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DYNAMIC EFFECT OF TRADE OPENNESS ON FINANCIAL DEVELOPMENT 1981-2021 ARDL BOUND TEST APPROACH: EVIDENCE FROM NIGERIA

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Abstract
Global economic integration has been proven to be a powerful mean of achieving financial development through which economic growth is promoted in countries. Despite the significance contribution and the rising figures of Nigeria's trade openness, the recent update of country's financial development reflected decrease. The paper examines the effect of trade openness on financial development in Nigeria, covering the period of 1981-2021. To check the existence of long and short run relationship the study employed Auto regressive distributive lag (ARDL) techniques of estimation. The estimated result found that, trade openness has positive and statically significant impact on financial development (FND), at 5% level of significance in the long run and insignificance in the short run equilibrium. Following the findings, the study made recommendation for a policy implication; there is need to form comprehensive economic policies that will improve exportation of goods, enhance productivity, encourage savings culture and promote capital accumulation and be more open to trade with other countries especially trough land border. And to diversify the country's economic sector by expansion and reviving mining sector, agriculture and tourism sectors, these could be a vital tool for strengthening the country's trade openness and improve financial sector development.

Keywords: Trade openness, financial development, ARDL Bound Test.

Introduction

The integration of the global economy has raised living standards all over the global regions, most of developing countries have shared in this prosperity, and their income has risen dramatically (Warrad, 2018). Trade openness is based on the reality that no country depends with only domestic production of all goods and services that are required by citizens to survive (Rahaman et al., 2020). Moreover, trade openness generates new market opportunities to domestic firms along with high productivity, job creation and innovation through international competition to promote geopolitical benefits derived from economic integration (Hossain et al., 2018). Trade openness brings efficient welfare, financial market development, employment generation and poverty alleviation across the globe, regardless of the pattern of country's economic conditions (Marta et al., 2019). Financial development is an outcome of trade

openness and it also among the factors that contributes to economic growth and development. Arif & Khan (2019) opined that trade openness plays a vital role in boosting financial development through capital accumulation and technological progress by increasing the savings rate, mobilizing and pooling savings, producing information about investment, facilitating and encouraging the inflows of foreign capital, as well as optimizing the allocation of capital. The link between trade openness and financial development gives different directions for economic development. Trade openness leads to an increase in financial development, which promotes economic growth via finance leading growth through the allocation of channel and capital accumulation (ChiminhHo, 2019). However, if trade openness generates finance it can promote economic growth hence trade openness serve as a growth factor. Trade openness will help to improve economic growth through increasing the level of a country's specialization as well as innovation and technology development. Trade openness provides access to global economic markets, raising financial intermediation competition and forcing banks to charge lower rates on loans (Ernst, 2018). Financial development reduces poverty and inequality by broadening access to finance by the poor and vulnerable groups, facilitating risk management by reducing their vulnerability to shocks, increasing investment and productivity that result in higher income generation (Lawal et al., 2016). Trade openness provides opportunities to communicate with foreign counterparts, which enables the transmission of technologies. Gabriel & David (2021) asserted that in the absence of trade openness, different ideas and technologies are been duplicated in multiple countries, while existence of trade openness encourages local firms to invent new ideas and technologies and consequently prevent the replication of research and development. For instance, the European Union (EU) was created in 1993 and included 28 states as members in 2019. Since 2002 and 19 of those nations have adopted euro as a shared currency. According to the International Monetary Fund (IMF), the EU accounted for 16.04% of the world's gross domestic product. However, the recent growth in some world countries was driven by the reduction of trade barriers policy (Martes, 2018). Despite the vast contribution of trade openness to financial development across the global regions, the Nigeria's sea port and airport are open and function for intentional trade since past decade. But the country's financial development is left behind. Aigheyisi & Isikhuemen (2018), asserted that Increase in the level of trade openness usually led to effective financial improvement through open border transaction, but the Nigeria's financial development recently experience decline, which resulted by the decrease in land border exchange and lack of new market opportunities through foreign earning.

The banning of physical border exchange and recent outbreak of global pandemic (covid-19) negatively affect country's financial transaction through land border trade, and resulted shutting down in physical border trading, rice and other substances importation, lack of income in the hand population that depend with land border as their source of earning. This resulted declined in the figures of country's financial development for instance: the Nigeria's financial development projected falling with the figure of 10.24 in 218, 11.15 in 2019, 12.13 in 2020 and 13.59 in 2021 Compared to 18.63 as of 2008. Instability of trade openness can be evident of decline of financial. The motivation of this paper is to examine the long run and short run effect of trade openness on financial development in Nigeria for the period of 1981-2021, with the view to determine trade openness either positively or negatively relate with financial development using widely applied Auto regressive distributive lag model.

Literature Review

Theoretical Review

The theoretical link between trade openness and financial development has been proved by categories of supply-leading and demand-following theory. The supply-leading theory identified that finance is a major determinant of growth, as finance provides avenue through which resources are mobilized and channel from surplus spending unit i.e. agriculture and land rents to deficit spending units such as sector where entrepreneurial activities are pursued. This is the main reason and believes that trade openness bring better financial system increases the chances of successful innovation which provokes increase in economic growth (Lawal et al. 2016). Furthermore, the demand-following theory view that finance plays a dependent role lagging behind growth. The theory states that the creation of modern financial institutions a response to the demand for these institutions by investors in the real sector of economy, thus the financial sector provide credit for domestic firms to finance their investment and boost countries economic activities (Lawal et al. 2016).

Empirical Review

To examine the relationship between trade openness and financial development, Quite number of studies with different methodologies and samples in diverse study area, investigated and their outcomes indicate a mixture of positive and negative relationship and also evidence of bidirectional causality between the variables as reported by the following studies; Lawal et al. (2016) studied the relationship between economic growth, financial development and trade openness in Nigeria for the period of 1981-2013, and applied auto regressive distributive Lag (ARDL) bound testing approach. The result found that there is existence of negative relationship between trade openness and economic growth as well as trade openness and financial development in Nigeria. Leminh (2017) analyzed the impact of financial markets development on capital structure of firms listed on Ho Chi Minh stock exchange. Using financial data of 116 listed firms of Vietnam, for the period 2009 to 2015, the study employed generalized least square regression method and the result revealed that market capitalization has positive relationship with debt rate in capital structure, volume of shares traded has negative effect to debt rate in capital structure of the Vietnam commercial banking system and credit growth has negative relationship with debt rate in capital structure. Meanwhile, interest rates of commercial banks were not statistical significant.Oke & Adeegbite (2018) studied the effect of trade openness on financial development in Nigeria for the period of 1981-2016, the study adopted Bayesian Vector Autoregressive (BVAR) as technique of estimation an the result found the proof of the existence of a positive significant relationship between trade openness and financial development in Nigeria during the period under review.

In inspecting short and long term cointergration and causal relationship between trade openness, financial development and economic growth in Nigeria using ARDL bound test, Muhammad et al. (2018) revealed that trade openness specifies positive but insignificant effect on financial development and economic growth in both short and long run. Aigheyisi & Isikhuemen (2018) inspect the effect of trade and financial openness, and output growth volatility in Nigeria for the period of 1970 to 2015. The study used autoregressive distributed lag (ARDL) approach to cointegration and error correction modeling was employed for the analysis. The empirical result indicate that, trade openness and financial openness exacerbate output growth volatility in Nigeria in the long run. However, the short run effect of trade openness on growth volatility is negative, implying that in the short run trade openness plays some role in reducing output growth volatility. The short run effect of financial openness on

output growth volatility is also negative, but not statistically significant.

However, the study of Sghaier & Abida (2019) investigates the relationships between financial development, trade openness and economic growth on a panel of four North African countries (Tunisia, Morocco, Algeria and Egypt), over a period of 1992 to 2016, with the application of generalized method of moment (GMM) techniques. The study found strong evidence of a positive link between trade openness and economic growth. It further revealed that the effect of trade openness is more pronounced in the presence of the financial development variable. Trade openness and financial development have negative and significant correlation in a long-run and positive in short run connection where as it is positive in a short run as reported by Caporale et al. (2020) in their study titled affiliation between international trade openness and financial development in six European Union members from Central and Eastern Europe Countries (CEEC-6) with the application of dynamic panel data analysis, known as Generalized Method of Moments (GMM) and pooled mean group (PMG) estimators. The contribution of Gabriel & David (2021) trade openness and financial openness on economic growth in sub-Saharan African countries for the period 1980 and 2017, using generalized method of moments (GMM), found that trade openness has significant positive impact on economic growth, whereas financial openness do not have significant positive impact on economic growth but trade has significant impact to financial openness.

Financial development and trade openness were found to have positive and statistically insignificant impact on economic growth both in both short and long run. However, the long-run growth effect of financial development is positive in 8 countries while that of trade openness is positive in 6 countries as reported in the study of Keho (2020) titled trade openness and economic growth in west African Countries for the period 1985 to 2018, using Mean Group (MG) method and the Seemingly Unrelated Regressio8n Estimator (SURE) panel data analysis. But the study of Kalaycıa & Cihan (2020) examined nexus between international trade, financial development and economic growth in South Korea over the period of 1977 to 2018. The study used dynamic ordinary least square (DOLS) and Conical cointergration (CCR) model. The empirical findings revealed the existences of negative and insignificant connection between financial development, international trade and economic growth as well as trade and financial development. Muibi et al. (2022) examine the dynamic effect of foreign aid, trade openness and foreign direct investment on economic growth in West African countries for the period of 1980-2018. The study employed panel ARDL for both short and long-term effects and mean group technique for the uniqueness of individual. The result found that long run relationship was observed and aid, FDI and trade openness positively enhanced output growth. Second, the interactive effect of aid, trade openness and FDI was negative, but strengthens the individual effects in the long run period. And MG estimation affirms that it is only in Senegal that the coefficients of these financial flow variables were sensitive to regional characteristics. However, trade openness has a positive association with growth whereas the financial development is positively, but insignificantly associated with growth. In the study of ChiH et al., (2021) titled economic growth, financial development, and trade openness of leading countries in ASEAN. Using fixed effect model (FEM) and random effect model (REM). Pham-ThiThuy & Honghanh (2021) found the existence of bidirectional causality between trade openness and financial development. Furthermore, it reported the presence of positive and significant relationship between trade openness and financial development in Asia for the period 1994-2008 using Pedroni co-integration technique and generalized method of moment (GMM) estimator.

Foregoing the empirical studies reviewed, many of them were cross country study, and the studies conducted in Nigeria are very scanty in literature. Hence current study was conducted to investigate the effect of trade openness on financial development for the period of 1981-2021.

Methodology

This section provides clear explanation on the methodology that can be used to examine the impact of trade openness on financial development in Nigeria. The study stresses econometric procedures that have been used to test the long and short-run relationships among the factors included in the study. However, the study employed Autoregressive Distributed Lag estimation technique. The method was developed by Pesaran, Shin and Smith, (2001). Apart from the fact that the method was developed for the estimation of cointegration between the variables of interest, it also estimated the short-run effect and the long-run effect among the variable of the study. ARDL test procedure provides valid results whether the variables are I (0) or I (1) or mutually co-integrated and provides very efficient and consistent estimates in small and large sample sizes (Pesaran, Shin & Smith 2001).

Empirical model Specification

The empirical model of this study was adopt from the study of Oke and Adegbite (2018) titled trade openness and financial development nexus in Nigeria. The model present in equation 1:

$$FINDEV = TOPEN, EXR, INR, \ldots\ldots\ldots(1)$$

Where FINDEV is stand for financial development, TOPEN stand for trade openness, EXR is stand for exchange rate and INR is stand for interest rate

This recent study will modifies equation 1 by economic growth (GDP) and use the remaining variables considered useful for the study which is to examine the long run and short run relationships between trade openness and financial development in Nigeria. Therefore, the modified model is presented in equation 2:

$$FND_t = f(TRO_t, INR_t, EXR_t, GDP_t)\ldots\ldots\ldots(2)$$

Where $FNDt$ stand for financial development at time t, TRO_t is stand for trade openness at time t and INR_t is interest rate at time t, EXR_t is Exchange rate at time t and GDP_t is stand for Economic growth at time t. Subsequent to the above model equation of the research, the econometric log form of the model will be written in equation 3 below:

$$InFND_t + \beta_0 + \beta_1 InTRO_t + \beta_2 INR_{t_t} + \beta_3 EXR_{t_t} + \beta_4 InGDP_t + \mu_t \ldots\ldots\ldots(3)$$

Variable Description

Trade openness describes the extent of actual exposure to trade connections and accounts for the effective level of integration (Sghaier and Abida, 2019). In this study, trade openness is measured by the sum of exports and imports of goods and services as a percentage of GDP (Lawal et al., 2016). Financial development entails improvement in the functions of easing savings mobilization and expanding the production possibilities of an economy (Oke and Adegbite, 2019). In this study, financial development is measure by the domestic credit to private sector provided by financial institution (Leminh, 2017, Gabriel and David 2021).

Trade openness and financial development

The table 1 contains the description of the variable, measurement, and the expected signs of

the relationship between the dependent and the independent variable and the sources of data in the study.

Table 1

S/N	Variables	Measurement	Expected Signs	Source
1.	Financial Development (FND)	Domestic Credit to private sector	Dependent Variable	WDI (2023)
2.	Trade Openness (TOP)	Trade % in GDP	**(+)**	WDI (2023)
3.	Interest rate (INR)	Real interest rate	**(+)**	WDI (2023)
4.	Exchange Rate	Real Exchange rate	**(+)**	WDI (2023)
5.	EconomicGrowth (GDP)	Growth Domestic Product per capita	**(+)**	WDI (2023)

Note; WDI stand for World Bank Development Indicators.

Unit root test

Prior the estimation of the ARDL model estimators, unit root test, lag length criterion test and cointegration test were conducted to ascertain the order of integration of the variables. Augmented dickey fuller (ADF) and the Philip Perron (PP) unit roots tests were applied to determine the order of integration of the variables under study. ADF and PP were chosen due to their power in detecting the order of integration of the variables in time series analysis, while the cointegration relationship among variable was tested using ARDL bound test.

Unit root test Equation

$$\Delta Y_t = \beta_0 + \sum_{j=1}^{B} \Delta\beta Y_{t-1} + \mu_t \text{.....(3)}$$

$$\Delta Y_t = \beta_0 + \beta_1 t + \beta_1 Y_{t-1} + \sum_{j=1}^{B} \Delta\beta Y_{t-1} + \mu_t \text{.....(4)}$$

Where μ_t is the error term and $\Delta Y_{t-1} = (Y_{t-1} - Y_{t-2})$, $\Delta Y_{t-2} = (Y_{t-2} - Y_{t-3})$, $\Delta Y_{t-p} = (Y_{t-c} - Y_{t-d})$, and c represents the number of recent time and d as the number of previous times or years.

Lag Selection Test

The lag length selection criteria test will be followed and is mainly to show the appropriate number of lags that would give the best cointegration and VECM results, and that of optimum lag determined must be free from serial correlation problem in order to avoid getting spurious result. In order to select the appropriate model of the long run underlying equation, it is necessary to determine the optimum lag length (k) by using proper model order selection criteria such as; the Akaike Information Criterion (AIC), Schwarz Bayesian Criterion (SBC) or Hannan-Quinn Criterion (HQC). The lag length criterion model will be presented in equation 9 and 10:

Lag length Equation

$$\ln TRO_t = \chi_0 + \sum_{i=0}^{B} \chi_{1i} FND_{t-i} + \sum_{i=1}^{B} \chi_{2i} \ln INR_{t-i} + \sum_{i=0}^{B} \chi_{3i} \ln EXR_{t-i} + \sum_{i=0}^{B} \chi_{4i} \ln GDP_{t-i} + \varepsilon_{3t} \text{.....(5)}$$

Where ln is natural logarithm, χ is the intercept parameter, Σ is summation sign, B is the maximum lag, TRO_t is trade openness at time t, FNDt is financial development at time t, INR_t

is interest rate at time t and GDP_t stand for economic growth at time t.

ARDL Bounds Test Model

To check for the existence of long-run cointegration between the independent variables and the dependent variable in Equation 9 and Equation 10 model is stated and projected using ARDL bound test for co-integration. The model was stated jointly with the null and alternative hypotheses which may be rejected or accepted. This set a revolving point when the null hypothesis of no long-run connection between the variables of the model is accepted.

Main ARDL Model

This study employed Autoregressive Distributed Lag (ARDL) bounds test approach for co-integration developed by Pesaran, Shin and Smith (2001) to estimate the correlation between variables under study. The ARDL approach gives more statistical advantages than other co-integration techniques. ARDL test procedure provides valid results whether the variables are I (0) or I (1) or mutually co-integrated and provides very efficient and consistent estimates in small and large sample sizes (Pesaran, Shin & Smith 2001). The ARDL approach, this approach is applicable to this study as all the series are either I (0) or I (1). The ARDL model is shown in equation 11

ARDL equation

$$\Delta FND_{2t} = \beta_0 + \sum_{i=1}^{B}\theta_{1i}\Delta \ln FND_{2t-i} + \sum_{i=0}^{B}\theta_{2i}\Delta \ln TRO_{t-i} + \sum_{i=0}^{B}\theta_{3i}\Delta INR_{t-i} + \sum_{i=0}^{B}\theta_{4i}\Delta EXR_{t-i} + \sum_{i=0}^{B}\theta_{5i}\Delta InGDP_{t-i} +$$
$$\chi_1 FND_{2t-i} + \chi_2 \ln TRO_{t-i} + \chi_3 \ln INR_{t-i} + \chi_4 EXR_{t-i} + \chi_5 InGDP_{t-i} + \varepsilon_{1t} \ldots\ldots (6)$$

Where ln stands for the natural logarithm sign, β_0 is the drift parameter, $\theta_1 \ldots \theta_5$ are the long-run coefficients, $\chi 1 \ldots X_5$ are the short-run coefficients, Δ is the change sign, $\sum$ is the summation sign, *B* is the maximum lag, *t* is the time trend, FND is the financial development, TRO is the trade openness, INR is the interest rate, EXR is the exchange rate and GDP is the economic growth, and ε is the residual term.

The ARDL model presented in equation 11 above is separated into 2 models. The first one is the co-integration model which gives information on the existence of long-run relationship among the variables, the second is the long-run model which gives detail explanation on the short-run impact of each independent variables on the dependent variable.

ARDL Model Hypothesis:

$$H_0 : \partial_1 = \partial_2 = \partial_3 = \partial_4 = \partial_5 = 0 \quad (No\ Co-\text{integ}\,ration)$$
$$H_1 : \partial_1 \neq \partial_2 \neq \partial_3 \neq \partial_4 \neq \partial_5 \neq 0 \quad (\text{C}o-\text{integ}\,ration\ exists)$$

The null hypothesis in the equations $H_0 : \partial_1 = \partial_2 = \partial_3 = \partial_4 = \partial_5 = 0$. This indicates the long run relationship. The alternative hypothesis is $H_1 : \partial_1 \neq \partial_2 \neq \partial_3 \neq \partial_4 \neq \alpha_5 \neq 0$. The calculated F-statistics should be compared with lower bound value and the upper bound value as suggested by Passerane et al. (2001). If the calculated F-statistic is higher than the upper bound value,

then co-integration is said to exist between the variables. On the other hand, if the calculated F-statistic is lower than the lower bound value then there is no co-integration relationship. Subsequently if the calculated F-statistic falls in between the upper and the lower bound values then the results is inconclusive.

ARDL Diagnostic tests

The diagnostic tests will also be applied to test the accuracy of the model which includes the serial correlation LM test, the heteroscedasticity test, the normality test, the Ramsey Reset test for specification and the stability test.

Data analysis and presentation

Unit root Test

The unit root test was carried out using Augmented Dickey Fuller (ADF; 1981) and Philips Perron (PP, 1988) tests, to check stationarity among the variables. The unit root tests were conducted at both level and first difference. The results of the test are presented in table 2

Table 2: Unit root test result

		Augmented Dickey Fuller(ADF)				Philips Perron (PP)			
Variables	**Order of integration**	**ADF Critical Values**			**Prob.**	**PP Critical Values**			**Prob.**
		1%	**5%**	**10%**		**1%**	**5%**	**10%**	
ΔLFND	I(1)	-3.615588	-2.941145	-2.609066	0.0014	-3.610453	-2.938987	-2.607932	0.0000
ΔLTRO	I(1)	-3.615588	-2.941145	-2.609066	0.0008	-3.610453	-2.938987	-3.610453	0.0000
INR	I(0)	-3.610453	-2.938987	-2.607932	0.0006	-3.605593	-2.936942	-2.606857	0.0000
ΔEXR	I(1)	-3.615588	-2.941145	-2.609066	0.0063	-2.607932	-2.938987	-3.610453	0.0009
ΔLGDP	I(1)	-3.615588	-2.941145	-2.609066	0.0229	-3.610453	-2.938987	-2.607932	0.0012

Source: Author Computation 2023, Using E-views 9.

From the table 4.1 ADF and PP tests, indicate all the variables are non.-stationary at level except natural log of interest rate, but stationary at first difference in both ADF and PP tests. This implies that all variables are integrated at first order of integration, while only natural log of interest rate integrate at both level and first difference. Thereby, indicating that, the variables may exhibit, the long run relationship. This is the reason why ARDL model is applicable as the method estimating data.

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Table 3 Lag Selection Test Result

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-365.9802	NA	614.4299	20.61001	20.82994	20.68677
1	-228.1261	229.7568	1.181336	14.34034	15.65994*	14.80091
2	-206.7641	29.66944	1.574387	14.54245	16.96171	15.38684
3	-169.1012	41.84762*	0.982833	13.83896	17.35789	15.06716
4	-140.9861	23.42923	1.374627	13.66590	18.28449	15.27791
5	-80.38248	33.66869	0.548293*	11.68792*	17.40618	13.68374*

Source: Author Computation 2023. Using E-views 9. * Indicates lag order selected by the criterion,

From Table 4.2, the optimum lag selection result indicate that, in (SC) criterion reflect lag one and (LR) criterion indicate lag three. Whereas, Akaike Information Criterion (AIC), final prediction error (FPE), and the HannanQuin (HQ) criterion indicate lag five. Meaning that, lag 5 is preferred for variables estimation.

Table 4 ARDL Bound Test Result

Model one: **FND = f (TRO, INR,EXR GDP)**		
F-statistic	4.808436	5
Critical Value Bounds		
Significance	I(0)Bound	I(1)Bound
10%	1.9	3.01
5%	2.26	3.48
2.5%	2.62	3.9
1%	3.07	4.44

Source: Author Computation 2023. Using E-views 9.

From table 4.3, the bounds test result shows that the computed F-statistic 6.641746 is greater than the upper bound critical value 3.01 at 10%, 3.48 at 5%, and 3.9 at 2.5% and at 1% is 4.44 level of significance. This implies the presence of strong cointegration among the variables and therefore is the null hypothesis of no co-integration among FND, TRO, INR, EXR and GDP i.e. a long-run cointegration exists among the variables.

Table 5 ARDL Short Run Result

Dependent Variable; FND				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
InTRO(-1)	0.070665	0.108336	0.652271	0.5229
INR(-1)	0.010392	0.003966	2.620403	0.0179
EXR(-1)	0.000836	0.000362	2.310397	0.0337
InGDP(-1)	0.080005	0.172659	0.463373	0.6490
CointEq(-1)	-0.401972	0.315888	-4.438192	0.0004

Source: Author Computation 2023. Using E-views 9.

The result from Table 4.4 reflects that, the natural log of trade openness (TRO) has positive but, statistically insignificant impact on financial development (FND) in the short run. Precisely, a percentage change in trade openness is associated with 0.070665 percent increase in financial development in the short-run equilibrium. This result supported by the work of Muhammad et al. (2018). The study that examines the nexus between trade openess, financial development and economic growth in Nigeria. The coefficient of interest rate (INR) has positive and significant impact on financial development (FND) at 1% level of significance, as percent increase in interest rate (INR) will lead to 0.010392 increase in country's financial development in the short run form, the result is consisted with the result of Aigheyisi & Isikhuemen (2018). Similarly the coefficient of exchange rate is appear positive and statistically significant impact on financial development at 1% level of significance, as 1% increase in exchange rate will lead to 0.000836 % increase in Nigerian financial development (FND) in a short run period. The result is supported the study of Leminh, et al., (2017).
However, the natural log of economic growth (GDP) has positive but statistically insignificant on financial development (FND), a percent change in economic growth (GDP) is associate with 0.080005 increase in Nigeria's financial development (FND), in the short run equilibrium. The result supported by the work of Oke and Adegbite (2018) in his study titled trade openness, economic growth and financial development nexus in Nigeria.

Table 6 ARDL Long run Result

Dependent Variable; FND				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
InTRO	0.150482	0.072552	2.074137	0.0536
INR	0.015831	0.005452	2.903831	0.0099
EXR	0.000596	0.000228	2.610447	0.0183
InGDP	0.336046	0.034179	9.832082	0.0000
Constant	-0.865905	0.352000	-2.459960	0.0249

Source: Author Computation 2023. Using E-views 9.

As reported in Table 4.5 the ARDL long run result indicate that, the coefficient of trade openness (TRO) has positive and statiscally significant impact on financial development (FND), at 5% level of significance in the long run. As percentage change in trade openness (TRO) is associate with 0.150482 percent increase in Nigeria's financial development (FND), in the long run equilibrium. This result supported by the result of Muhammad et al. (2018) who

found a positive and significant relationship between trade openness and financial development in Nigeria. Similarly, the coefficient of interest rate (INR) also found positive and significant impact on financial development (FND), at 1% level of significance in the long run, as one percent increase in interest rate (INR) is associated with 0.015831 percent increase in financial development (FND), in the long run form. This result is contradicting to the finding of Gabriel and David (2021). Likewise, the coefficient of exchange rate (EXR) also found positive and significant impact on financial development (FND), at 1% level of significance in the long run, as one percent increase in exchange rate (EXR) is associated with 0.000596 percent increase in financial development (FND), in the long run form. This result is similar to the finding of Leminh (2017). However, the coefficients of economic growth (GDP) also found positive and statistically significant impact on financial development (FND), at 1% level of significance, as a percent increase in economic growth (GDP) is associate with 0.336046 increase in county's financial development (FND), in the long run equilibrium. This result supported by the result of Oke and Adegbite (2018) in the study titled trade openness, economic growth and financial development nexus in Nigeria.

Table 7 Error correction Term

D.V: InFND				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
LTRO(-1)	0.065488	0.055188	1.186632	0.2441
INR(-1)	0.010038	0.004925	2.038296	0.0499
EXR(-1)	0.001062	0.000343	3.100113	0.0040
LGDP(-1)	0.256791	0.028814	8.911903	0.0000
ECT(-1)	-0.893188	0.272469	-3.645145	0.0009

R-squared = 0.779853 DW statistics = 0.997587

Source: Author Computation 2023. Using E-views 9.

The error correction term (ECT) is negative, less than one (in absolute value) and significant. The coefficient of the ECT is -0.893188 and the probability value is 0.0009. This confirms the earlier long run relationship among the data series and also shows the speed of adjustment of towards long run equilibrium to be 11% in the first year. The speed of adjustment is slow because only 11% of the short-term disequilibrium between the explained and the explanatory variables will converge to equilibrium in the long-run. The R-squared of the model 0.779853 revealed that 71% of the proportion of the dependent variable has been explained by the explanatory variables, while only 29% of the variation is captured by the error term in the model. The Durbin Watson statistics is 2.097587 which indicate that the model is good fit; because it falls within the range of 1.5 and 2.5. The DW statistics 2.097587 is greater than the R-squared 0.779853 and this further indicates that the model is free from first order serial correlation.

Table 8 ARDL Diagnostics Tests Results

Diagnostic Tests	F-statistic	LM-statistic
Serial Correlation Test	1.965045 (5,22)	11.73153 (0.1241)
Heteroscedasticity Test	1.311735 (0.4286)	6.449490(0.2886)
Normality Test	1.818699 (0.402786)	Not Applicable

Source: Author Computation 2023. Using E-views 9.

From Table 8, serial correlation test using Breusch-Godfrey serial correlation LM test was employed on the study to test for the presence of serial correlation, the null hypothesis for no serial correlation was not rejected since p-value is greater than five percent. Heteroscedasticity was also estimated using Breusch-Pagan-Godfrey test and from the test result reported in Table 8, the null hypothesis of variance is constant (homoscedasticity) because the probability value is greater than five percent. The study also tested for the normality of the errors in the model through the Jarque-Bera and its probability values as reported in Table 8. The result revealed that the Jarque-Bera p-value was insignificant which implies the acceptance of null hypothesis that errors were normally distributed in the ARDL model.

Conclusion and Recommendation

The core objective of this paper is to examine the impact of trade openness on financial development in Nigeria covering the period of 1981-2021. While in reviewing the related literature on the relationship between trade openness and financial development the study, review both country and cross-country studies and adopt supply versus demand following hypothesis taking hint of relationship from the basis of theories. The study employed Auto regressive distributive lag (ARDL) and the study concluded that trade openness (TRO) has positive and statiscally significant impact on financial development (FND), at 5% level of significance in the long run. As percentage change in trade openness (TRO) is associate with to 0.150482 percent increase in Nigeria's financial development (FND) in the long run equilibrium and insignificance in the short run. The result found that trade openness has positive and insignificant relationship on financial development in the short run and significance at 5% in the long run estimate. However, the result reflect insignificancy in the short run estimate because of the stagnation in open border transactions via land border trade, which resulted by banning of import and export during covid-19 and recent border closure between the period 2018- to date. These results point to a policy implication that there is need to form sound economic policies that will improve exportation of goods, enhance productivity, encourage savings culture and promote capital accumulation and be more open to trade with other countries especially trough land border. There is need to diversify the country's economic sector by expansion and reviving mining sector, agriculture and tourism sectors, these could be a vital tool for strengthening the country's trade openness and improve financial sector development.

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