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FINANCIAL MARKET DEVELOPMENT AND EXPORT EARNINGS IN NIGERIA

Keywords: financial markets, export earnings, Stock Market Volatility, economy.

JEL Classification: G1, F10, G12, E00.

Abstract: This study aims to evaluate the impact of financial market development on earnings from exports in Nigeria. *Ex post facto* research design was used in this study and time series data were obtained from the Central Bank of Nigeria, International Monetary Fund, and World Bank Development database from 1990 to 2021. The study utilized Auto-regressive Distributed Lag (ARDL) technique in establishing the short and long-run relationship among the variables. From the result, it was found that: financial market depth has negative but significant ($\beta = -20.457$) impact with export earnings in Nigeria; financial market access ($\beta = 3.149$) has a positive and significant impact with export earnings in Nigeria; financial market efficiency ($\beta = 3.695$) has positive and significant effect with export earnings in Nigeria; and financial market stability

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($\beta = 0.025$) has positive and significant effect with export earnings in Nigeria. Therefore, it was concluded that financial market development through financial market access, efficiency, and stability has a significant impact on export earnings in Nigeria. Accordingly, the study recommended that policymakers and relevant stakeholders focus on enhancing and maintaining an enabling environment for easy access to financial markets, which boosts export earnings, among others.

■■■ INTRODUCTION

Export activities in the oil and non-oil sectors have become an economic policy strategy in terms of economic diversification, trade deficits, exchange rates correction, and enhancement of national income (Adeboje, Raifu, Ogbeide & Orija, 2021). Export earnings assumed vital relevance not only for developed countries but also for developing nations like Nigeria (Chude & Chude, 2023). According to the export-led growth hypothesis, increased export can perform the role of engine of economic growth because it can boost greater production and productivity (Bereket, 2020). Admittedly, export earnings accrued will improve the Nigerian economy to meet up with the developed nations in terms of economic growth and development.

Total export earnings in Nigeria have contributed 9.3% to the Gross Domestic Product (GDP) in Nigeria from 2011 to 2020 (Central Bank of Nigeria [CBN], 2021), which is considerably lower for a developing nation with a capacity for industrialization. National Bureau of Statistics (2023) estimated that export earnings in Nigeria were ₦15.14tn, ₦10.28tn, and ₦26.80tn, while contribution to GDP was 8.1%, 10.7%, and 8.4% in 2020, 2021, and 2022, respectively. Hence, these observed fluctuations in export earnings and their consequential impact on the economy have become a subject of considerable concern, thus bringing about concerns regarding its potential adverse effects on Nigeria's overall economy.

Despite policies and reforms since Structural Adjustment Programme (SAP) in 1986 (Raifu & Folarin, 2020), export trading activities in Nigeria still experience non-sufficient financing required to carry on operations as desired to boost export earnings (Adeboje et al., 2021). One of the factors affecting export output is the lack of proper financing, which has been identified as one of the major banes to export earnings in Nigeria (Noruwa, 2018). As such, the limited access to finance confines these firms to lower value-added stages of the supply chain, depriving them of the chance to exploit lucrative opportunities (Kumarasamy & Singh, 2018). Hence, financial markets as highlighted by Akintola,

Oji-Okoro and Itodo (2020) tend to be another viable source of funds to export sector to improve export earnings in Nigeria.

The financial market, which is a component of the financial structure (Sajo & Li, 2017), and comprised of the money market, capital market, and foreign exchange market (Anyamaobi & Boma-Oruwari, 2021), enhances oil and non-sector productivity, which may result in increased export earnings (Akintola et al., 2020). Similarly, Etudaiye-Muhtar, Ahmad, Olaniyi and Abdulmumin (2017) averred that firms may explore external sources of funding such as equity investments, preference shares, corporate bonds, or any other viable financing options from the financial market.

From the foregoing, the financial market's four key dimensions: financial market depth, accessibility, efficiency, and stability play an important role in shaping the market's operations and its ability to fulfil its function of providing financial resources to both individuals and corporate entities (Choi, 2023). Financial market depth and accessibility determine the availability of funds for entities involved in export trade, while financial market efficiency and stability imply the sustainability and extent by which financial resources will be available for export entities in the financial market (Donaubauer, Neumayer & Nunnenkamp, 2019).

Many studies have explored the relationship between financial market development and export earnings amidst different findings. Studies by Choi (2023), Nguyen and Su (2021), and Kong, Shen, Chen, Peng and Wong (2021) do not capture the financial market stability dimension to explain export performance. In Nigeria, studies by Wasurum and Tamunowariye (2022) and Adeboje et al. (2021) utilized financial markets' depth and accessibility to predict export promotion in Nigeria without using the index data. This paper aims to improve upon the existing literature by utilizing financial market depths, access, and efficiency indexes, as well as stock price stability for financial market stability, which have not been used in previous Nigerian studies as determinants of export earnings in Nigeria.

THEORETICAL AND EMPIRICAL LITERATURE

Financial markets serve as a conduit for the transfer of resources from savers to investors (Adeniyi, Oyinlola, Omisakin & Egwakhide, 2015; Pawłowski, 2018). Theoretically, this study is hinged on the supply-led hypothesis, which forms the basis of the finance-led growth nexus. The hypothesis asserts that

when the financial system provides credit, it simultaneously generates demand from businesses seeking credit to fuel economic investments (Ogbonna, Mombosi & Ugwuoke, 2020). This theory was initially formulated by Schumpeter (1911) and has received support from the works of scholars such as King and Levine (1993), among others. Similarly, McKinnon (1973) and Shaw (1973) examined the relationship between financial development and economic growth, considering various aspects such as the role of the financial system, financial intermediaries, and the overall financial sector. The theoretical exploration of the connection between financial development and export earnings gained significant attention, particularly after the influential theoretical work by Kletzer and Bardhan (1987). Using the framework of the Heckscher-Ohlin model, which compares two international trade models with identical factor endowments, one of these models introduced external finance for working capital. The findings revealed that credit market constraints play a substantial role in determining a country's specialization in specific sectors, particularly those that rely heavily on external finance (Kletzer & Bardhan, 1987). Therefore, following the supply-led hypothesis and given the development in the financial markets in Nigeria, this study proposes that export earnings are significantly influenced by developments in the financial market. This would occur when barriers to accessing credit facilities are removed and exporters are able to fund their activities.

Choi (2023) utilized financial market firm-level data from 1990 to 2016 in Taiwan while examining the financial development impact on export-based firms. Using the OLS regression, the results show that financial development proxy by financial markets and institutions, depths and access increases export earnings and is more productive for firms that engage in production. Also, Nguyen and Su (2021) conducted a study on multidimensional evidence of financial development and export quality. Their findings revealed that financial market indexes comprising financial market depth, access, and accessibility have a significant positive impact on the quality of exports. Kong et al. (2021), Kumarasamy and Singh (2018), Svirydzenka (2016), Jaud, Kukenova and Strieborny (2015), and Nieminen (2020) found that financial market depth and access strengthen the markets and boost operations which promote exports activities. However, Paudel and Alharthi (2021) found that financial market depth, access, and efficiency formed into indexes using Principal Component Analysis (PCA) show negative relationship with performance of export.

Contextualizing financial markets using a single variable to proxy financial markets development rather than the index, Chen, Poncet and Xiong (2020) examined the local financial development and private firm's exports in China using data from 260 cities using the OLS regression, and the study shows that exporting firms operating in more unstable financial markets and institutions underperformed compared to firms in more stable financial markets and institutions. Likewise, Okafor, Bhattacharya and Apergis (2020) found that access to finance improves exports output and performance. Other studies such as Pradhan and Hiremath (2020), Choi and Lugovskyy (2019), Ghimire, Mukherjee and Alvi (2016), and Coban (2015) found that financial market has a positive impact on increasing export performance. Nevertheless, Irfan, Rehman, Liu and Razzaq (2022) found that financial markets have an inverse relationship with minerals and energy exports in both long and short-run. Likewise, Bereket (2020) using the ARDL bound test technique found that financial development has a positive but non-significant long-run relationship with exports. Bilas, Bošnjak and Novak (2017) also established a negative long-run relationship between financial development proxied by credit to the private sector and export trade.

In Nigeria, Adeyemo and Tamunowariye (2022) examined the nexus between trade performance, financial development, and the Nigerian economy, and it was found that financial development proxy with funds to the private sector has a significant positive impact on exports. Adeboje et al. (2021), Raifu and Folarin (2020), Noruwa (2018), Tule and Oboh (2017), and Elechi, Kasie and Chijindu (2016) also found that financial development proxy by credit to private sectors has a long and positive relationship with exports in Nigeria. However, Wasurum and Tamunowariye's (2022) findings show that export trade does not Granger-cause financial development proxy by credit to the private sector and financial development does not Granger-cause export trade in Nigeria.

RESEARCH METHODOLOGY AND RESEARCH PROCESS

This comprises the model specification, definition and measurement of variables, research design, data sources, and technique for data analysis.

Model Specification

This study adapts the model used in the study of Paudel and Alharthi (2021), which was stated as follows:

$$\text{EXPORT} = f(\text{WAPOP}, \text{FDI}, \text{GDPPC}, \text{FD}, \text{FI}, \text{FM}) \quad (1)$$

Where: EXPORT = Export Earnings; WAPOP = Working Age Population Proxy for Labour Force; FDI = Foreign Direct Investment; GDPPC = Gross Domestic Product Per Capita; FD = Financial Development Index; FM = Financial Markets Index Proxy for Financial Market Depth, Access and Efficiency; FI = Financial Institutions Index Proxy for Financial Institutions Depth, Access and Efficiency.

Based on the preceding information, Equation (1) has been adapted to align with the specific objectives of the current study. The adjusted model is expressed as follows:

$$\text{EXPORT} = f(\text{FMD}, \text{FMA}, \text{FME}, \text{FMS}, \text{INTR}, \text{INFR}, \text{EXGR}) \quad (2)$$

ARDL Model for the study below shows the econometric expression of both the short-run and long-run relationship between financial market variables and export earnings in Nigeria.

$$\begin{aligned} \ln \text{EXPORT}_t = & \alpha + \sum_{i=1}^{n1} \gamma \ln \text{EXPORT}_{t-i} + \sum_{i=1}^{n2} \beta_1 \text{FMA}_{t-i} + \sum_{i=0}^{n3} \beta_2 \text{FMA}_{t-i} + \\ & \sum_{i=0}^{n4} \beta_3 \text{FME}_{t-i} + \sum_{i=0}^{n5} \beta_4 \text{FMS}_{t-i} + \sum_{i=0}^{n6} \beta_5 \text{EXGR}_{t-i} + \sum_{i=0}^{n7} \beta_6 \text{INTR}_{t-i} + \\ & \sum_{i=0}^{n8} \beta_7 \text{INFR}_{t-i} + \sum_{i=1}^{n1} \gamma \Delta \ln \text{EXPORT}_{t-i} + \sum_{i=1}^{n2} \beta_1 \Delta \text{FMA}_{t-i} + \sum_{i=0}^{n3} \beta_2 \Delta \text{FMA}_{t-i} + \\ & \sum_{i=0}^{n4} \beta_3 \Delta \text{FME}_{t-i} + \sum_{i=0}^{n5} \beta_4 \Delta \text{FMS}_{t-i} + \sum_{i=0}^{n6} \beta_5 \Delta \text{EXGR}_{t-i} + \sum_{i=0}^{n7} \beta_7 \Delta \text{INTR}_{t-i} + \\ & \sum_{i=0}^{n8} \beta_8 \Delta \text{INFR}_{t-i} + \delta \text{ECM}_{t-i} + \varepsilon_t \end{aligned} \quad (3)$$

The original Equation (1) from Paudel and Alharthi (2021) was revised to address the identified gap in the literature and align with the objectives of this study. The remodified model expresses export earnings as a function of financial markets depth, financial markets access, financial markets efficiency, financial markets stability, and control variables based on various works of literature reviewed; theory, empirical, and conceptual. The variables such as "Interest Rate", "Exchange Rate", and "Inflation Rate" are incorporated into the equation as control variables. They are commonly recognized as critical drivers of economic conditions and can significantly affect a country's trade performance (Summers, Wessel & Murray, 2018). In addition, they refer to the table of variable measurement for expected relationship between the variables.

Research Design

An ex-post research design was adopted for this study which implies examining the relationships between a dependent variable and a set of independent variables (Creswell, 2014). This design is suitable because it analyzes existing facts and utilizes pre-existing (secondary) data.

Method and Sources of Data Collection

The study makes use of quantitative data, specifically secondary data spanning 32 years from 1990 to 2021. This timeframe was deliberately selected to encompass important periods such as the 4th Republic, post-adoption of the Structural Adjustment Programme (SAP), and pre- and post-2008/2009 financial crises, which might have influenced the concepts under investigation.

Variables Description and Sources

Table 1. Variables Description and Sources

Variable(s)	Description/Measurement	Source (s)	Apriori Expectation
Financial Markets Depth (FMD)	Financial Markets Depth Index. It is measured as percentage size of the financial markets	International Monetary Fund Financial Development Database	+
Financial Markets Access (FMA)	Financial Markets Access Index. It is measured as the percentage of the overall level of accessibility of funds in the markets	International Monetary Fund Financial Development Database	+
Financial Markets Efficiency (FME)	Financial Markets Efficiency Index. It is measured as the percentage of the aggregate degree of effectiveness and effectiveness of markets	International Monetary Fund Financial Development Database	+
Financial Markets Stability (FMS)	Financial Markets Stability proxy with the volatility of stock price index measured as the average of the 360-day fluctuations of the national stock market index	International Monetary Fund Financial Development Database	-
Interest Rate (INTR)	Annual Rate at which borrowers pay for using borrowed funds (%)	Central Bank of Nigeria	+/-
Exchange Rate (EXGR)	Local currency units relative to U.S. dollars	Central Bank of Nigeria	+/-
Inflation Rate (INFR)	Consumer Price Index (CPI) yearly aggregate (%)	Central Bank of Nigeria	+/-
Exports Earnings (EXPORT)	Total export Value (oil and non-oil)	Nigerian Bureau of Statistics	

Source : author's computation.

Techniques for Data Analysis

This study adopts a time series data procedure, utilizing the Ordinary Least Square (OLS) econometric technique. To assess the stationarity of variables, a pre-test on the model is conducted using the Philip Perron and Augmented Dickey-Fuller (ADF) tests for unit roots. The outcome of the unit root test depicts that the nature of the regression technique to be used in establishing the

relationship among the variables is the auto-regressive distributed lag (ARDL) for long-run cointegration.

RESULTS

Unit Root Test

Table 2. ADF and PP Stationary Unit Root Test Results

Variables	ADF Stat. Values	Sig. Value	Philips Perron (PP)	Variables	ADF Stat. Values	Sig. Value
LnExport	-6.6936	0.000***	-6.6740	0.000***	I(1)	Stationary
Financial Market Depth	-5.8487	0.000***	-5.8440	0.000***	I(1)	Stationary
Financial Market Access	-5.8159	0.000***	-5.8131	0.000***	I(1)	Stationary
Financial Market Efficiency	-5.7872	0.000***	-5.0757	0.000***	I(1)	Stationary
Financial Market Stability	-5.0668	0.000***	-4.2884	0.0102**	I(1)	Stationary
Exchange Rate	-4.5736	0.005***	-4.5654	0.005***	I(1)	Stationary
Inflation Rate	-3.3463	0.079*	-2.8665	0.1863	I(0)	Stationary
Interest Rate	-3.9282	0.000***	-3.9937	0.020***	I(0)	Stationary

Note: *** and ** and * show significance levels at 1%, 5% and 10%, respectively.

Source: author's computation.

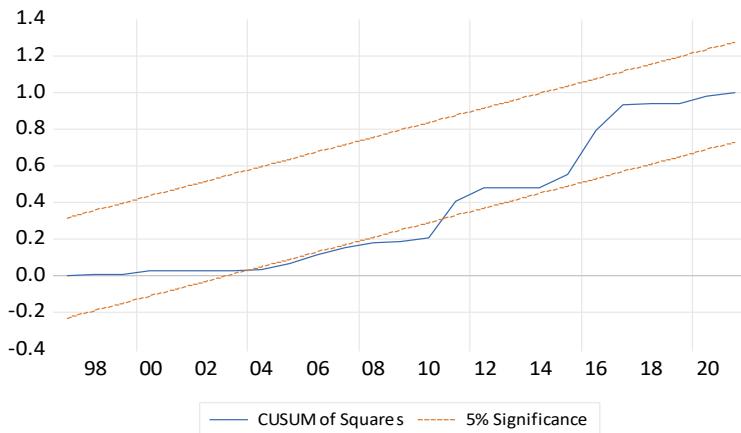
As shown in Table 2, export earnings (lnexport), financial market depth, access, efficiency and stability indexes, and exchange rate, showed stationarity at the first difference I(1) with a 1% level of significance. In contrast, the interest rate and inflation rate exhibited integration or stationarity at level I(0).

Structural Break Test

A structural break test is conducted to identify if there are significant underlying policy shifts that may affect the data-generating process. The F test (Chow

test) was employed to test the existence of endogenously determined structural break time.

Figure 1. CUSUM Square Test



Source: author's computation.

Figure 2. Chow Test Result

Chow Breakpoint Test: 2004

Null Hypothesis: No breaks at specified breakpoints

Varying regressors: All equation variables

Equation Sample: 1990 2021

F-statistic	7.836664	Prob. F(8,16)	0.0003
Log likelihood ratio	50.97502	Prob. Chi-Square(8)	0.0000
Wald Statistic	62.69331	Prob. Chi-Square(8)	0.0000

Source: author's computation.

The outcome of the CUSUMSQ test in Figure 1 shows that the plot lies outside the critical 5% boundary, particularly evident in the year 2004. This year was predetermined as the point of potential structural break. More so, Figure 2 depicts the Chow test result, which shows the significant F test value (7.837) at the 1% significance level, affirming 2004 as the year of the structural break determined by the earlier CUSUMSQ test. Consequently, a dummy variable is introduced to accommodate the break's impact on the dependent variable. Incorporating these dummy variables in the regression model explicitly captures the influence of structural breaks on the dependent variable.

ARDL Bound Test Co-integration Procedure

To determine the presence of a long-run relationship, the ARDL bound testing procedure, developed by Pesaran, Shin and Smith (2001), is employed.

Table 3. ARDL Bound Test Procedure Result

Variable	F-Statistics	Cointegration
InExport	6.4917	Cointegration
	Lower Bound	Upper Bound
1%	3.15	4.43
5%	2.55	3.68
10%	2.26	3.34

Source : author's computation.

Based on the result presented in Table 3, the computed F-statistic value (6.4917) exceeds the upper-bound critical values. Consequently, it can be said that a long-term relationship exists between export earnings and financial market development variables. This indicates the presence of cointegration among the series examined in the study.

**REGRESSION ANALYSIS:
ERROR CORRECTION MODEL FOR LONG RUN COINTEGRATION**

Table 4. Long-run and Short-run Estimates results

Variables	Long-Run		Short-run	
	Coefficient	t-statistics	Coefficient	t-statistics
InExport	–	–	-0.1919	-0.9192
Financial Market Depth	-20.4569	-4.7661***	-6.8436	-3.4688***
Financial Market Access	3.1497	3.2705 ***	3.2784	2.4416**
Financial Market Efficiency	3.6946	4.2193***	4.1849	5.6300***
Financial Market Stability	0.0251	1.8602*	-0.0324	-3.2405***
Exchange Rate	-0.0047	-3.5701***	-0.0117	-5.3977***
Inflation Rate	0.0063	1.6880	-0.0126	-3.8762***
Interest Rate	-0.0844	-3.0611***	-0.0075	-0.6748
Dummy	-0.3362	-1.3096	-0.3494	-1.6480
ECM-1	–	–	-1.1919	-9.4650***
Constant	7.5544	6.1471***	7.6550	9.7564***

Note: *** and ** and * show significance levels at 1%, 5% and 10%, respectively.

Source: author's computation.

Table 4 depicts the short-run, error correction coefficient and long-run coefficients for the model of this study. In the short-run, the lag of financial market depth, financial market stability, inflation rate, exchange rate, and interest rate has a negative but significant relationship with export earnings in the short-run, except for interest rate which has a non-significant relationship.

The Error Correction Model (-1.19) suggests that the short-run shocks in the previous year that caused disequilibrium will be corrected at intervals of each year with the speed of adjustment of (-1.19). The (119%) speed of adjustment indicates that the error correction process fluctuates around the long-run values, but when this process is completed, there is rapid convergence to the path of equilibrium (Narayan & Smyth, 2006).

The long-run coefficients for the model as shown in Table 4 revealed that financial market depth has a negative (-20.45) but significant relationship with export earnings in Nigeria. The negative and significant relationship between financial market depth and export earnings could be justified. When a deeper financial market in Nigeria attracts foreign investment, it leads to a stronger domestic currency (Forex rate) which could affect export competitiveness and earnings. Also, strong domestic currency in Nigeria might divert domestic capital away from export-oriented industries as investors will be attracted to locally used product and services resulting to lower investment in export commodities and export earnings. This aligns with the findings of Wasurum and Tamunowariye (2022) and Paudel and Alharthi (2021). Although, this finding is contrary to apriori expectations and findings of Choi (2023), Adeyemo and Tamunowariye (2022), Adeboje et al. (2021), and Noruwa (2018), which found that financial market depth has a positive relationship with export earnings.

Financial market access, financial market efficiency, and financial market stability have positive and significant relationship with export earnings with coefficients of (3.14), (3.69) and (0.03), respectively. It means that improved access to financial resources and services in the financial market enables export-oriented businesses to secure capital for production, expansion, and innovation. More so, efficient financial markets optimize capital allocation and facilitate trade financing, promote competitiveness through innovation, and enhance risk management, all of which contribute to higher export earnings. Additionally, a stable financial market tends to increase investors' confidence and reduce the uncertainties and abrupt fluctuations often associated with financial instruments. Such stability enables businesses to engage in long-term planning, fostering sustainable growth that ultimately translates to elevated export earnings. Nevertheless, this finding was in line with the apriori expectation and studies of Choi (2023), Nieminen (2020), and Noruwa (2018). However, this finding was contrary to the study of Irfan et al. (2022), Bilas et al. (2017), and Paudel and Alharthi (2021), which found that financial market access and efficiency have a negative association with export performance.

In addition, the exchange rate and the interest rate have a negative but significant relationship with export earnings in Nigeria. The inflation rate has a positive but non-significant relationship with export earnings. The dummy variable that accounts for the influence of structural breaks has a negative and non-significant relationship with export earnings in Nigeria. This implies that possible reforms in the economy may not affect determining export earnings

in Nigeria. By implication, this means that if there are any changes in economic, financial policies, or other significant policy shifts in Nigeria, export earnings may not be affected.

Lastly, the theoretical implication of this finding is that it aligns and further consolidates the submissions of finance-led growth theory that underpinned this study, which suggests that a well-developed financial market can positively influence a country's export earnings. The findings conform with Beck (2002), Kim, Lin and Suen (2010), and Do and Levchenko's (2007), theoretical postulates that countries with well-developed and stable financial systems or high levels of financial system stability tended to have a large share of exporting activities which improves export earnings.

Diagnostic Tests

Table 5. Diagnostic Tests for the Study

Export Earnings		
Diagnostic Test	Coefficient	Significance Value
R2 Adjusted	0.79	–
BG-LM test	3.27	0.195
Ramsey Reset Test	0.29	0.776
JB Test	1.05	0.590
Breusch-Pagan-Godfrey Test	22.18	0.103
Durbin-Watson Test	3.15	
F-statistics	16.97	0.000***

Note: *** and ** and *show significance levels at 1%, 5% and 10%, respectively.

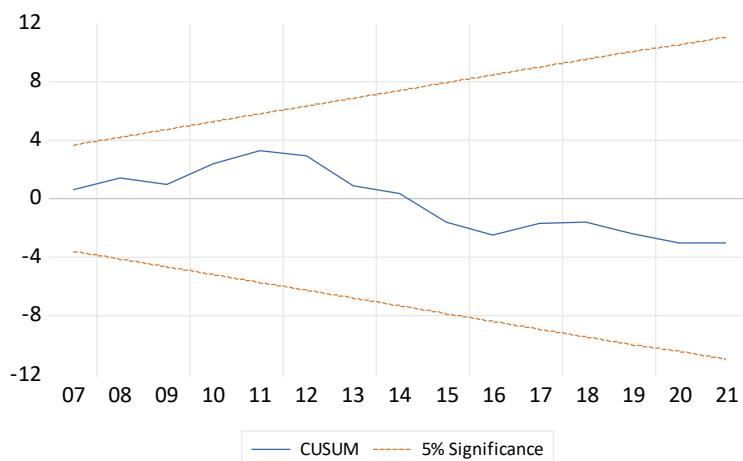
Source: author's computation.

In Table 5, the Adjusted R-squared value indicates that the included predictors explain approximately 79% of the variability in Nigeria's export earnings. The BG-LM test for serial correlation demonstrates the absence of serial correlation among the same variables across successive time intervals, ensuring the model's freedom from serial correlation. Similarly, the Ramsey RESET test confirms the model's proper specification and lack of misrepresentation. The JB test confirms the normal distribution of all error terms. The Breusch-Pagan-Godfrey test indicates the constant variance of residuals, signifying the absence of heteroscedasticity issues.

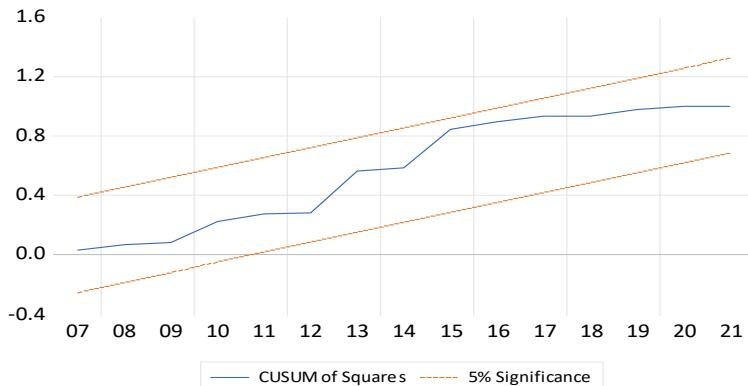
Stability Test

The cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMSQ) tests were used for stability test.

Figure 3. CUSUM Test



Source: author's computation.

Figure 4. CUSUMSQ Test

Source: author's computation.

Figures 3 and 4 revealed that the plots for variables are within the 5% critical boundary. This suggests that there is stability in the long-run relationship among the variables. In addition, the coefficients of the variables in the model are stable.

■■■ CONCLUSIONS OF THE RESEARCH PROCESS

The findings of this study lead to the conclusion that export earnings in Nigeria are positively impacted by financial market development vis-à-vis the financial market accessibility, financial market efficiency, and financial market stability, except for financial market depth which has a negative impact on export earnings in Nigeria. It was therefore recommended that policymakers and relevant stakeholders focus on enhancing and maintaining an enabling environment for easy access to financial markets by encouraging the implementation of inclusive financial services and technological innovation such as accessing market instrument through mobile phone codes, and e-coins through block chain technology. Additionally, centralized digital transactions platforms can help streamline access to funding and financial instruments, potentially boosting export earnings. More so, implementing regulatory frameworks, strengthening risk management practices, enhancing surveillance mechanisms, and providing clear guidelines for financial market players will mitigate excessive

volatility and prevent abrupt fluctuations in financial markets, which, in turn, help exporting entities in boosting their earnings. Promoting transparency in financial transactions, which includes non-ambiguous reporting and tracking of transactions, bureaucratic barriers (processes involved to access financial transaction, excessive documentations). When these aforementioned can be automated and shortened, it will help to improve the efficiency of the markets, which contributes to increased export earnings among others.

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