recent the time 2007 (Kose et al., 2011). The conflicting arguments as to whether the advantage effects of current financial innovation undoubtedly surpass their deficiencies that overwhelmed the capital flow instability studies (Asongu et al. 2015). To be precise, it is still

an open debate to ascertain the benefits of financial globalization for developing economies like Nigeria.

Given that a relatively satisfactory unanimity on trade globalization benefits exists (Asongu, 2014), the advantages of financial globalization still maintain some great contradictions. With a post-world financial global crisis of 2007, the dimension of research sees the disadvantages of foreign capital flows. Kose et al. (2011) considering the adverse effects of financial globalization coupled with a weak domestic financial system; Rajan, Prasad (2008) having highlighted why should countries integrate with the rest of the world given their specific features; Asongu and De Moor (2015) the thresholds of financial globalization for positive results in local development.

However, finance-growth nexus got attention ever since the evolutionary research of Schumpeter (1911), in which the scholar statistically analyzed the level to which financial development enhances economic growth. The acceleration of economic growth emerged when the financial sector mobilizes savings and channels the mobilized savings to other productive sectors of the economy. Goldsmith (1969) later supported the idea. Greenwood & Jovanovic (1990), Ghirmay (2004), Agbetsiafa (2004), Abu Bader & Abu Qarn (2008), Levine & Zervos (1993) also were among the scholars to support the argument. This category of scholars termed 'supply leading hypothesis.'

Additionally, demand following is another class of scholars whose argument were economic growth induces financial development as a result of demand for financial services. That means that when an economy grows and the economic activities as well increases, which leads to the rise in the demand for financial resources and consequently triggers financial expansion and development. Odhiambo (2008) & Robinson (1952) were among the early contributors to this class.

Moreover, the fourth category of scholars comprising Hussein & Demetriades (1996); Akinboade (1998), Smith & Greenwood (1997) argued that the causal relationship between economic growth and financial development is bidirectional. Meanwhile, the last category of scholars argued that there might be no relationship between the variables. Lucas (1988) argued that many economists had overstated the influence of financial development concerning economic growth. Atindehou et al. (2005) also succumb to the argument.

Conversely, should we look at the role financial inclusion plays in this country's financial sector, given the low turnout when it comes to financial accessibility because, on average, not more than 20 percent of households have access to financial services in Africa (IFAD 2011)? The reasonable part of the population uses an informal financial system that is not involved in the structure and technical needs of the financial system. Given that, it could be the rationale behind the surplus liquidity this economy seems to be fighting with because most of their financial institutions are left with the resources idle instead of been utilized in the productive sectors of the economy, which subsequently dampen the performance of the financial institutions.

Having highlighted that, this paper strives to relate to this increasing line of thought by empirically examining the effect of foreign direct investment uncertainty on financial development in Nigeria and the interactive role of financial inclusion and economic growth. The analysis considers the sample data of a Nigerian economy from 1970-2018. Among the distinguishing features of this paper is that (i) it uses four financial development components: financial system depth, Banking System Efficiency, Banking System Activity, and Financial Size through the application of Principal Component Analysis.

Since previous researchers mostly used financial system depth and because financial development is multidimensional, the size index alone might not give the actual picture of the financial development (Cihak et al. 2013; World Bank 2012); (ii) the study considers the asymmetric relationship of foreign direct investment inflow uncertainty and interacting role of financial inclusion with economic growth, knowing clearly that this economy is increasingly integrating with other financial sectors across the globe and coupled with the challenges of uncertainty in the capital flow; (ii) there are conflicting views as to whether its decrease or increase affects the Nigerian financial development positively or otherwise; (iii) Based on the papers we have seen so far, there has not been a study that considers the asymmetric nature of the relationship between this uncertainty and financial development, as the past studies paid attention mostly to the linear relationship (Asongu 2015; and Sulong 2020).

Prevailing Issues

It is necessary to note that the present paper takes in to account the underdevelopment of the Nigerian financial system. Because even with success recorded as a result of financial sector reforms designed to strengthen the financial system, still, this financial sector seems not developed even when compared to other financial sectors of the developing world (World Bank, 2017). The average percentage of African financial development, having analyzed via domestic credit by banks to the private sector, was 20.56%. Meanwhile, South Asia has 46.8%, and Nigeria recorded 10.9% (International Monetary Fund 2018). This is what kept the country behind other developing countries. It is also clear that Nigerian financial system development according to the measurement, stands to be the least in the top eight leading African economies.

Taking into account the above problem and as well considering the following, that motivates this author to come up with the present study: (i) As World Bank (2018) has shown that almost half of the Nigerian population are living under the poverty line, and as financial development is poverty curtailing (Efobi et al. 2017), Financial role throughout the post-2015 development approach seems crucial (Asongu & De Moor 2015). (ii) The issue of excess liquidity in the Nigerian financial institutions, which hinders financial access for individuals and businesses, is also significant in Nigeria's' financial development studies (Asongu, 2014). Recent research is in agreement that

access to finance in the country has been limited by liquidity surplus (Saxegaard, 2006; Fouda, 2009; Asongu et al., 2016).

Literature Review

The deliberation on which to acknowledge whether the foreign capital flow is beneficial or not for local development stands open in both decision-making and scholarly stream. Consistency with Asongu (2014a), the two strands of the studies open up to the debate in developing economies. Firstly, Solow (1956) records that a potential advantage could emerge as a result of the efficient allocation of resources. The neoclassical was precisely in line with the presumptions that liberalization of capital flow paves the way to international risk sharing.

Furthermore, weak economies with no efficient capital resources but endowed with the labor force are given more financial resource accessibility needed for investment, growth, and rise with the advanced world. Obstfeld (1998), Fischer (1998), Rogoff (1999), Summers (2000) and Batuo and Asongu (2015) were among the researchers that appreciate the fact that developing economies could benefit from increased investments, decreased in cost of capital, more exceptional living standard and sustainable growth resulting from financial globalization. These debates have been taken forward by the majority of the developing economies to substantiate the liberalization of capital flow decisions for the past decades.

Another league of the studies sees financial integration as an imaginary attempt to expand the advantages of international trade commodities to foreign trade in assets (Asongu 2014a). In line with this, the advantages of financial integration are increasingly deemed, among other things: instabilities, financial crisis spread as well as a growing dependence on foreign debt. These are some of the issues that keeps on deteriorating business activities. Leung (2003) argued that it promotes inequality, while Azzimonti et al. (2014) believe that it reduces productivity and efficiency.

Thus, given the recent global financial crisis, more evidence of the uncertain nature of financial integration come to reality (Asongu et al. 2015). Relevant studies concerning African financial system development were argued in 3 main classes, namely, instability in growth, financial flows (e.g., FDI, aid, and remittances), other macroeconomic outcomes and, financial development. Brambila-Macias and Massa (2010) have analyzed the data set of the 15 African countries, thereby examining the linkages between foreign capital flows and economic growth. They concluded that due to capital flow instability, it becomes likely that the financial crisis would bring about negative spill-overs on the performance of the economy.

Another research of Chauva and Geis (2011), highlights a comprehensive measure on some of the determinants associated to instability and the crisis, noticeably: the impacts of the crisis on economic sustainability; the significance of distribution channels; fiscal and monetary policy challenges in

return; medium and long-run challenge associated to viable recovery and fence against potential crises. Meanwhile, Price and Elu (2014) analyzed the extent to which macroeconomic uncertainties are propelled by regional currency integration amid uncertainty and financial crisis. While analyzing the data set of the Central African Franc Zone (CFAZ), the authors concluded that growth-driving credit shortening becomes more evident in CFAZ economies.

Data and Methodology

Data

This paper generated its data for the analysis from the Financial Development and Structure Database and African Development Indicators of the World Bank Group to assess the data set of the Nigerian economy for the year 1970-2018. The reason for using Nigeria as a case study was discussed in the introduction.

The financial Development index in this study is constructed using principal component analysis, and it comprises four financial development components: financial system depth, Banking System Efficiency, Banking System Activity, and Financial Size while GDP annual growth percentage measures economic growth.

Also, financial globalization uncertainty is measured as the standard error standing to the first auto-regressive lag of Net FDI inflows, values of the residuals are derived by regressing the parameters on its lagged value with a time trend (Ahmad 2018). The fluctuation rate in the residual values over the years denotes the uncertainty in the financial globalization.

Meanwhile, for financial inclusion, the study considers three basic dimensions of an inclusive financial system: banking penetration (BP), availability of the banking services (BS), and usage of the banking system (BU).

Empirical Findings

The analysis of the present study is built on the endogenous growth model. The Cobb-Douglas model is usually applied by many academics and researchers to examine the influence of any other determinant affecting economic growth. Rateiwa (2017); Sainz-fernandez (2018); and Tsaurai (2018). where some of the past studies that used the model. The paper adopts the endogenous growth model due to the lack of explicit modeling in the finance theory. Below is the initial model:

$$M_t = Y_t^{\partial} \, (H_i + A_t)^{1-\partial} \qquad (1)$$

Where M_{it} is the GDP, Y_{it} indicates capital A_{it} denotes labor; while H_i stands as technology. This study will expand the equation (1) earlier stated above, thereby introducing the variables this study intends to use:

$$LNFD_t = (1-\partial)_{y1i} LNGDP_t + (1-\partial)_{y1i} LNFGU_t + (1-\partial)_{y1i} LNFI_t + u_t \quad (2)$$

Gregory and Hansen (1996) Co-integration

We further use a residual-based approach of Gregory and Hansen's co-integration test, considering its superior advantages. The technique gives unknown structural breaks. It further provides three different types of tests, which comprise level, trend shift, and regime shift. The advantage of this approach is that at a time, the author might like to test for co-integration and in the process, a shock may emerge in which the author may not likely know the exact timing. This can be termed as an unknown break, although the technique gives the exact date.

This technique is Eagle and Granger (1987) extension analysis that includes analyzing the null hypothesis of no-co-integration. Correspondingly, an alternate hypothesis of the existence of a long-run relationship with an unknown structural break in the formation of time series data based on ADF, Za, and Zt test. The analyzing conditions are to reject the null hypothesis when the absolute value of ADF or Zt, statistics is statistically beyond 5 percent; otherwise, the null hypothesis would not be rejected.
The three models are:

$$x_{1t} = \omega_1 + \omega_2 Q_{t\pi} + \alpha^1 y_{2t} + e_t \quad t = 1, \dots \dots n. \ (3)$$

The preceding equation denotes the resulting pattern, but it restricts a level change in the switch.

$$x_{1t} = \omega_1 + \omega_2 Q_{t\pi} + \aleph_t + \alpha^1 y_{2t} + e_t \quad t = 1, \dots \dots n. \ (4)$$

The following equation makes changes in the co-integration intercept and slope vector.

$$x_{1t} = \omega_1 + \omega_2 Q_{t\pi} + \alpha^1 y_{1t} + \alpha_2^1 y_{2t} Q_{t\pi} + e_t \quad t = 1, \dots \dots n. \ (5)$$

The dummy variable deals with the structural break.

$$\emptyset_{t\pi} = \begin{cases} 0, & t \leq [n\pi] \\ 1, & t > [n\pi] \end{cases}$$

Where π = (0,1) is the corresponding speck of changing the timing, the distance of this timing is typically captured as (0.15n, 0.85n). From one to

three versions are calculated in sequence, with the size of the split varying the interval $\pi = (0,1)$.

Table 1. *Gregory Hansen Test at Level, Trend, and Regime*

Test	Statistic	Breakpoint	Date	CV 1%	CV5%	CV10%
Zt	-5.49	41	2015	-5.77	-5.28	-5.02
Zt	-5.90	19	2015	-6.05	-5.57	-5.33
Zt	-6.30	17	2015	-6.51	-6.00	-5.75

The Gregory and Hansen co-integration result reveals the existence of long-run relationships at a 5% level of significance, both at level, trend, and regime. This is authentic, looking at the Zt-statistics of the three tests, which shows the values more significant than the critical values. It also confirmed the unknown structural break of 2015 as given by the Zivot and Andrew unit root test.

Long-run Estimate

The fact that this study attempts to assess the asymmetric nature of the relationship between financial globalization uncertainty and financial development, we, therefore, apply a nonlinear auto-regressive distributed lag (NARDL) estimate. The NARDL approach is a non-linear version of the ARDL technique. Pesaran, Shin, and Smith (2001) developed the approach and extended by Shin, Yu, and Greenwood (2009) through partial sum decomposition. The technique takes care of serial correlation and the correct endogeneity problem. It also considers the potential asymmetric variations to the motion of financial development in the value-added sector.

The method demands the value of the variable to be decomposed. The analysis, thus, breaks down FGU into negative and positive sub-components. FGU Positive and FGU Negative denotes the sums of partial negative and positive changes. They are calculated as follows;

$$M_t = \alpha^+ Y_t^+ + \alpha^- Y_t^- + u_t \quad (6)$$

where M_t is the f × one vector of financial development, t stands for the period; Y_t is the f × one vector of multiple regressors given that $Y_t = Y_0 + Y_t^+ + Y_t^-$, as a natural logarithm of financial globalization uncertainty; μt denotes error term; α^+ and α^- Are the long-run relationship asymmetric variables representing financial globalization uncertainty asymmetrically responding during the increase and decrease times.

The $Y_t^+ + Y_t^-$ are fractional sum actions of negative (–) and positive (+) dynamics in Y_t defined as:

$$Y_t^+ = \sum_{m=1}^{t} \Delta Y_m^+ \,;\; Y_t^- = \sum_{m=1}^{t} \Delta Y_m^- \quad (7)$$

$$\Delta Y_m^+ = \sum_{m=1}^{t} \max(\Delta Y_m, 0) \,, \Delta Y_m^- = \sum_{m=1}^{t} \min(\Delta Y_m, 0) \quad (8)$$

were ΔY_m stands for changes in economic growth variables (Y_t) as the '+' and '−' symbols show a positive and negative mechanism around zero thresholds, demarcating the negative and positive FGU parameter shocks. This means that at first uncertainty, we are supposed to have a normal distribution of the series.

The accumulated asymmetric functional multiplier results of a switch in component Y_t *on* X_t would be derived through the following equation:

$$h_m^+ = \sum_{j=0}^{m} \frac{dX_{t+j}}{dY_t^+}, h_m^- = \sum_{j=0}^{m} \frac{dX_{t+j}}{dY_t^-}; m = 0,1,2 \qquad (9)$$

where m $\rightarrow \infty$, $h_m^+ \rightarrow \theta^+$ and $h_m^- \rightarrow \theta^+$ are the dynamic adjustment patterns.

Table 2. *Estimation Result of NRADL*

Short-run Estimate

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.367	0.164	2.237	0.031**
LFDV (-1)	0.176	0.086	2.046	0.0483**
LFGU_POS (-1)	0.205	0.038	5.395	0.000*
LFGU_NEG (-1)	1.314	0.629	2.090	0.045**
FI	0.179	0.267	0.670	0.508
GDP	0.81	0.188	4.345	0.000*
INT	1.022	0.308	3.318	0.000*
TB	-0.102	0.025	-4.080	0.000*
F-Statistics				
2.264**				
R-squared				
0.564				
Adjusted R-squared				
0.314				

Note: * and ** represents a 1 and 5 percent significance level. FDV= financial development, GDP= gross domestic product, FDI= foreign direct investment, INT= interaction of FDI and GDP

Long-run Estimate

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LFD (-1)	1.066	0.360	2.959	0.006*
LFGU_POS (-1)	0.317	1.341	2.362	0.025**
LFGU_NEG (-1)	0.330	1.400	2.362	0.025**
FI	0.542	0.124	4.370	0.000*
GDP	0.354	0.085	4.354	0.000*
INT	0.128	0.038	3.368	0.000*
TB	-0.201	0.055	-3.654	0.000*

Note: * and ** represents a 1 and 5 percent significance level. FDV= financial development, GDP= gross domestic product, FDI= foreign direct investment, INT= interaction of FDI and GDP

Studying the result given above through the NARDL estimate, the asymmetric relationship between FGU and FD seems to exist. Looking at the long-run result from where we see a 1-unit increase in FGU, it will lead to 31% increment in the Nigerian financial sector development. This result is consistent with the findings of Asongu (2015), where it reveals that some of the African countries take the advantages of this uncertainty in developing their financial sectors, thereby allocating the available surplus resources to other productive sectors of the economy whereas the 1-unit decline in FGU would result to 33% percent decrease in Nigeria's financial system development.

Logically, a decrease in financial globalization uncertainty implies an increase in foreign capital flow, which the increase might appreciate the local currency and subsequently affects the country's foreign market competition that may reduce its exports. This will adversely affect its financial sector as a result of less loan patronage and even results in bad loans. While in the words of Asongu (2012), a logical explanation for this negativity is that with financial globalization, foreign banks have a comparative advantage in the service sector, thus decreasing the proportion of private credit from domestic banks.

Considering the value of coefficients concerning both the positive and negative composition of financial globalization uncertainty in relation to the response of financial development, we can see that while the positive dimension has 31%, the negative composition records 33%. Moreover, based on these values, we can say that the negative response about the shocks is more pronounced than the positive.

However, an increase in financial inclusion enhances their development of the financial sector at a 1% level of significance, which translates that a unit increase in FI brings about a 54% increase in FD. Likewise, a statistically positive relationship exists between GDP and FD. A unit increase in GDP as well as results in a 35% rise in FD. Moreover, for the interaction term, an increase in financial inclusion coupled with the presence of economic growth brings about a 12% improvement in the Nigerian financial sector development.

Conversely, the global financial crises based on the dummy result highlighted in the estimation above, reveals that a negative relationship exists between the crises and the financial development. Meaning that a unit increase in the crises pulls down the Nigerian financial sector by 20 percent in the long-run, while 10% in the short-run.

Diks-Panchenko Nonparametric Granger Causality Test

The modification of nonlinear Granger causality test pioneered by Hiemstra and Jones (1994) remains Diks and Panchenko (2006). The modified version argues that the Hiemstra-Jones test does over-rejects no causality null hypothesis while increasing the sample size. The paper uses the Diks-Panchenko test for the nonlinear causality between the parameters. To accept the existence of a causal relationship, the null hypothesis must be rejected:

H_o: $[X_t]$ cannot Granger cause $[Y_t]$, given as:

$$\boldsymbol{Y_{t+1}}\left|\left\{\boldsymbol{X_t^{ix}}, \boldsymbol{Y_t^{iy}}\right\} - \boldsymbol{Y_{t+1}}\right|\boldsymbol{Y_t^{iy}} \quad (11)$$

$$meanwhile, \tau_x \; and \; \tau_y \; denotes \; lags, and$$

$X_t^{\tau x} = (X_{t-\tau x+1} \ldots\ldots\ldots\ldots . . X_t)$ and $Y_t^{\tau y} = (Y_t - \tau y + 1 \ldots\ldots\ldots\ldots . . Y_t)$

System (3) is a hypothesis about the invariant distribution of the time series for a purely stationary bivariate$\left[\tau x + \tau_y + 1\right]$ dimensional vector

$$w_t = (X_t^{\tau x}, Y_t^{\tau}, Z_t) \text{ while } Z_t = Y_{t+1} \quad (12)$$

This equation clearly states that for each fixed value of y, x and z are conditionally independent on Y = y.
Then the null hypothesis of no nonlinear causality:

$$\beta g \equiv \varepsilon\{fx, y, z(x, y, z).fy(y) - fxy(x, y).fy, z(y, z)\} = 0 \quad (13)$$

Table 3. *Diks-Panchenko Granger causality test*

Direction of Causality	t-statistics	P-value
LFD does not cause LGDP	0.870	0.190
LGDP does not cause LFD	1.991	0.023**
LFD does not cause LFGU	0.974	0.165
LFGU does not cause LFD	1.813	0.0349**
LFD does not cause LFI	0.631	0.736
LFI does not cause FD	2.119	0.035**

The above result of asymmetric causality reveals the presence of non-linear unidirectional causality between economic growth running to financial development. This result supports the demand push hypothesis of Odhiambo (2008) & Robinson (1952), among others. This is very true because Nigeria as being one of the essential oil-producing countries in OPEC and, coupled with the increasing effort been put to diversify its economy, as such other productive activities within the economy do not always come from their financial sector, preferably from the public sector.

This improvement in other productive sectors within the economy might translate and trigger the increasing demand for financial services, which subsequently affects the sector positively. It also displays a one-way causality between foreign direct investment uncertainty that leads to financial development through the use of public sector funds to develop the sector as the government mostly dominates it. Likewise, it shows a one-way causality of financial inclusion leading to financial development. Which means, through people's participation and increasing access to the teaming population to the financial services, the Nigerian financial sector will develop.

Descriptive Statistics and Correlation Analysis

Below tables 4 and 5 shows the descriptive summary and correlation analysis of the Nigerian economy. It can be seen that the mean values are more significant than the Standard deviation, which means the data is usually

collected. Jarque-Bera Statistics variables' coefficients show the mean distribution of frequencies.

Table 4. *Descriptive Statistics*

Variables	Mean	Standard deviation	Skewness	Kurtosis	Jarque-Bera
LFD	4.086	1.757	-0.116	2.195	1.431 (0.488)
LFGU	0.577	0.112	-0.336	2.455	1.531 (0.465)
LGDP	1.487	0.994	-2.089	9.156	113.051 (0.000)
LFI	0.451	0.413	-1.457	5.556	30.695 (0.000)

Table 5. *Correlation Analysis*

Correlation				
Probability	LFD	LFGU	LGDP	LFI
LFD	1.000000			

LFGU	0.176	1.000000		
	0.226	-----		
LGDP	0.370	0.071	1.000000	
	0.008	0.625	-----	
LFI	0.310	-0.108	0.288	1.000000
	0.029	0.459	0.000	-----

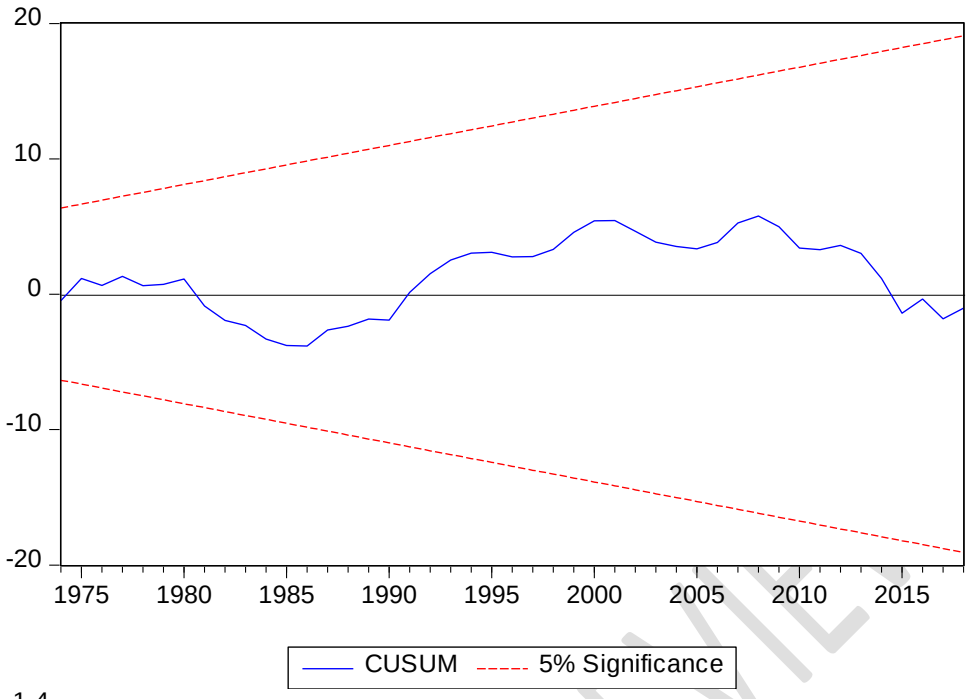
Table 6. *Diagnostic Tests*

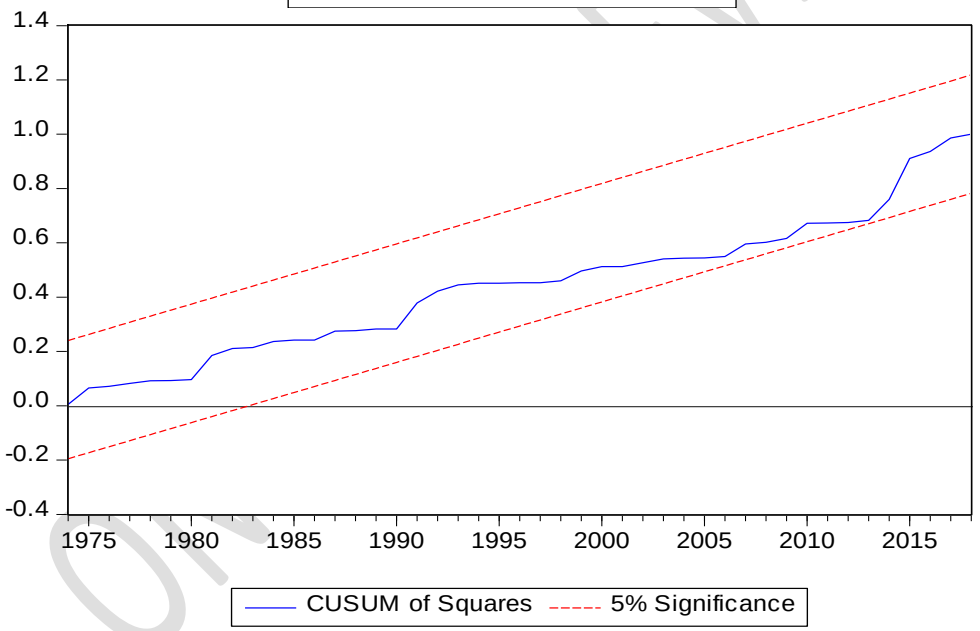
	Normality Test	Serial Correlation	Heteroscedasticity
FD=F(EG, FDI)	0.562 (0.6935)	0.928 (0.573)	2.713097 (0.2575)

All the above diagnostic tests reveal that we cannot accept the alternate hypothesis; this is because the p-values are not significant, even at 5%. With that, we accept the null hypothesis, meaning the model is free from heteroscedasticity and serial correlation; meanwhile, the normality test shows that the data is standard.

Stability Test

The following CUSUM and CUSUM Square tests show the stability nature of the data to the long and short run at a 5% level of significance.





Unit Root Test

For the unit root tests, this paper applied Zivot and Andrew, Dicky Fuller, and Phillips Peron in order to have a robust result. Given the results below, all the variables reveal to be stationary, though ADF and PP show mixed stationarity, the Zivot and Andrew result shows the stationarity of the series at first deference.

Table 7. *Zivot and Andrew*

	t stat - 1st diff.	P value - 1st diff.	Brk Date - 1st diff.

LFD	-10.75356	< 0.01	Break Date: 2015
LFI	-10.59838	< 0.01	Break Date: 2016
LGDP	-12.47363	< 0.01	Break Date: 1988
LFGU	-19.42235	< 0.01	Break Date: 1974

Table 8. *ADF and PP Unit Root Test*

Variables	ADF		PP	
	At level	At first different	At level	At the first diff
LFD_{it}	-1.464 (0.542)	-5.869* (0.000)	-1.607 (0.775)	-4.189* (0.009)
$LFGU_{it}$	-1.434 (0.898)	-3.994* (0.003)	-1.511 (0.811)	-3.967* (0.016)
$LGDP_{it}$	-1.304 (0.198)	-6.467* (0.000)	-4.572 (0.003)	-19.639* (0.000)
LFI_{it}	-0.369* (-3.806)	0.698* (4.179)	1.399** (2.091)	0.557* (3.115)

Notes: ** and * denotes in 5% and 1% levels. the *p*-values are in the brackets

Table 9 Optimal lag Selection Criteria

Table 9. *Lag Selection Criterion*

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-82.99937	NA	0.009174	3.822194	3.942638	3.867095
1	-20.75131	113.4298*	0.000862	1.455614	1.937390*	1.635215*
2	-11.35263	15.87332	0.000852*	1.437895*	2.281004	1.752197
3	-6.153762	8.087135	0.001024	1.606834	2.811276	2.055838
4	5.005819	15.87140	0.000957	1.510853	3.076627	2.094557

* indicates lag order selected by the criterion

As the study uses asymmetric econometric techniques such as Gregory Hansen co-integration test and Diks and Pachenko Causality tests, the paper uses optimal lag selection criteria in choosing the correct lag. Five selection criteria for lags are considered in the above table. The lowest-value test gives us the optimal lag.

BDS Independence Test

Table 10. *BDS Test for LFD*

Dimension	BDS Statistic	Std. Error	z-Statistic	Prob.
2	0.162	0.013	12.461	0.000
3	0.263	0.022	11.955	0.000
4	0.319	0.026	12.269	0.000
5	0.345	0.027	12.777	0.000
6	0.347	0.027	12.851	0.000

Table 11. *BDS Test for LFI*

Dimension	BDS Statistic	Std. Error	z-Statistic	Prob.
2	0.070	0.015	4.662	0.000
3	0.086	0.024	3.507	0.000
4	0.059	0.030	1.966	0.049
5	0.040	0.032	1.263	0.206
6	0.059	0.031	1.887	0.059

Table 12. *BDS Test for LGDP*

Dimension	BDS Statistic	Std. Error	z-Statistic	Prob.
2	0.038	0.012	3.166	0.000
3	0.056	0.019	2.947	0.004
4	0.074	0.023	3.217	0.000
5	0.081	0.025	3.238	0.001
6	0.077	0.024	3.153	0.001

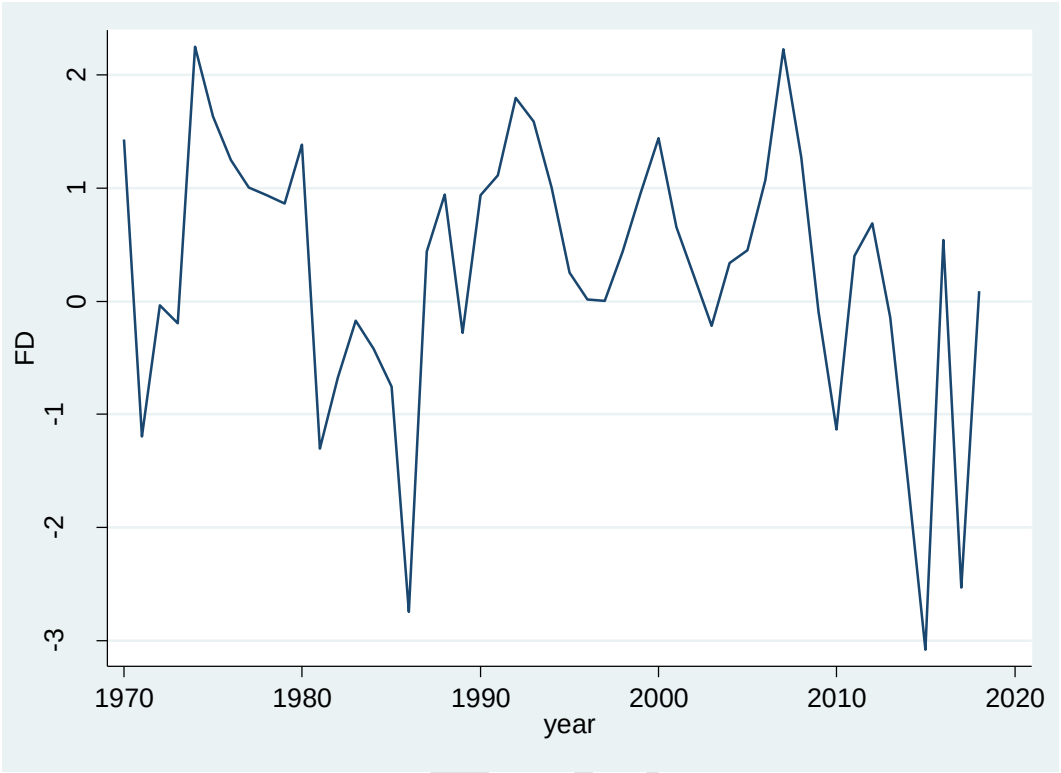
Table 13. *BDS Test for LFGU*

Dimension	BDS Statistic	Std. Error	z-Statistic	Prob.
2	0.066	0.011	5.847	0.000
3	0.134	0.018	7.303	0.000
4	0.172	0.022	7.690	0.000
5	0.192	0.023	8.107	0.000
6	0.197	0.023	8.456	0.000

TSline

This research analyses the asymmetric role of financial globalization uncertainty, the interacting role of financial inclusion, and economic growth in the Nigerian economy. The study uses the Gregory Hansen co-integration technique, thereby given us the actual breakpoint concerning the country's financial sector. Below figure 1 shows the TSLINE test, which confirms the presence of a break in the data.

Figure 1. *TSline*



Conclusion and Recommendations

This study analyzed the asymmetric nature of the relationship between financial globalization uncertainty and financial development and examined the interacting role of financial inclusion and economic growth on financial development. The paper uses the data set of the Nigerian economy covering the year 1970 to 2018.

The asymmetric estimation result reveals that the coefficients' values concerning both the positive and negative composition of financial globalization uncertainty about the response of financial development record 31% in terms of the positive dimension, the negative composition records 33%. Moreover, based on these values, we can conclude that the negative response concerning the shocks is more pronounced than the positive.

However, an increase in financial inclusion enhances the development of the financial sector, which means that a unit increase in FI brings about an increase in FD. Likewise, a statistically positive relationship exists between GDP and FD. An increase in GDP as well as results in rising in FD. Furthermore, for the interaction term, an increase in financial inclusion coupled with the presence of economic growth brings about a 12% improvement in the Nigerian financial sector development.

Conversely, the global financial crises based on the dummy result highlighted in the estimation show that a negative relationship exists between

crises and financial development. Meaning that a unit increase in the crises pulls down the Nigerian financial sector by 20 percent in the long-run, while 10% in the short-run.

However, we have seen how the causality results revealed a one-way causality running from economic growth, financial globalization uncertainty, and financial inclusion to financial development.

Recommendation

Having seen that, this paper is at this moment recommending to the Nigerian policymakers to look outside the box and come up with reforms and policies that will help its local financial sector and protect the domestic investors from being able to compete extensively even in the event where more foreign capital flows gain its way into the economy. Thereby regulating the flows and making sure that the resources are not only concentrated in one primary sector; instead, it should be diversified to other productive sectors to increase the real sector activities.

Moreover, the issue of global financial shocks as well should be handled with caution in the event of any future occurrence, and this is because having seen how it affected the financial sector negatively, that calls for preparation towards any future occurrence. As such, there should be proper regulations that will help in averting such an impact.

Furthermore, the financial sector should do more in creating awareness concerning the need to engage the use of financial services as well as embarking on the formal system of finance and not the other way. Also, there should be a relaxation in the interest rate to encourage small scale investors that are willing to take credit for investments. Meanwhile, policymakers should as well make the business atmosphere conducive for the investors in terms of tax incentives and the rest so that after accessing the loans, they can freely invest and be productive.

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