

THE EFFECT OF AGGREGATE INSTITUTIONAL QUALITY ON FOREIGN DIRECT INVESTMENT IN NIGERIA: EVIDENCE FROM NARDL

MUSA ABDULLAHI SAKANKO¹
JAMES OBILIKWU²
JOSEPH DAVID³

Abstract

The vital role of foreign direct investment has been widely studied and documented in the economic literature; however, the argument remains largely on identifying the main determinants of FDI to developing countries. It is on this note, the quantitative research method was adopted to investigate the asymmetric relationship between aggregate institutional quality and foreign direct investment in Nigeria using the Nonlinear Autoregressive Distributive Lag (NARDL) model on quarterly time-series data from 1999 Q1 – 2019 Q4. The bounds test obtains revealed that long-run co-integrating relationship exist among the variables. The NARDL result shows that both in the short-run and long-run aggregate institutional quality have asymmetric and a statistically significant effect on foreign direct investment. The study recommends that the government should establish or strengthen the quality of institutional indicators and legal framework to assure confidence in the system to motivate Foreign Direct Investment (FDI) inflow.

Keywords: foreign direct investment, institutional quality, NARDL

JEL Codes: F23, B52, C32

Introduction

The rising episodes of foreign direct investment (FDI) in less developed countries play a vital role while includes the provision of investment capital inflow, mobilization of savings, job creation, revenue generation, acquisition of modern technologies, enhancing foreign exchange, competition and productivity, local content and manpower developing thus, stimulation of economic growth. These advantages are not unknown to policymakers but due to the liberal of the economy and policies, the inflow of FDI in less developed countries is characterizing with incentive packages offering to encourage foreign investors (Esew & Yaroson, 2014).

This study attempts to examine the asymmetric effect of institutional quality on FDI in Nigeria, as the quality of institutions, is the backbone and pillars of FDI's inflow, whereas, weak institutions insert uncertainty to the foreign investors because investment decisions are volatile to uncertainty. Therefore, globalization comes with many incentives that drive economic growth and development, one of them is FDI's and numerous factors encourage its inflow, among is institutional quality. For example, sound institutional qualities entice and

¹Department of Economics, University of Jos, Nigeria. Sakanko2015@gmail.com

ORCID iD <https://orcid.org/0000-0002-5203-5462>

² Department of Economics, Ibrahim Badamasi Babangida University, Nigeria

ORCID iD <https://orcid.org/0000-0001-6265-8906>

³ Department of Economics, Ibrahim Badamasi Babangida University, Nigeria.

ORCID iD <https://orcid.org/0000-0002-1357-5618>

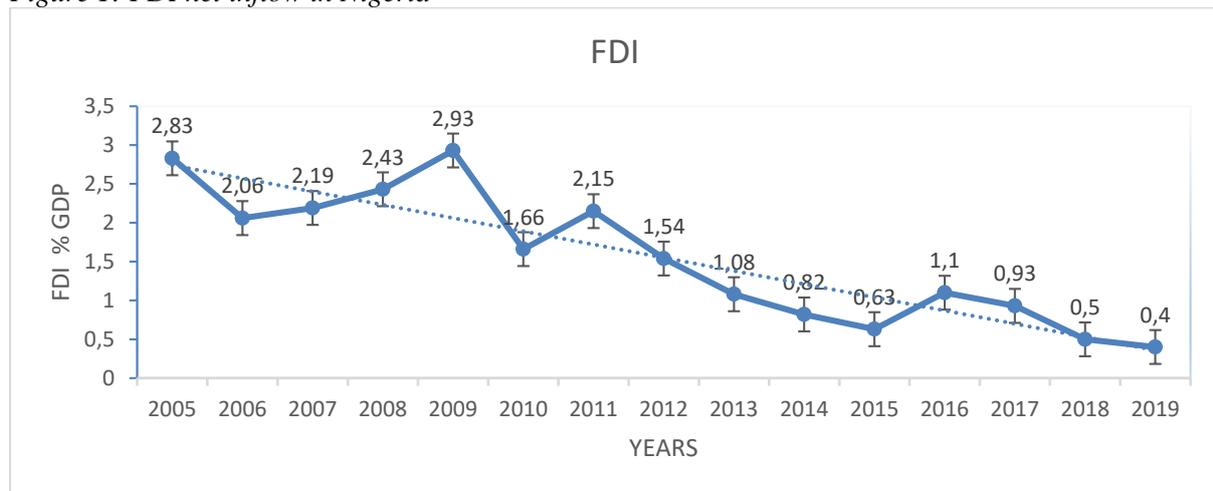


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convince foreign investors (Esew & Yaroson, 2014) as it ensures a certain level of a property right to the investors and lesser cost for doing business whilst inefficient institution quality feature with mistrust, high levels of extortion, corruption, bureaucracy, marginal and fear of sunk costs.

Quite some time, Nigeria's FDI net inflow percentage of Gross Domestic Product, which grew from 4.28% to 4.85% and 5.79% in 1989, 1993, and 1994 respectively, declined to 2.83% in 2005 and later rose to 2.93% in 2009, after which dropped to 1.66% in 2010 and further dropped to one time lowest 0.5% and 0.4% in 2018 and 2019 respectively (World Bank, 2019). Figure 1 below shows an overview chart of Nigeria's net inflow of FDI from 2005 to 2019.

Figure 1: FDI net inflow in Nigeria



Source: World Bank (2019)

Figure 1 shows the FDI net inflow in Nigeria, over time has been seeping at a decreasing rate. The FDI net inflow was so substantial before the Democratic government in 1999 in Nigeria

This has awakened a skirmish among scholars, researchers, economists, political analysts, and policymakers as to what factors are responsible for the low attracting of FDI in the less developed countries, especially, Nigeria. Though, theoretical literature (Dunning, 1993) opined that market share or size, cheap labour force, governance efficiency or effectiveness and seeking resources are the motives for investing in foreign markets while Oke, Ezike & Ojogbo (2012) and Ajide, Adeniyi & Raheem (2014) suggest that obtaining political stability, control of corruption, and government effectiveness were the major determinate of FDI. Similarly, Blomstrom, Lipsey, & Zejan (1994), Balasubramanyam, Salisu, & Sapsford (1996), Borensztein, De Gregorio, & Lee (1998), Hermes & Lensink (2003), Bengoa & Sanchez-Robles (2003), Alfaro, Chanda, Kalemli-Ozcan, & Sayek (2004), Javorcik (2004), Azman-Saini, Law & Ahmad (2010), Havranek & Irsova (2011) and Gönel & Aksoy (2016) ascertained that level of economic development, financial markets development, human capital, economic stability, trade liberalization, technology gap, FDI ownership and information, and communication technologies are influencing factors of FDI. Furthermore, in an aggregate study of institution quality Busse & Hefeker (2007), Daude & Stein (2007), Ali, Fiess, & MacDonald (2010), Buchanan, Le & Rishi (2012) and Jilenga & Helian (2017) pinpointed that institutional failure is the determinant of FDI which has given room for other numerous maladies. Therefore, the fundamental principle underlines the paramount of institutional quality in appealing foreign direct investments to a country that is credited to what

makes up these qualities. Besides, the institution quality has six components, therefore these indicators could differently influence FDI inflow (Esew & Yaroson, 2014 and Omodero, 2019).

Given the above arguments, appraising the correlative between institutional qualities and FDI is significant. While different views still prevail in the literature, nonetheless, promising institutional qualities are linked to a higher inflow of FDI (Peres, Ameer & Helian, 2018; Hayat, 2019; Fagbemi & Bello, 2019). Certainly, despite the volume of rising contemporary perceptions concerning institutional quality and FDI, the available empirical studies in Nigeria investigate the individual effect of institutional indicators on FDI includes Esew & Yaroson (2014), Akpo & Hassan (2015), Brown & Ibekwe (2018), Omodero (2019) and Zangina & Hassan (2020). However, this study examines the asymmetric effect of aggregate institutional quality on FDI in Nigeria.

The objective of this study is to examine the effect of the aggregate institutional quality on FDI in Nigeria. Then, the study argued on two principal research hypotheses, that there is no asymmetric relationship between aggregate institutional quality and FDI. And the aggregate institutional quality has no effect on FDI.

The significance of this study is, the paper is among the first to use the aggregate institutional quality and measures its effect on FDI in Nigeria. In this regard, the findings of the study will enable specific assumptions or inferences to be drawn from the empirical outcomes by policymakers, researchers, economists, analysts, and business practitioners for further decision and policymaking.

This study contributes to the existing literature in the study area as follows. The paper used aggregate institutional quality i.e. all the six quality indicators were summed (control of corruption, political stability, and absence of violence, regulatory quality, rule of law, government effectiveness and voice and accountability). Secondly, previous studies assumed a linear relationship between institutional quality and FDI's except (Zangina & Hassan, 2020), they used nonlinear ARDL model in Nigeria, yet on disaggregate institutional quality indicators (corruption), this study follows suit and evaluates nonlinear (positive and negative) corridors through which aggregate institutional quality might influence FDI in Nigeria because "macroeconomic variables are found to be nonlinear in most cases in social sciences" (Kahneman & Tversky, 1979, p. 258; Shiller, 1993, p. 147). Thirdly, the annual time series data were converted to quarterly to overcome small sample size which has been a challenge for measurement of institution indicators and forced most of the previous studies to adopts panel study. Lastly, the asymmetric relationship exists between institutional quality and FDI's both in the short-run and long-run with significant absent only in the long-run.

Following the introductory section, section two is the literature review, section three methodology, section four the results and discussion, and section five conclusion and recommendations

1. Literature review

North (1991) affirmed that institutions are constraints developed by humans for economic, political, and social interaction. These institutions contain laws, customs, constitutions, and property rights that reduced uncertainty and order in society. That the environmental structure of institutions of a particular society provides firms with benefits to perform more efficiently. Similarly, Hayat (2019) substantiated that good institution feature certainty because of the prevailing rule of law, property right, and less corruption which can encourage technological transfer whereas weak institutions deny rule of law and property rights, high corruption, and political instability thereby few inflows of the foreign direct investment due to uncertainty. Consequently, this study established institutional theories as a theoretical framework. Among the reasons for the choice of the theory are assumptions that

effective institutions raise benefits and reduce the cost of the transaction of economic activities, induce incentives that shape economic growth and development, and lastly, influence per work output and levels of income.

Following the theoretical postulation and the findings of (Buchanan et al., 2012, p. 84) on “determinants of FDI’s inflow”, functional model of this study described in equation 1 as:

$$FDI = f(INST) \quad (1)$$

Where FDI, denote foreign direct investment and INST, is institutional quality. Equation 1 shows that institutional quality is a function of foreign direct investment inflows. Empirically, Samimi, Rezanejad & Ariani (2010), evaluate the impact of good governance on foreign direct investment in 16 countries in the Middle East and North Africa (MENA) and found that political stability and control of corruption has a positive impact on foreign direct investment inflow. Buchanan et al. (2012), investigates foreign direct investment and institutional quality using panel techniques and established a positive and significant relationship between institutional quality and foreign direct investment. Buchanan et al. (2012) examine 164 countries and the empirical result obtain shows that institutional quality has a positive and significant effect on foreign direct investment. Another review by Bissoon (2012) on a study of 45 less developed countries in the African, Asian, and Latin American reveals that the institutional quality influences inflows of foreign direct investment. Similarly, Jilenga & Helian (2017) employed the Generalized Method of moments and obtained a positive relationship between institutional quality and foreign direct investment in Sub-Sahara Africa. Also, Hayat (2019) used the same method in 104 countries and the estimation disclosed that institutional quality influences foreign direct investment.

At disaggregated institutional indicators, Ajide, Adeniyi & Raheem (2014) adopted a panel estimation method in Sub-Sahara Africa and the result indicates that control of corruption, political stability, and government effectiveness influence foreign direct investment. Likewise, Peres, Ameer & Helian (2018) observed that institutional quality by the sum of control of corruption and rule of law significantly impact on foreign direct investment in developing countries.

Furthermore, in Nigeria, Esew & Yaroson (2014) employ the Vector Error Correction Model (VECM) and uncovered that political stability and corruption are determinants of foreign direct investment. Akpo & Hassan (2015) applied the Autoregressive Distributive Lag model (ARDL) and concludes that institutional quality is a determinant of foreign direct investment in Nigeria. Brown & Ibekwe (2018) took on the Granger causality test and found that political stability has a unilateral predictive effect on foreign direct investment inflows in the Nigerian economy. Omodero (2019) used the Ordinary Least Square Method (OLS) and proved that corruption has a significant and positive effect on foreign direct investment. Similarly, Zangina & Hassan (2020) employed Nonlinear Autoregressive Distributive Lag (NARDL). The findings confirm that corruption influences foreign direct investment inflow and corruption control has asymmetric effects on foreign direct investment inflow to Nigeria.

2. Methodology

Here the procedure used to obtain data and the method of analysis is specified. This study utilizes secondary data. Secondary data is already available data collected by someone other than the researcher. The choice was motivated by the availability of data on the variables employed and is very simple to use. The data employed covered the period of 1999 Q1 – 2019 Q4, sourced from the World Bank development indicators report on Nigeria (2019) and the World Governance indicators (2019). The variables examined are Foreign direct investment,

aggregate institutional qualities measures as the sum of institutional quality indicators (control of corruption, political stability, and absence of violence, regulatory quality, rule of law, government effectiveness and voice and accountability), employment, market capitalization and access to electricity, all were in percentage. The method of analysis adopted is a Nonlinear Autoregressive Distributive Lag (NARDL) model. The nonlinear Autoregressive distributive lag (NARDL), allow asymmetric long-run and short-run effect estimation, irrespective level of stationarity it can be applied except I (2), and a hidden cointegration easily detected by Nonlinear Autoregressive Distributive Lag, for example, a positive shock of institutional quality may have a larger impact in the short-run while a negative shock has a larger impact in the long-run.

Following the theoretical model in equation 1, institutional quality and control variables like employment, market capitalization, and access to electricity identify as determinants of foreign direct investment. Thus, the model specification adopted is presented:

$$FDI = F(INSTAG, EMP, MKL, ETR) \quad (2)$$

Where: FDI denotes foreign direct investment, INSTAG is aggregate institutional quality – summation of all the institution’s index; control of corruption, rule of law, government effectiveness, regulatory quality, political stability and absence of violence, voice and accountability. EMP is the employment rate – the percentage of those that are actively involved in the workforce. MKL is a market capitalization – the traded value of companies listed in the stock market. And ETR represents access to electricity – the percentage of the population that has access to national electricity including organizations, communities, and multinational companies. Equation 2 represents a functional relationship between the explanatory variables and the explained variable. To estimate a linear relationship equation 3 will be considered. Where β 's are the parameters estimated, INSTAG, EMP, MKL, ETR are regressors coefficients, μ is error term or stochastic, and $t = 1, 2, 3 \dots$

$$FDIt = \alpha + \beta_1 INSTAG_t + \beta_2 EMP_t + \beta_3 MKL_t + \beta_4 ETR_t + \mu_t \quad (3)$$

To achieve the objective of this study, a recent Nonlinear Autoregressive Distributive lag model developed by Shin, Yu, & Greenwood-Nimmo (2014) as an advanced of the conventional Autoregressive Distributive Lag model was adopted (Pesaran, Shin & Smith, 2001). The method was used to validate the work of Kahneman & Tversky (1979) and Shiller (1993). They assumed that many studies find an insignificant relationship between economic variables due to assuming a linear relationship.

The Nonlinear Autoregressive Distributive Lag model specified as:

$$FDIt = \alpha + \beta_1^+ INSTAG_{tL} + \beta_2^- INSTAG_{tL} + \beta_3^+ EMP_{tL} + \beta_4^- EMP_{tL} + \beta_5^+ MKL_{tL} + \beta_6^- MPL_{tL} + \beta_7^+ ETR_{tL} + \beta_8^- ETR_{tL} + \mu_t \quad (4)$$

Equation 4 demonstrates the long-run model for estimating Nonlinear Autoregressive Distributive Lag. The model has two components. Partial sum of positive and negative (+ -) change in independent variables. Where $INSTAG_{tL}$ is the long-run aggregate institution variable, EMP_{tL} is the long-run employment rate variable, MKL_{tL} indicates long-run market capitalization variable, ETR_{tL} implies long-run access to electricity, L represents long-run symbolic, β^+ , and β^- are the long-run parameters and respective coefficients. Besides the short-run estimation describes in equation 5.

$$FDIt = \alpha + \beta_1^+INSTAG_{tS} + \beta_2^-INSTAG_{tS} + \beta_3^+EMP_{tS} + \beta_4^-EMP_{tS} + \beta_5^+MKL_{tS} + \beta_6^-MKL_{tS} + \beta_7^+ETR_{tS} + \beta_8^-ETR_{tS} + ECM_{t-1} \quad (5)$$

Where INSTAG_{tS} illustrates the short-run aggregate institution variable, EMP_{tS} depicts the short-run employment rate variable, MKL_{tS} suggests short-run market capitalization variable, ETR_{tS} signifies short-run access to electricity, and S is short-run denotation. The essence of equation 5 is to compare the short-run and long-run asymmetric effect of aggregate institutional quality to determine which of the partial sum has much impact on the dependent variable in Nigeria. The error correction mechanism demonstrates the short-run speed of adjustment to ascertain equilibrium in the long-run. It has two conditions which must be satisfied. Negative and statistically significant.

3. Results and discussion

Descriptive Statistics

The summary of the descriptive statistics of the variables utilized in the estimation of this study is shown in Table 1. Descriptive statistics present the data in a meaningful way for easy interpretation, for example, it shows the distribution, deviation from the mean, the spread of data, visualization of raw data, etc.

Table 1. Descriptive Statistics

	FDI	INSTAG	EMP	MKL	ETR
Mean	1.612160	-6.706914	52.63858	10.72994	50.93173
Medium	1.677500	-6.770000	52.84000	10.57000	50.35500
Std. Dev.	0.661159	0.387683	0.414473	5.388148	4.583879
Skewness	-0.110978	-0.160382	-1.123940	1.227540	-0.123696
Kurtosis	2.087337	2.357635	2.687290	5.600663	1.893204
Jarque-Bera	2.977488	1.739889	17.38377	43.16916	4.340923
Probability	0.225656	0.418975	0.000168	0.000000	0.114125
Observation	81	81	81	81	81

Source: Authors' computation (2020)

Table 1 reveals that the mean values and deviations from the mean scores for FDI, INSTAG, EMP, MKL, and ETR within the sample period are 1.612 (0.661), -6.707 (0.388), 54.639 (0.414), 10.730 (5.388) and 50.932 (4.584) respectively. The MKL reported the highest deviation. Likewise, the Skewness -0.111, -0.160, 1.352, -1.124, and -0.124 respectively, symbolize that while the majority of the data points lay on the left-hand side of the normal curve except that for MKL which spread from the right-hand side of the normal curve. The Jarque-Bera test for normality shows that EMP, MKL, and ETR are normally distributed leaving out FDI and INSTAG.

Empirical Results

The strategy for measuring the empirical model of this study involves first, experimenting, or testing the individual properties of the time-series data towards establishing a suitable and adequate technique to be adopted in the estimation. Accordingly, the Augmented

Dickey-Fuller (ADF) and Phillips-Perron (PP) for unit root tests were performed and the outcomes related in Table 2.

Table 2. Test for Unit Root Results

Series	Level		First Difference	
	ADF	PP	ADF	PP
FDI	-0.322	-0.808	-2.235	-4.497***
INSTAG	-3.126**	-2.586*	-3.284**	-4.051***
EMP	-1.298	-0.252	-2.499*	-2.637*
MKL	-2.582*	-2.024	-2.189	-4.110***
ETR	-1.370	-4.449***	-1.027	-4.5801***

*** significant at 1% level, ** significant 5% level and * significant 10% level

Source: Authors' computation (2020)

The null hypothesis of the tests has it that a particular series has a unit root. Hence, Table 2 shows that while FDI and EMP achieved stationary after first difference, EMP in both the ADF and PP, FDI only in PP tests. Similarly, INSTAG stationary at a level in both ADF and PP. MKL and ETR stationary at a level in ADF and PP. The results of the unit root tests signify the variables have a mixed level of integration. This has to validate the use of the intended NARDL model. Therefore, the Nonlinear Autoregressive Distributive Lag (ARDL) Bounds test was used to establish whether a long-run relationship exists among the variables. The result of the NARDL Bounds test, shown in Table 3.

Table 3. Result of the Bounds Test

Test Statistics	Value	Significance	I(0)	I(1)
F-statistics	4.755	10%	1.85	2.85
K	8	5%	2.11	3.15
		1%	2.62	3.77

Source: Authors' computation (2020)

Note: The automatic lag selection was used to determine the maximum lag length

Given the F-statistics value (4.755) greater than the upper boundary at 10%, 5% and 1% level of significance respectively, the variables have been said to have a long-run relationship, signing that the independent variables have a long-run relationship with the dependent variable. Then, the estimation of the NARDL model was considered appropriate to determine the short-run and long-run asymmetric relationship between FDI and the explanatory variables in Nigeria. Table 4 presented both short-run and long-run estimates.

Table 4. NARDL Results. Dependent variable (FDI)

Variables	Coefficients	t-statistics
INSTAG_POS _L	0.852	2.338**
INSTAG_NEG _L	-2.653	-6.381***
EMP_POS _L	24.939	4.590
EMP_NEG _L	0.004	0.012
MKL_POS _L	-0.167	-3.735***
MKL_NEG _L	0.335	4.023***
ETR_POS _L	-0.384	-7.930***

ETR_NEG _L	0.005	0.073
	Short-Run	
INSTAG_POS _S	1.606	10.551***
INSTAG_NEG _S	-0.785	-6.363***
EMP_POS _S	-0.513	-0.516
MKL_POS _S	0.110	6.311***
MKL_NEG _S	-0.087	-4.834***
ETR_POS _S	0.128	5.810***
ETR_NEG _S	0.215	7.135***
ECM _{t-1}	-0.300	-7.689***
DW Stat. = 2.228	R ² = 0.919	Adjusted R ² = 0.867

Source: Authors' computation (2020)

Having obtained both long-run and short-run asymmetry estimated models in (4) and (5). Dynamics asymmetric results for both short-run and long-run are given in Table 4. In the long-run, coefficients of aggregate institutional quality, significant relationship is confirm for both positive (INSTAG+L), and negative (INSTAG-L). Especially, the effect of the positive component of aggregate institutional quality on foreign direct investment is statistically significant, with a 1 percent increase of institutional quality, leading in a 0.85 percent increase in foreign direct investment in Nigeria. This corroborated with the above-cited literature, particularly with Samimi, Rezanejad & Ariani (2010), Buchanan et al, (2012) and Jilenga & Helian (2017). They found that institutional quality has a positive effect on FDI. Correspondingly, the effect of the negative component of aggregate institutional quality on foreign direct investment is statistically significant and bigger in magnitude, with a percentage decrease of aggregate institutional quality, resulting in an average of 2.65% decrease in FDI in Nigeria. These findings revealed that the long-run negative component of aggregate institutional quality impact is larger than the positive component by 1.8. Nonetheless, in the long-run, employment (EMP+L) or size of the working force positive component has a positive and statistical significance effect on FDI, a percentage increase in the working force leading to an average of 24.94% improvement in FDI while the negative component (EMP -L) expressed a positive sign but statistical insignificance. Meaning a percentage decrease in the working force will bring about a 0.004% gain in FDI. However, the market share measured using market capitalization, both positive and negative components (MKL+ - L) show a significant effect on FDI. Specifically, a 1 percent increase in the positive component of the market share (MKL+ L) leading to an average of 0.17% reduction in FDI. Similarly, a 1 percent decrease in the negative component of the market share (MKL- L) will result in a 0.34% increase in FDI. This finding complies with Dunning (1993) and Balasubramanyam et al. (1996). Furthermore, access to electricity positive components has a depreciating effect on the FDI and statistical significance while the negative component prevailed an insignificant appreciating effect on FDI. Particularly, the positive component of access to electricity on FDI (ETR+L), with a percentage increase in access to electricity yielding a depreciation of 0.38 percentage on FDI. The negative component (ETR-L) on FDI reveals an appreciation of 0.005% statistical insignificance.

In the short-run, a significant relationship was obtained for both positive (INSTAG+S) and negative (INSTAG-S) coefficients of aggregate institutional quality. Specifically, the effect of the positive components of aggregate institutional quality on foreign direct investment

is statistically significant, with a 1% increase in the aggregate institutional quality resulting in an average of 1.61% increase in foreign direct investment. This is corresponding with Buchanan et al. (2012), Bissoon (2012), Akpo & Hassan (2015) and Jilenga & Helian (2017). Similarly, the negative component of aggregate institutional quality on foreign direct is statistically significant, a 1% decrease in institutional quality leading to an average of 0.79% decline in FDI in Nigeria is observed. Therefore, the findings revealed that the short-run positive component of aggregate institutional quality impact is larger than the negative component by 0.82%. Furthermore, both the positive and negative changes in the market share (MKL+ - S) have a statistically significant effect on FDI in the short-run. That is the positive (MKL+S) component on FDI, with a percentage increase in MKL, FDI appreciated by 0.11 percentage. Similarly, the negative (MKL-S) component on FDI, with a percentage decrease in MKL, FDI depreciated by 0.09 percentage. Also, both positive and negative components of access to electricity (ETR+ -S) effect on FDI are statistically significant. Implying that the positive component of access to electricity on FDI (ETR+S), a percentage increase in access to electricity yielding appreciation of 0.13 percentage on FDI. In the same manner, the negative access to electricity component on FDI (ETR-S), 1% reduction in the access to electricity will result in an average of 0.22% increase in FDI.

The finding also reveals the speed of adjustment (ECMt-1) has the required sign negative and is statistically significant. Meaning, a short-run shock will be adjusted to equilibrium in the long-run with an average speed of 30% quarterly. The coefficient of determination (R^2) shows that the variables employed accounted for 92% variation in the response variable and the remaining 8% have not been captured. This implied that the model is a good fit. Durbin Watson statistics reveal the absence of autocorrelation since the estimated value approximately is not more than 2.

After ascertains long-run and short-run NARDL results, there is need to test for the assumptions of the technique used (Normal distribution of error term, serial correlation, and heteroscedasticity) as well the stability of the estimated model to determine whether the method of analysis adopted passed the classical OLS assumption and stability test or not, established in Table 5 and 6:

Table 5. Diagnostic tests

Tests	Statistics	Prob.
Normal distribution	Jarque-Bera	0.363
Serial correlation	Breusch-Godfrey	0.105
Heteroscedasticity	Breusch-Pagan-Godfrey	0.936

Source: Authors' computation (2020)

The classical assumption of the OLS method employed given the probability values in Table 5 shows that the error term is normally distributed with zero mean and constant variance, homoscedastic, and not serial correlated. Thus, it concluded that the model passed the key assumptions test, the findings and policy implications of the paper stand to be implemented by any relevant and concerned organizations.

Table 6. Stability tests

Tests	Statistics	Prob.
Ramsey RESET	F-statistics	0.466
CUSUM and CUSUMQ	Stable	0.05

Source: Authors' computation (2020)

Table 6 shows results for Ramsey RESET and CUSUM and CUSUMQ. Ramsey RESET presented with a probability value greater than 5%. This implied that the model is well-specified. CUSUM and CUSUMQ are stable because the probability value is within the required region of 5% (0.05). Based on these outcomes, the policy recommendation from this study is valid.

Conclusion and recommendations

The study examines the asymmetric relationship between aggregate institutional quality and foreign direct investment in Nigeria. The NARDL model was adopted on quarterly time-series data from 1999 Q1 – 2019 Q4, a deviation from the traditional annual time-series data employed by previous literature. The bounds test obtains revealed that long-run co-integrating relationship exist between the institutional quality and foreign direct investment in Nigeria. The NARDL result shows that in the short-run and long-run the positive components of the aggregate institutional quality have an appreciating effect on foreign direct investment and statistical significance. Similarly, the negative components of the aggregate institutional quality have a decline effect on foreign direct investment and statistically significant in both the short-run and long-run.

It was also discovered that the positive component of the aggregate institutional quality in the short-run has a larger effect on foreign direct investment than the negative component. Likewise, in the long-run, the negative component of the aggregate institutional quality has a larger effect on foreign direct investment than the positive component. Generally, the negative component of the aggregate institutional quality has a substantial effect on foreign direct investment than the positive component. The aggregate institutional quality and control variables exploited in the model are determinants of foreign direct investment in Nigeria proofed by the coefficient of determination (92%). The short-run partial shock caused by aggregate institutional quality and control variables can converge to equilibrium in the long-run at an approximate speed of 30% quarterly. This study established that efficient institutional quality will positively and significantly attract investors and amplify economic growth all things being equal.

The study recommends, that the relevance of aggregate institutional quality attracts FDI inflows, hence, the government should establish or strengthen the quality of institutional indicators and legal framework to secure confidence in the system to motivate FDI inflow. This is because the aggregate institutional quality is found to have an asymmetric effect on the FDI both in the short-run and long-run in Nigeria.

This study is among the first to used time-series data to measure the effect of aggregate institutional quality on foreign direct investment in Nigeria, was constrained with a lack of available studies to compare its findings with. Another weakness is the inability of the researchers to estimate the symmetric effect along to carry out a comparative validation of the method of analysis adopted. Therefore, further studies should investigate both the symmetric and asymmetric effects of the aggregate institutional quality on foreign direct investment in Nigeria.

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