Analysis of Financial Development and Trade Performance in Nigeria

Usman Gana[1]

Mohammed Shuaibu[2]

Abstract

Despite the importance of financial development-international trade nexus and its implication for growth, studies have yet to look at the impact of new financial development indicators developed by the International Monetary Fund on international trade performance in Nigeria. This is one of the few attempts made to examine the elasticity of trade to financial development, given the inconclusive findings that permeate the literature. Therefore, this paper investigates the effect of financial development on aggregate trade performance in Nigeria using annual data from 1980 to 2021. The empirical framework is based on the ARDL approach to cointegration and error correction model. The findings revealed that (i) The ARDL bound test revealed the existence of a long-run equilibrium association between the variables; (ii) We find that a unit improvement in financial development induces a 1.1%-1.2% increase in trade performance in the short-run short term and a 9.7% in the long-run; (iii) The results show that a 1% increase in the exchange rate (depreciation) leads to a 0.01% improvement in trade performance in the short-term. The findings have important policy implications. The paper concludes that financial development contributes to trade performance.

Keywords: Financial development; International trade; Nigeria; Cointegration; Error correction model; Nigeria

JEL classifications: F14; G00

1. Introduction

Financial development is crucial for trade performance because it gives domestic firms better access to credit, enhancing their productivity and export orientation. This effect could affect exporters and importers differently. As Rafiu and Folarin (2020) pointed out, exports require financing to improve the quality and quantity of exports, while imports require credit to procure capital and intermediate inputs from abroad. Classical trade theories have made a strong case for factor endowment as the basis for trade between countries. Caporale et al. (2021) note that heterogeneity in the level of financial development could explain the pattern of trade between nations. This means that countries with better financial systems tend to

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[1] Department of Economics, University of Abuja, Nigeria, ORCID: 0000-0002-0876-246X, usmangana2015@gmail.com

[2] Corresponding Author, Department of Economics, University of Abuja, Nigeria, ORCID: 0000-0001-7684-753X, mohammed_shuaibu@yahoo.com

export finance-intensive products or are better placed to support domestic export-oriented firms. Nevertheless, lack of finance remains a significant constraint to firms' growth and competitiveness (Ho & Iyke, 2021).

Some critical indicators related to international trade and financial development are presented in Table A1 of the appendix. The trend of total trade has been mixed. It dropped from about US$23.9 billion for the period 1980-1989 to about US$16.5 billion in 1990-1999 before increasing significantly to about US$77 billion in 2000-2009, which marked the start of democracy in Nigeria as well as the adoption of relatively more liberal trade regimes. This increased further to US$149 billion in 2010-2019 before the COVID-19 pandemic, which reduced trade flows to US$125 billion in 2020-2022. The periods 1980-1989, 1990-1999, and 2000-2009 indicate a positive trade balance. However, subsequent periods show that Nigeria records a trade deficit of US$18.9 billion, perhaps due to high import bills occasioned by the COVID-19 pandemic, which contributed to an already rising import bill in the previous decade.

Table A1 also shows that financial development measured by domestic credit to the private sector as a share of GDP and broad money as a percentage of GDP has generally trended upward, indicating an improvement in financial depth in the last five decades. Some of the notable reforms include the establishment of the Central Bank of Nigeria (CBN) in 1958, the creation of the Nigeria Deposit Insurance Corporation (NDIC) in 1988, banking sector consolidation in 2004/2005, post-banking sector consolidation reforms such as the implementation of risked-based banking supervision, gradual adoption of the Basel Accords/Standards (II & III), the enhanced regulatory framework for corporate governance and anti-money laundering, and the cashless policy initiative to promote e-payment and cash-based transactions; establishment of the Asset Management Company of Nigeria (AMCON) in 2010 by the CBN in response to the banking sector crisis characterized by weak risk management, non-performing loans, and corporate governance failures.

The CBN strengthened its regulatory oversight while AMCON purchased non-performing loans, introduced the Bank Verification Number (BVN), developed the National Financial Inclusion Strategy, and implemented sustainable banking principles to encourage responsible banking practices. These reforms have, among other things, contributed to Nigeria's financial development. The exchange rate from 1980 to 1989 was single-digit, recording an average of N2.2/US$, but rose to N25.9/US$ in 1990-1999 and nearly tripled to N124.9/US$ in 2000-2009. This increased further to N214/US$ and N395.3/US$ in 2010-2019 and 2020-2022, respectively (See Table A1 in the appendix).

The trade-finance nexus seriously affects regional and national trade policies (Wajda-Lichy et al., 2019; Shuaibu, 2023). Hence, it has continued to attract significant attention from academic and policy circles. This paper contributes to the debate by using two widely used indicators of financial development (credit to private sector as a percentage share of GDP or broad money to GDP ratio) to analyze their short- and long-term impact on external trade performance in Nigeria from 1977 to 2022. This is one of the first attempts to examine this nexus in Nigeria using a dynamic modeling approach to analyze more recent aggregate trade data and using different measures of financial development. Also, extant studies (Beck, 2002; Yakubu et al., 2018; Sare, 2019; Tsaurai, 2020; Caporale et al., 2022; Shuaibu, 2023) have focused on cross-country analysis using different panel data techniques. These studies ignore the heterogeneities across countries regarding the level of financial development and the trade structure. Some notable exceptions that have conducted country-specific studies are Rafiu et al., 2020 for Nigeria, Qiu et al., 2022; Xinzhong, 2022; and Zhou, 2023 for China.

An apparent gap in these studies that thus forms the value addition of this paper is the disaggregated consideration of trade. For instance, Rafiu et al. (2020) focused on the effect of financial development on merchandise trade, while Qiu et al., 2022 and Xinzhong, 2022 looked at the impact on exports only. In addition to using ordinary least squares, Zhou (2023) only looked at the long-term effect of financial development on international trade and ignored the contemporaneous impact, which could be crucial for policy formulation and implementation, especially in developing countries like Nigeria. The finance-trade nexus might be significant for countries trying to catch up with high-income economies by developing their financial sector and adopting trade-led growth strategies (Caporale et al., 2022). The main finding is that financial development matters for trade performance in Nigeria.

The paper's layout is as follows: Section 1 is the introduction, Section 2 is the review of related literature, Section 3 highlights the methodology and data, Section 4 presents and discusses the results and Section 5 concludes and highlights some policy considerations.

2. Literature Review

The theoretical literature on the trade-finance nexus can be traced to the work of Beck (2002), who hypothesized that *cetaris paribus*, "a higher level of external finance results in a higher export share and trade balance of goods that have relatively high scale economies." While there may be several channels that link financial development with trade, one of the most salient and, thus, the focus of this paper is the capacity of the financial system to help export-oriented businesses overcome cash constraints. The surplus funds in the financial system are transmitted to the private sector.

The theoretical model focuses on the role of financial intermediaries in facilitating large-scale, high-return projects and shows that economies with better-developed financial sectors have a comparative advantage in manufacturing industries (Beck, 2002). The model focuses on the role of finance in mobilizing savings and facilitating large-scale and high-return projects. The producers of the good with increasing returns to scale profit from a higher level of financial development than producers of other goods since a higher level of external finance allows them to exploit scale economies (ibid.). Tsaurai and Hlup (2020) opine that firms involved in external trade may need to choose between alternative financing instruments to boost production due to high fixed and variable costs. As Baldwin and Krugman (1989) pointed out, when firms expand their operations to export, they often require significant capital to meet contemporaneous costs such as research and development, quality control and standards, trade facilitation, and logistics. However, firms usually need help to raise the requisite capital to purchase machines and other intermediates to scale up production for exports.

More country-specific empirical literature on the trade-finance nexus, especially in Nigeria, must be provided. Most studies on this topic have been carried out through panel data analysis, and inferences cannot be drawn from any particular country due to cross-sectional heterogeneity. For instance, Beck (2002) analyses the relationship between financial development and trade in manufactured goods in a panel of 65 countries. Using an empirical framework that controls for endogeneity bias and country-specific effects, the findings reveal that financial development exerts a significant causal impact on exports and the trade balance of manufactured products. The study ignored other products and focused only on manufactured goods. Yakubu (2018) looked at the impact of financial development on trade in 46 African countries between 1980 and 2015. The system GMM estimates show that private credit does not promote export and trade, while domestic credit positively influences trade openness and exports.

Tsaurai and Hlupo (2020) analyze the link between financial development and foreign trade for transitional economies from 1994 to 2014. Using the panel fixed effect estimator, the results indicate that financial development has a positive but insignificant effect on trade. In contrast, the random effect estimator showed that the impact of financial development on trade is negative and statistically significant. The author notes that in both models, human capital development amplified the positive effect of finance on trade. Using dynamic panel data analysis, Caporale et al. (2022) investigate the nexus between financial development and foreign trade in 6 EU countries. The study revealed that financial development positively affects trade openness and exports. The findings also show that the effect becomes

negative when financial development interacts with sectoral value added, with the manufacturing sector being more pronounced than the agriculture sector.

Ho and Iyke (2021) examine the dynamic effect of trade openness on financial development for 43 Sub-Saharan African countries between 1996 and 2014. Based on mean group, pooled mean group, and dynamic fixed effect models, they found that trade openness leads to financial development in the long run, but in the short-run model, the effect is negative. Further, the authors show that trade openness leads to financial development in low-income countries, but its effect is detrimental to high-income countries. This study focused on the impact of trade on finance and ignored the issue of endogeneity bias that may exist in the nexus. Similarly, Shuaibu (2023) examines the nexus between trade and finance for 21 Sub-Saharan African countries between 2000 and 2020. The panel Granger causality tests showed a two-way causal link between trade and finance in Africa. At the same time, the system GMM estimates indicate that financial development has a positive and significant effect on trade. The literature considered so far examines the trade-finance nexus using panel data, which may not be adequate for country-specific policy inferences.

To our knowledge, except for Rafiu et al. (2020), the effect of financial development on trade has yet to be adequately studied in Nigeria. The authors examine the impact of financial development on merchandise trade using an autoregressive distributed lag model. While the results showed that financial development exerts a positive and significant effect on merchandise export in the short and long run, the impact of financial development on merchandise import is positive but insignificant in the short run, negative and statistically significant in the long run. In addition to disaggregating trade into export and import, the study only focused on merchandise trade and ignored the services component, which is also essential. Similarly, Qiu et al. (2022) disaggregates exports by volume, structure, and mode in their analysis of the trade-finance nexus in China. Using regression techniques to analyze data between 1987 and 2018, they found that financial development reduced the volume of international trade using the three dimensions considered. Ahad (2017) examines the link between financial development and trade in Pakistan based on data covering 1972-2014. The parsimonious error correction model revealed that financial development, exchange rate, and inflation significantly affect the trade balance in the long run. Still, the short-run estimates showed that only exchange rate and inflation statistically affect the trade balance.

In another study of China's Jiangsu province, Xinzhong (2022) examined the impact of financial development on export trade using regression analysis. The analysis indicates that financial development does not significantly affect export growth, indicating poor coordination between financial development and export performance. This suggests that other factors related to factor endowment,

institutional aspects, and productivity may be necessary. Zhou (2023) analyzes the effect of financial development on external trade in China. The study finds a long-run link between financial development indicators and external trade. At the same time, the regression analysis showed that improving financial development positively affects foreign trade. The results also show that an increase in financial scale reduces foreign trade, suggesting that financial scale should encompass quality and efficiency to enhance its potency.

3. Methodology

The empirical framework leans on the work of Beck (2002), who provides a lucid theoretical and empirical exposition of the trade-finance nexus. The reference is, however, adapted to a country-specific context, and the selection of variables is based on the literature reviewed (See Ahad, 2017). Several studies have focused on two measures of financial development: private credit to GDP ratio and stock market capitalization as a share of GDP. These measures must account for financial development's complex and multidimensional nature.[3] Thus, we rely on the IMF's newly developed financial development index that reflects the financial system's depth, access, and efficiency. The model also includes the control variables such as exchange rate, inflation, and income (GDP). While the exchange rate is expected to spur the competitiveness of exports and thus boost trade performance, higher income is also likely to impact aggregate trade flows positively. The model is specified as follows:

$$tra = \alpha + \beta_1 findi + \beta_2 finii + \beta_3 finmi + \beta_4 exr + \beta_5 gdp + \beta_6 inf + \varepsilon_t \qquad (1)$$

Where tra represents total trade flows, findi is the financial development index, finni depicts the financial institution index, finmi represents the financial market index, and exr is the exchange rate. At the same time, GDP is the gross domestic product used to control the income effect. The data cover the period 1980 to 2021. The period was considered because data for our primary variable(s) of interest (financial development indicators) was only available for this period and was sourced from the IMF financial development index database (https://data.imf.org/ ?sk=f8032e80-b36c-43b1-ac26-493c5b1cd33b) while total trade, exchange rate, inflation, and GDP were sourced from the World Bank's World Development Indicators (https://databank.worldbank.org/source/world-development-indicators#).

Preliminary data diagnostics such as line plots, correlation matrices, descriptive statistics, and stationarity tests are conducted before the short- and long-run analysis. The ARDL bound testing approach developed by Pesaran et al. (2001) is used for the following reasons: (i) applicable to small sample size; (ii) can be used if

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[3] https://data.imf.org/?sk=f8032e80-b36c-43b1-ac26-493c5b1cd33b

variables are integrated of different orders (I(0) and I(1)); (iii) modeling flexibility because it accounts for both models both long- and short-run dynamics; and (iv) it incorporates lagged effects and addresses endogeneity. The null hypothesis is that there is no cointegration between the variables considered. The decision rule is that cointegration exists if the estimated F-statistic exceeds the upper bound critical value. However, if the F-statistic is less than the lower bound (or in between the lower and upper bound), we conclude that there is no cointegration (inconclusive).

After that, an error correction model (ECM) is used to ascertain the nature of the short-run relationship in the event of an abrupt shock in the established cointegrating relation. The ECM analyses dynamic linkages and captures short-run fluctuations and long-term equilibrium adjustments in the time series. Some post-estimation tests for heteroscedasticity, misspecification, autocorrelation, normality, and parameter stability are conducted to ascertain the robustness and potency of the results for policy inference.

4. Discussion of Findings

The analysis and interpretation of results start with preliminary data checks. Figure 1 depicts the trend of the main variables of interest and shows a positive correlation between the three measures of financial development (financial market index, financial institutions index, and the broader financial development index). We also see a sharp decline in financial development after 2008 due to the global financial crisis, and Nigeria began to see a modest recovery in the financial system after 2010. The flow of trade (trab) seemed to move in a similar direction, albeit at a lower level between 1980 and the early 2000s, before exhibiting slight volatility after that due to global crude oil market volatility

Figure 1. Trend analysis
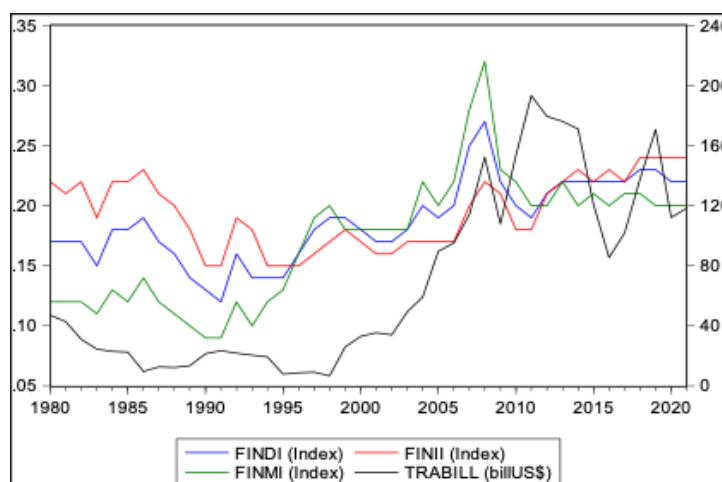
Tables 1 and 2 show the correlation analysis and summary statistics of the variables used in estimations. The correlation matrix shows that the financial development index (FINDI) has a 59% positive correlation with trade flows (LNTRA). We see a relatively lower correlation between LNTRA and the financial institutions index (FINNI), while the financial markets index shows a high positive correlation of 77%. Exchange rate (EXR) and domestic income (GDP) exhibit a high correlation of 81% and 66%, respectively, with trade flows. The correlation between inflation and trade is negative (17%). Overall, the results do not indicate any evidence of multicollinearity.

The descriptive statistics presented in Table 2 show that the average performance of total trade flows during the review period was about US$68.9 billion, while the range of trade has a minimum of US$6.6 billion and a maximum of US$193.2 billion, indicating a significant disparity in Nigeria's trade performance over time. The standard deviation of trade was US$59.6 billion, which shows that the variability of the data around the mean is relatively stable relative to the average. The Financial Development Index (FINDI) is a combination of the Financial Institution Index (FINII) and the Financial Market Index (FINMI)—the FINII and FINMI aggregate financial markets and institutions' depth, access, and efficiency. The values lie between 0 (worst) and 1 (best). Nigeria's average performance across the three financial development indicators is relatively poor (less than 0.2), with a very low standard deviation of 0.05 for FINMI and 0.03 for FINDI and FINII. The minimum and maximum values observed during the review period indicate that the level of financial development has not been very substantial.

Table A2 in the appendix indicates that the variance inflation factor coefficient of the financial development indicators exceeds 5, while the other control variables are below 5. The results show that FINDI has a significantly higher variance (9.17), suggesting moderate multicollinearity. FINMI and FINII also have relatively high variances (6.88 and 8.76, respectively), indicating moderate multicollinearity. The control variables, EXR, INF, and GDP, have much lower variances (0.01, 0.03, and 0.04, respectively), suggesting low multicollinearity.

Table 1. Correlation matrix

	LNTRA	LNFINDI	LNFINII	LNFINMI	INF	EXR	LNGDP
LNTRA	1	0.59	0.03	0.77	-0.17	0.81	0.66
LNFINDI	0.59	1	0.65	0.89	-0.55	0.70	0.77
LNFINII	0.03	0.65	1	0.26	-0.33	0.48	0.44
LNFINMI	0.77	0.89	0.26	1	-0.47	0.66	0.77
INF	-0.17	-0.55	-0.33	-0.47	1	-0.30	-0.36
EXR	0.81	0.70	0.48	0.66	-0.30	1	0.75
LNGDP	0.66	0.77	0.44	0.77	-0.36	0.745	1

Table 2. Summary statistics

	FINDI (index)	FINII (index)	FINMI (index)	EXR (naira/US$)	INF (%)	TRA (bn, US$)	GDP (US$)
Mean	0.19	0.20	0.17	105.53	18.74	68.91	216.96
Std. Dev.	0.03	0.03	0.05	109.88	16.51	59.61	166.74
Minimum	0.12	0.15	0.09	0.55	5.39	6.62	44.00
Maximum	0.27	0.24	0.32	401.15	72.84	193.23	574.18
Obs	42	42	42	42	42	42	42

Table 3 presents the outcome of the unit root tests, and it shows that all the variables are integrated of order one except for inflation (INF), which was found to be stationary at levels. This ADF and PP unit root test results are stationary at levels and robust at the 5% significance level. Therefore, we proceed with the long-run analysis using the ARDL bound testing approach to cointegration. The result shows a long-run equilibrium link between the variables as the value of the estimated F-statistic (6.92) exceeds the upper bound at the 5% significance level. This finding is consistent with other studies that suggest that a more efficient financial system boosts trade performance in the long run, especially in the case of finance-intensive sectors. This conforms with the findings of Ahad (2017), who observed that a long-run association exists between financial development and trade in Pakistan.

Table 3. Stationarity test results

Augmented Dicky-Fuller				Philip-Perron			
Variable	Test statistic	Critical Value 5%	Order of Integration	Variable	Test statistic	Critical Value 5%	Order of Integration
TRA	-5.44	-2.94	I(1)	TRA	-5.44	-2.94	I(1)
FINDI	-5.07	-2.94	I(1)	FINDI	-9.36	-2.94	I(1)
FINII	-5.91	-2.94	I(1)	FINII	-7.07	-2.94	I(1)
FINMI	-6.48	-2.94	I(1)	FINMI	-6.68	-2.94	I(1)
EXR	-4.07	-2.94	I(1)	EXR	-3.96	-2.94	I(1)
LNGDP	-6.27	-2.94	I(1)	LNGDP	-6.27	-2.94	I(1)
INF	-3.09	-2.94	I(0)	INF	-2.93	2.94	I(0)

Table 4. ARDL Bounds Test Co-Integration Result

F-statistic	Degree of Freedom	Level of Significance	Lower & Upper Bounds I(0)	I(1)	Remark
6.919835	6	10%	2.12	3.23	Cointegrated
		5%	2.45	3.61	
		2.5%	2.75	3.99	
		1%	3.15	4.43	

The long-run equation estimates are obtained using dynamic OLS, which can be applied with cointegrated variables. The model controls for the dynamic effect of lagged variables, and the estimation procedure involves regressing the differenced dependent variable on lagged differences of the regressors. The estimated coefficients obtained from dynamic OLS yield consistent estimates of the long-run equilibrium association.

The long-run estimates in Table 5 show that the broad measure of the financial development index exerts a positive but statistically insignificant effect on trade performance. The other indicators of financial development (FINII and FINMI) show that financial institutions and markets in Nigeria negatively and significantly impact trade. This may be explained by the fact that the financial markets and institutions independently do not contribute considerably to trade-oriented firms in Nigeria. Financial institutions are more inclined to give credit to oil companies, which form a relatively small share of the total number of firms in the country. In addition, some domestic firms may also need help to raise long-term capital through the capital market. This makes a strong case for enhancing domestic firms' access to the capital market while financial institutions could increase lending to the private sector sector. The findings are similar to those of Rafiu et al. (2020), who used the ARDL approach to show a cointegrating relationship between financial development and merchandise trade. Our findings differ from those of Qiu et al. (2022), who observed that financial development reduced external trade performance in China. The difference could be traced to the measurement of trade and financial development indicators.

Table 5. Long-run estimation results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNFINDI	11.621	6.824	1.703	0.111
LNFINII	-7.918	4.151	-1.907	0.077
LNFINMI	-6.946	3.439	-2.020	0.063
INF	-0.053	0.012	-4.245	0.001
EXR	0.000	0.002	0.133	0.896
LNGDP	1.295	0.283	4.580	0.000
C	-13.966	9.695	-1.441	0.172

The contemporaneous error correction model is presented in Table 6. The second and third lags of the financial development index (FINDI) exert a significant positive effect on trade performance, meaning that it takes a little time for the full impact of financial development to materialize. For the financial institutions index (FINII), we also see a positive and significant impact on trade performance at different levels, including the first lag. The immediate effect may be traced to the components of this measure, which may affect domestic firms that export or depend on imported intermediate inputs. The FINII comprises credit to the private sector as a share of GDP and pension funds, mutual fund assets, and insurance premiums as a share of GDP, amongst other access and efficiency indicators. The financial market index (FINMI) is positive and insignificant at levels but becomes significant at the first lag. After that, it becomes negative and statistically significant at the second and third lags, suggesting that the effect of financial market development, such as the increased market capitalization, does not transcend credit availability for domestic firms engaged in international trade. The short-run results are similar to the findings of Rafiu et al. (2020) for Nigeria, Xinzhong (2022), and Zhou (2023) for China.

Regarding the control variables, we find that domestic income has a negative and significant effect on trade at levels but becomes positive at its first and second lag, with only the latter being significant. This could be explained by the fact that higher domestic income growth may not trickle down to all firms, especially those that import and export, due to the weak business enabling environment, among others. The coefficient to the exchange rate is, as expected, positive but only statistically significant when the third lag is considered. This means that trade takes time to respond to changes in the exchange rate. The results show that inflation exerts a negative and significant effect on trade in the short run. This is in line with the findings of Ahad (2017) for Pakistan.

Table 6. Short-run error correction model estimates

Variable	Coefficient	Std. Error	t-Statistic
D(LNTRA(-1))	0.240**	0.120	1.900
D(LNTRA(-2))	-0.020	0.100	-0.160
D(LNTRA(-3))	-0.200**	0.100	-2.010
D(LNFINDI)	-1.740*	0.610	-2.870
D(LNFINDI(-1))	-3.810*	0.640	-5.920
D(LNFINDI(-2))	1.190**	0.580	2.060
D(LNFINDI(-3))	1.050***	0.570	1.840
D(LNFINII)	1.520*	0.590	2.580
D(LNFINII(-1))	2.670*	0.380	7.110
D(LNFINII(-2))	-0.490	0.460	-1.070
D(LNFINII(-3))	1.040**	0.470	2.200

Variable	Coefficient	Std. Error	t-Statistic
D(LNFINMI)	0.530	0.360	1.470
D(LNFINMI(-1))	2.150*	0.440	4.840
D(LNFINMI(-2))	-1.710*	0.290	-5.880
D(LNFINMI(-3))	-1.040*	0.300	-3.410
D(INF)	-0.002	0.002	-1.110
D(INF)	-0.004*	0.002	-2.620
D(EXR)	0.004***	0.002	1.870
D(EXR(-1))	0.000	0.002	0.120
D(EXR(-2))	0.002	0.003	0.510
D(EXR(-3))	0.005**	0.002	2.850
D(LNGDP)	-0.820*	0.140	-5.630
D(LNGDP(-1))	0.150	0.140	1.090
D(LNGDP(-2))	0.660*	0.140	4.890
Error Correction Term (ECT)	-0.120***	0.060	-1.890
Diagnostic Tests			
Test type		*F-stat.*	*P-value*
Breusch-Godfrey LM Test	Serial Correlation	2.1457	0.2327
Breusch-Pagan-Godfrey Test	Heteroscedasticity	2.3522	0.1435
Ramsey RESET Test	Specification	4.6463	0.0837
Jarque-Bera Test	Normality	0.4545	0.7967

The ECT in the short-run model indicates the speed at which deviations from the long-run equilibrium between trade and the other explanatory variables of interest are corrected in the short run. The negative and statistically significant ECT of -0.120 implies that a departure from steady-state equilibrium established over the long term is corrected by about 12% each. In other words, if the variables move away from their long-run equilibrium path, they would adjust back towards it by approximately 12 percent in the subsequent period. The post-estimation tests show that the model performed satisfactorily as the estimates are not marred by misspecification, serial correlation, heteroscedasticity, and non-normality.

Further Checks: Forecast error variance decomposition and Causality test

We subject the data to forecast error variance decomposition analysis following Ahad (2017). The results in Table 7 indicate the amount of information each variable contributes to the other variables in the vector autoregression system. It gives information about how the magnitude of the forecast error variance of each of the variables is explained by exogenous shocks to the other variables. Regarding the dependent variable, the trade is strongly endogenous as it significantly influences itself, but the magnitude dissipates quickly over the forecast horizon. The influence of the other variables on trade displays strong exogeneity as they do not considerably explain trade flows significantly in the short run. Over a more extended

forecast period, we see that the coefficient of the financial institutions' index (FINII) becomes more significant in explaining the deviation in trade (31%) while the high own shock of trade observed from the first up to the fifth period drops by nearly 50%. The forecast error variance for the financial development index is about 6.8% over the long run, while for the financial market (FINMI), it is about 5.6%. The results also show that domestic income and exchange rate do not significantly account for Nigeria's variations in trade flows. These findings validate previous findings.

Table 7. Forecast error decomposition of variances

	Variance Decomposition of LNTRA					
Period	S.E.	LNTRA	LNFINDI	LNFINII	LNFINMI	EXR	LNGDP
1	0.295898	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
5	0.558636	88.20000	2.123017	3.409785	4.980914	0.843830	0.442455
10	0.813441	53.54784	6.853778	30.86901	5.597857	2.486340	0.645180

5. Conclusion

This paper investigated the link between financial development and external trade performance in Nigeria. Based on a modified version of Beck's theoretical work (2002), we specify an empirical model that accounts for different measures of financial development and controls for exchange rate, inflation, and domestic income. The empirical estimates from a 42-year annual time series indicate that financial development positively and significantly affects trade performance in the short run. The effect is positive but statistically insignificant in the long run. This means that higher levels of financial development are associated with better trade performance. The findings make a case for strengthening financial systems, especially the markets and institutions, to enable them to provide requisite financing for trade-oriented firms. Future studies should consider disaggregating trade into oil and non-oil components to isolate the dominant influence of Nigeria's crude oil exports. In contrast, future empirical exercises could consider financial development and other policy complementarities (interactions). The paper concludes that financial development matters for trade.

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Appendix

Table A1. Key Indicators (period average)

Period	Official exchange rate (naira per US$)	Inflation, consumer prices (%)	Domestic credit to private sector (% of GDP)	Broad money (% of GDP)	Total Exports (billion US$)	Total Imports (billion US$)	Total trade (billion US$)	Trade balance (billion US$)
1980-1989	2.2	20.9	6.8	13.4	12.4	11.5	23.9	0.8
1990-1999	25.9	30.6	6.9	12.3	9.2	7.3	16.5	1.9
2000-2009	124.9	12.3	11.2	16.0	45.4	31.5	77.0	13.9
2010-2019	214.2	11.8	12.2	24.1	74.2	74.8	149.0	-0.6
2020-2022	395.3	16.3	13.2	25.4	53.3	72.2	125.5	-18.9

Source: Computed based on World Bank World Development Indicators (online)

Table A2. Variance Inflation Factors

Variable	Coefficient Variance
LNFINDI	9.17080
LNFINMI	6.880610
LNFINII	8.761225
LNEXR	0.006743
LNINF	0.032932
LNGDP	0.042990