

Financial Sector Liberalisation and Capital Market Growth in Nigeria

Adeyefa, Felix Ademola

Department of Accountancy, Rufus Giwa Polytechnic, Owo, Ondo State, Nigeria

Abstract: The study examined financial sector liberalisation and capital market growth in Nigeria from 1985 to 2021 with secondary data sourced from the Central Bank of Nigeria Statistical Bulletin. The two formulated hypotheses were tested with the Augmented Dickey-Fuller (ADF) and error correction mechanism. Findings from the study revealed that broad money supply and credit to private sector have a positive and significant effect on both market capitalisation and volume of transactions. Also, cash reserve requirements and exchange rate have negative and significant effects on both market capitalisation and volume of transactions. Interest rates have significant and positive effects on market capitalisation and significant negative effects on volume of stock transactions. Foreign direct investment has a positive and insignificant effect on market capitalisation and volume of transactions. The study recommended that the monetary authority in Nigeria must continually improve the monetary policy to control the money supply in the economy and reduce the interest rate to enhance capital market expansion. Also, the Nigerian government should encourage more exports to create a positive relationship between exchange rate and stock prices. This will make local currency depreciate and local firms will become more competitive, leading to an increase in stock prices.

Keywords: Financial market, Stock transactions, Money supply, Monetary policy and Exchange rate

I. INTRODUCTION

The financial sector is a segment of the economy that consists of businesses and institutions that offer financial services for wholesale and retail trades. In this sector are many businesses such as; banks, investment firms, venture capitalist firms, and insurance providers. Nigeria's financial industry is categorised into bank and non-bank financial institutions. Regulatory agencies have made efforts to liberalise the financial institutions in Nigeria by developing policies to improve the financial sector's performance in Nigeria. One of these policies is financial liberalisation. Financial liberalisation refers to weakening or eliminating governmental oversight over agents' institutional framework, tools, and operations in various financial sectors. Oshikoya (1992) stated that the financial liberalization theory argued that the economy grows through financial deepening and financial sector reform. Financial deepening refers to an increase in the number of financial services available to all segments of the economy to increase the diversification of financial risks (Adeyefa & Obamuyi, 2018).

The primary purpose of financial liberalization is to create an effective financial system that will boost and increase

resource allocation efficiency, create financial stability, preserve consumer confidence in the system and enhance financial inclusion. Theoretically, financial liberalisation should promote economic growth by encouraging more private investment in the economy's significant sectors and an increase in savings through an increase in the real deposit rate. With a liberalised financial market, tremendous growth in the stock market is expected so that once the equity culture is established, it will be a dependable source of economic growth and development (Ogbebo, Oguntodu & Olayinka, 2017). Trade constraints such as entry barriers, bank interest rate limits, mandatory reserve requirements, and how to allocate credit are all subject to liberalisation. With the removal of these constraints, the economy will be opened to foreign investors who will easily access the Nigerian market and further improve foreign trade.

Capital markets are classified as non-bank financial institutions, and it is expected that the market should be influenced by financial liberalisation. Capital markets are essential because they finance the economy, disperse risk, and support monetary and economic stability. Capital markets in the United States finance a large portion of the economy through loans and equity for non-financial businesses (Center Forward, 2020). The capital market as a location for long-term capital includes investments in stocks, bonds, and money raised both domestically and abroad. The capital market fosters economic growth by mobilising and efficiently utilizing savings. The capital market has shown to be the most effective method for Nigerian businesses to raise medium-and long-term cash (Yusau & Umoru, 2022). Businesses seeking medium-and long-term finance benefit immensely from the capital market, which significantly contributes to economic growth in Nigeria (Abina & Lemea, 2019). An efficient transfer of financial resources from savers (surplus unit) to those in need of capital (deficit unit) and those who successfully sell it with a higher capitalisation depends on a functioning capital market.

Liberalisation of the capital markets is an example of a structural policy that influences both the type of shocks the economy experiences and how the economy reacts to these shocks (Joseph, Shari & José, 2008). The capital market is made up of both primary and secondary markets. The exchange of existing securities or previously-issued securities take place in the secondary market, while new issues of stocks and other securities are conducted (traded) in the primary markets. It may be inferred that the capital market has a

significant impact on Nigeria's economy because long-term funds are raised by Nigerian enterprises from it through the issuance of shares, debentures, and bonds. Stock market liberalisation means removing policies that have repressive tendencies in the market (Adeyeye, Aluko, Fapetu & Migiroy, 2017).

In order to remedy the predominant macro-economic and structural imbalances in the economy, most developing countries implemented the Structural Adjustment Programme in the 1980s. This reform centered on liberalisation, privatization, economic stability and deregulation. Thus, when Nigeria adopted the Structural Adjustment Programme on 27th June 1986, policies on agricultural regulations, trade, business, and foreign exchange systems were all reformed. Despite all efforts by the Nigerian government since 1986, the Nigerian Capital market could still not be categorized as an efficient market.

Considering the efforts made by the regulatory authorities over time to liberalise the Nigerian economy, it is expected that the Stock Exchange in Nigeria should be in strong form efficiency as against its present state. Anyanwu, 1998 and Olowe (1999) provided evidence that the Nigerian Stock Exchange is in weak form efficiency. Hence, it becomes imperative to ascertain whether financial liberalisation affects the capital market.

The broad objective of the study is to examine the nexus between financial sector liberalisation and capital market growth in Nigeria. The specific objectives are to:

- i. examine the effect of financial sector liberalisation on the efficiency of capital market in Nigeria.
- ii. determine the effect of financial sector liberalisation on the liquidity of capital market in Nigeria.

II. LITERATURE REVIEW

2.1 Conceptual framework

2.1.1 The Nigeria Capital Market

The capital market in Nigeria primarily serves as a marketplace for long-term investments, where long-term securities are traded. In 1961, the Lagos-based Nigerian Stock Exchange (NSE), currently known as the Nigerian Exchange Group, was established. In November 2019, the Nigerian Exchange Group highlighted that the Exchange had one hundred and sixty-one (161) quoted companies; in 2021, the total number of listed companies was one hundred and fifty-seven (157). Nigerian Stock Exchange was established mainly to provide secured sources of funds for business as well as create a reliable saving system, giving investors and enterprises dependable access to funds.

Nigerian Capital market has both primary and secondary markets. The primary market is known as the new issue market because it deals with new or recent securities offerings. In contrast, the secondary market, known as the stock market, provides an avenue for acquiring and selling

existing securities. The investor's Protection Fund was set up again in 2012 to foster openness and confidence in the stock market. The primary purpose of reconstructing the Investor's Protection Fund is to provide financial assistance to investors who make some financial loss due to a dealing member's suspension or cancellation of registration, bankruptcy, insolvency, negligence, or because one of the company's directors, employees, representatives, officers defrauded the company.

Nigeria Stock Exchange (NSE) in 1999 began the operation of an automated trading system where stock dealers were made to transact business via computer networking. This innovation enhanced the growth of the stock exchange, and trading on the floor of the stock exchange was published on the Stock Exchange Daily Official List, newspapers and the provision of the exchange indices are declared daily. As part of its financial liberalisation policy, the Federal Government regulation that restricted the inflow of foreign capital into Nigeria was repealed to promote foreign investment. Due to this, foreign investors are permitted to trade on the Nigerian Stock Exchange as foreign brokers. Additionally, Nigerian businesses are also permitted to list on the Nigerian Stock Exchange and, at the same time, get listed on any foreign stock exchange.

The Securities and Exchange Commission is the body that controls the capital market in Nigeria. This Commission was set up mainly to ensure that investors are prevented from being defrauded and to ensure the market's stability towards attaining the required economic growth.

2.1.2 Effects of financial liberalisation indices on capital market

Exchange rate

It is expected that there should be a direct link between exchange rate and stock prices with local currency depreciation. When local currency depreciates, the local firms become more competitive and export will therefore increase. This will result in an ultimate increase in stock prices. In developed economies, the relationship between exchange rates and stock prices could be explained over the short and long terms. In the short-run, stock market trend could lead to currency depreciation, whereas in the long run, a weak currency could lead to a weakened stock market trend (Abdulrasheed, 2013).

Money supply

Through the effects of increasing or lowering the money supply, the stock market is indirectly impacted. When the money supply grows, interest rates decrease, which encourages consumers and businesses to spend more. Spending more leads to a rise in demand, which frequently drives up inflation. The impact of changes in the amount of money in circulation can be reasonably predicted in many economic sectors. It affects stock prices when it expands faster than the economy as a whole. The stock market is influenced indirectly by the consequences of changing the

money supply. Interest rates fall as the money supply expands and individuals and companies are encouraged to spend more. Increase in spending will lead to higher demand and thus inflation increases.

Foreign Direct Investment

Foreign Direct Investment (FDI) flows are the transactions that were tallied during the reference period which may be quarterly or yearly. FDI in developing economies do have positive effect on the stock market capitalisation (Mika'ilu & Yunusa, 2018). A developed capital market is a conduit for the inflow of foreign direct investment into an economy and a hint of the market's ability to withstand structural financial shocks (Tékam, 2018).

Interest rate

Higher interest rates also result in lower future discounted valuations since they increase the discount rate applied to future cash flow. When interest rates change, there could either be positive or negative effect on the stock market. However, when interest rate rises, there is a fall in the prices of bond and return on bond increases, making investor desire more bonds. Earnings and stock process typically decline as interest rates rise.

Credit to private sector

Credit to the private sector is the term used to describe financial resources given to the private sector that create a claim for repayment, such as loans and advances, purchases of non-equity securities, trade credits, and other accounts receivable (Olorunmade, Samuel & Adewole 2019). Increase in credit to private sector will increase trading activities in stock market.

Cash reserve requirement

Banks are able to extend more loans to consumers and businesses when the reserve ratio is reduced by the regulatory body. This lowers the amount of cash that banks must retain in reserves. The economy grows as a result, thereby increasing the money supply in the country. A bank's financial lending capacity will be limited if the cash reserve ratio rises. As a result, banks will request more deposits from customers. Banks will also increase interest rates, which will deter borrowers from seeking for loans because of the higher interest rates. An increase in interest rate may reduce stock prices.

2.2 Theoretical framework

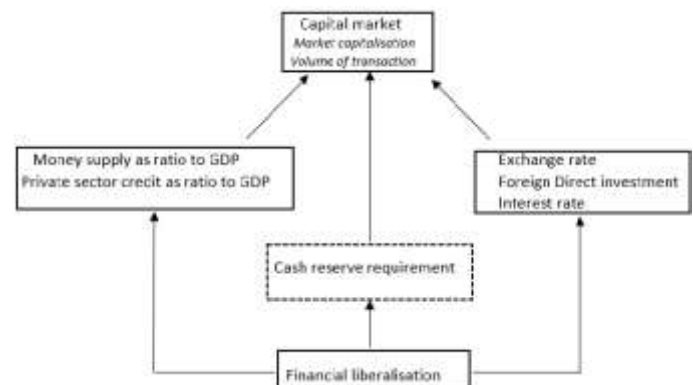
2.2.1 Theory of Financial liberalisation

Ronald McKinnon and Edward Shaw first propagated the financial liberalisation theory in 1973. The duo sought an alternative to financial repression. Financial liberalisation refers to removing a number of barriers to make the financial sector of developing economies measure up to that of developed economies. In 1973, both Ronald McKinnon and Edward Shaw posited in their books that government should

come up with policies that could seek interest rates deregulation, removal of credit restrictions, opening up the domestic financial system to foreign capital inflows, free access to the banking industry, ease the entry of foreign banks, private ownership of banks and exchange rate removal. This theory highlighted three forms of financial liberalization: domestic financial sector, stock market and capital account.

Financial liberalisation refers to domestic financial sector reforms like privatisation and increasing credit to private sector credit extensions. Privatisation is a non-governmental party acquisition of ownership of a previously owned by the government enterprise, operation, or asset. The theory of financial liberalisation also applies to the liberalisation of the stock market. Stock market liberalisation occurs when an economy opens up its stock markets to foreign investors and simultaneously grants domestic businesses access to global financial markets. The theory similarly provided that with capital account liberalisation, the reserve requirement is reduced, the exchange rate of capital account transactions is also relaxed, and local firms are allowed to borrow from foreign countries. The theoretical framework of financial liberalisation underpinning the study and how it relates to the growth of the capital market in Nigeria is modelled below:

Fig. 1: Theoretical framework modelling financial liberalisation



Source: Researcher (2022)

Fig. 1 showed the links between the capital market and indices of financial liberalisation; Money supply as ratio to gross domestic product, exchange rate, private sector credit as ratio to gross domestic product, foreign direct investment, interest rate and cash reserve requirement

2.3 Empirical review

Ogbebor, Oguntodu and Olayinka (2017) examined the effect of financial liberalisation and stock market development in Nigeria. The study used OLS estimation techniques to analyse the time series data obtained from 1986 to 2016 and discovered that financial liberalisation significantly impacts stock market development in Nigeria. Adeusi, Azeez and Olanrewaju (2012) investigated the nexus between financial liberalisation and the corporate performance of informal capital market in Nigeria. The study employed the use of OLS multiple regression analysis covering a period of ten years

(2001-2010) to analyse the three formulated models. Findings from the study showed that financial liberalisation has a significant effect on the loan granted and deposits mobilised by the market but has an insignificant effect on the net surplus.

Ilugbusi, Ajala, Akindejoye and Ogundele (2020) investigated the relationship between financial liberalisation and economic growth in Nigeria from 1986 to 2018. The study revealed that long and short-run relationship exists between financial liberalisation and economic growth. The study also found that prime lending rate has insignificant positive relationship with economic growth while credit to private sector has significant positive effects on economic growth. Also, the ratio of private investment to gross domestic product, exchange rate and savings deposit rate had insignificant negative impact on economic growth. Sulaiman, Oke and Azeez (2012) empirically examined the relationship between financial liberalisation and economic growth in Nigeria from 1987 to 2009. The study estimated data obtained with the Johansen Co-integration test and Error Correction Mechanism. The study revealed that the variables have a long-run equilibrium relationship and that financial liberalization had a growth-stimulating effect on Nigeria.

Akintola, Oji-Okoro and Itodo (2020) investigated the link between financial sector development and economic growth in Nigeria. The study considered the independent contributions of the money, capital and foreign exchange markets to economic growth, using quarterly data between the first quarter of 2000 and fourth quarter of 2019. Findings showed that financial deepening, banking system liquidity and all share index had positive and significant impact on the real output growth in the long run, while exchange rate spread was steady with falling levels of gross domestic product. Ikeora, Igbodika and Jessie (2016) evaluated the effect financial liberalisation has on economic growth in Nigeria using data from 1987 to 2013. Formulated hypotheses were tested with the aid of OLS multiple regression analysis, and the findings revealed that the variables do not have unit roots and that there was a long-run equilibrium relationship between financial liberalisation and economic growth in Nigeria. Also, the non-existence of a causality relationship between financial liberalisation and economic growth in Nigeria was confirmed by the result.

Owusu and Odhiambo (2013) considered the relationship between financial liberalisation and Nigeria's economy's expansion from 1969 to 2008. The study used autoregressive distributed lag (ARDL)- bounds testing to analyse the obtained data and found that financial liberalisation has positive and significant effect on economic growth in Nigeria both in the short and long-run. Nwadiubu, Sergius and Onwuka (2014) studied how financial liberalisation has impacted the economy in Nigeria. The study covered the period from 1987 to 2012. The annual time series data were analyzed using the Johansen Co-integration test and the Error Correction Mechanism (ECM). Findings from the study showed the existence of a long-run equilibrium relationship

among the variables. Also, all the explanatory variables and their lagged values showed a positive relationship with GDP, except for financial deepening (FD).

Akpan (2008) appraised the impact of financial liberalisation on economic growth in Nigeria using the endogenous growth model, and error correction mechanism (ECM) with time series data from 1970 to 2006. Findings from the study revealed that financial deepening has a significant and positive impact on economic growth in Nigeria. In contrast, private sector credit, investment and openness negatively impact Nigeria's economic growth.

Igbinosa (2012) studied the impact of financial liberalisation on the growth of the Nigerian economy in Nigeria. Data obtained for the study from 1981 to 2009 were analysed with multiple regression analysis, and findings revealed that a significant positive relationship exists between financial development and economic growth while interest rate had an insignificant negative relationship with Nigerian economic growth. Qazi and Shadida (2013) investigated how financial liberalisation impacted Pakistan's economic growth from 1971 to 2007. The study used the autoregressive distributed lag (ARDL) estimation technique and the results from the test carried out showed the relationship between long-run growth with financial liberalisation indicators that could promote economic growth.

Catao and Terrones (2005) examined the impact of financial openness on economic growth using panel data obtained from developed and developing countries between 1960 and 2007. Findings from the study revealed an intertemporal balance between economic growth and openness and that greater dominant openness appears to have short-run negative but long-run positive effects on output growth. Also, the study's result showed that financial globalisation has a strongly negative long-run impact but no significant short-run impact on output growth. Fidel, Fabio and Andrew (1996) investigated the role of capital market imperfection for investment decisions to ascertain if the introduced financial reform in the 80s successfully relax the constraint in the financial system of Ecuador. The model takes into account both a ceiling on leverage as well as rising borrowing costs as leverage levels rise. The study found that capital market imperfection has significant effect of small and young firm in the country but has no effect on large and old firms. The study failed to provide proof that the financial reforms has relaxed the constraints in the financial system of Ecuador.

Eundak (2004) studied the process of financial liberalisation in South Korea. The WTO Financial Services Agreement and the IMF's Structural Adjustment Program after the financial crisis of 1997 were crucial turning points in Korea's financial reforms. Regarding the origins of the Korean financial crisis, there are two schools of thought. The study considered the view of financial globalisation from an international political economic approach. The reasons for the Korean financial crisis were viewed from two different angles; when Korea encountered the financial crisis, its domestic financial market

system was inadequate, and its financial liberalisation process was too early to produce a stable financial market. According to a perspective on globalisation, financial globalisation inherently favours uncontrollable cross-border short-term capital flows, hence financial crises is unavoidable regardless of how strong or how weak the local financial system is. In the context of South Korea, this study contrasted these two points of view.

2.4 Gap to fill

Previous studies concentrated on the effect of financial liberalisation on economic growth in Nigeria (Ilugbusi, Ajala, Akindejoye & Ogundele, 2020; Ogbekor, Oguntodu & Olayinka, 2017; Sulaiman, Oke & Azeez, 2012; Akintola, Oji-Okoro & Itodo, 2020 and Owusu & Odhiambo, 2013) while very few researches had been carried out on the effect of financial liberalisation on the capital market in Nigeria with Ogbekor, Oguntodu & Olayinka (2017) being the recent on the subject matter. Ogbekor, Oguntodu & Olayinka (2017) developed a model with a ratio of market capitalization to GDP proxied with stock market capitalisation as the dependent variable and foreign ownership of shares in the Nigerian stock exchange as the only explanatory variable. Oshikoya (1992) stated that financial liberalisation theory argued that the economy grows through financial deepening and financial sector reform, while McKinnon (1973), Shaw (1973) and Jayati (2005) argued that money supply and interest rate determine financial liberation. Thus, this study departs from the former study by including interest rate as one of the determinants of financial liberalisation and two major indices of financial deepening; ratio of money supply to GDP (MSS/GDP) and ratio of credit to private sector (CPS/GDP) in the models. Pill and Pradhan (1995), Galindo, Micco and Ordoñez (2002) and Cemile (2002) also used ratio of credit to private sector to GDP as a proxy for financial liberalisation. Cash reserve requirements and exchange rates were further added to the model. Exchange rate is very strategic in influencing macroeconomic outcomes in the economy (Cuddington, 1983; Giovannini & Turtelborn, 1992; Civcir, 2003; and Akilo & Yinusa, 2007). This study filled the knowledge gap created by the non-inclusion of these other variables essential in the measurement of financial liberalisation. This study also departs from the former literature by grounding the study on the theory of financial liberalisation to generate new insights. The specification of two models with different dependent variables, key in determining the performance of capital markets, will also enhance the robustness of the results produced by the study.

III. METHODOLOGY

The study obtained data from the Statistical Bulletin of the Central Bank of Nigeria (CBN) from 1985 to 2021. Analysing the data, the study employed descriptive statistics, correlation matrix, Augmented Dickey-Fuller unit root test, cointegration test, Engle-Granger Cointegration test of the error term at level and Error Correction Mechanism to numerically estimate the coefficients in the models. The theory of Financial

Liberalisation propounded by Mckinnon (1973) and Shaw (1973) underpins this study and two specified models were specified based on the views of Ogbekor, Oguntodu and Olayinka (2017) which shows the relationship between financial liberalisation and capital market growth. The specified models were modified to include some variables:

Objective 1: Financial liberalisation has no significant effect on the efficiency of the Nigerian Capital Market

Model 1 is specified in a functional form as stated below:

$$MCA = f(MSS, CPS, INT, CRR, EXR, FDI) \dots\dots\dots(1)$$

Equation (2) can be re-written in an explicit form as:

$$MCA = \beta_0 + \beta_1MSS + \beta_2CPS + \beta_3INT + \beta_4CRR + \beta_5EXR + \beta_6FDI + \mu_t \dots\dots\dots(2)$$

Where:

- MCA = market capitalisation (proxy for capital market efficiency)
- MSS = broad money supply as ratio to GDP (proxy for financial deepening)
- CPS = private sector credit as ratio to GDP (proxy for credit allocation decisions)
- INT = Interest rate (proxy for interest rate ceiling)
- CRR = Cash reserve requirement
- EXR = Exchange rate
- FDI = Foreign direct investment
- U_t = Error term
- β_0 = Intercept

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ = Coefficients to be estimated

Objective 2: Financial liberalisation has no significant effect on the liquidity of the Nigerian Capital Market

Model 2 is specified in a functional form as stated below:

$$VLT = f(MSS, CPS, INT, CRR, EXR, FDI) \dots\dots\dots(3)$$

Equation (4) can re-written in an explicit form as:

$$VLT = \beta_0 + \beta_1MSS + \beta_2CPS + \beta_3INT + \beta_4CRR + \beta_5EXR + \beta_6FDI + \mu \dots\dots\dots(4)$$

Where:

- VLT = volume of transaction (proxy for capital market liquidity)
- MSS = broad money supply as ratio to GDP (proxy for financial deepening)
- CPS = private sector credit as ratio to GDP (proxy for credit allocation decisions)
- INT = Interest rate (proxy for interest rate ceiling)
- CRR = Cash reserve requirement
- EXR = Exchange rate
- FDI = Foreign direct investment
- U_t = Error term
- β_0 = Intercept

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ = Coefficients to be estimated

IV. ANALYSIS AND RESULTS

This sub-section presents a descriptive analysis of the variables used. These descriptive statistics provide a historical background for the behaviour of our data. The descriptive statistics are presented in Table 1. The variables examined here are market capitalisation (proxy for capital market efficiency) (MCA), broad money supply as a ratio of GDP

(MSS), private sector credit (CPS), Interest Rate (INT), cash reserve requirement (CRR), exchange rate (EXR), foreign direct investment (FDI) and value of transactions (VLT). MCA, MSS, CPS, INT, CRR, EXR, FDI and VLT were available from 1985 to 2021.

4.1 Descriptive Statistics

Table 1: Results of Descriptive Statistics

	CPS	EXR	FDI	INT	CRR	MCA	MSS	VLT
Mean	7460.921	120.3465	455.5408	18.09054	48.10000	8094.086	16.47324	471.3516
Median	1096.540	120.9700	249.0402	17.59000	45.95000	1359.300	13.09000	120.4000
Maximum	39521.13	420.6700	1368.069	29.80000	104.2000	43124.84	44.45000	2350.880
Minimum	13.07000	0.890000	0.339000	9.250000	26.39000	6.600000	8.460000	0.230000
Std. Dev.	10369.94	111.0603	469.0135	4.145271	15.12817	11182.11	7.099476	587.2101
Skewness	1.353134	0.933078	0.484692	0.527596	1.572592	1.529296	1.725398	1.208024
Kurtosis	3.957265	3.230331	1.710042	4.132953	6.674134	4.829463	7.339357	4.050990
Jarque-Bera	12.70370	5.450702	4.014034	3.695394	36.06181	19.58213	47.38777	10.70205
Probability	0.001744	0.065523	0.134389	0.157600	0.000000	0.000056	0.000000	0.004743
Sum	276054.1	4452.820	16855.01	669.3500	1779.700	299481.2	609.5100	17440.01
Observations	37	37	37	37	37	37	37	37

Source: Author's Computation using Data from CBN 2021 Statistical Bulletin

The result shows that credit to the private sector on average is 7.5 trillion and its maximum is 39.5 trillion while its minimum is 13.1 billion. Also, the result shows that exchange rate on average is ₦120.3/1\$ and its maximum is ₦420.7/1\$ while its minimum is ₦0.89/1\$. From Table 1, the result shows that foreign direct investment on average is 455 billion and its maximum was 1.36 trillion while its minimum was 0.339 billion USD. The result shows that interest rate and liquidity ratio are on average 18.1% and 48.1% while the maximum are 29.8% and 104.2% while the minimums are 9.25% and 26.39% respectively. The result shows that market capitalisation on average was 8.1 trillion and its maximum was 43.12 trillion while its minimum was 6.6 billion. From Table 1, the result shows that the broad money supply on average was 16.5 trillion, its maximum was 44.5 trillion while its minimum was 8.46 billion. The result shows that volume of transactions in the stock market on average was 471 billion and its maximum was 2.35 trillion while its minimum was 0.23 billion.

Jarque Bera normality test was carried out to show whether the distribution follows normality condition. With the null hypothesis of normal distribution, Jarque Bera result shows that normality test, skewness is zero and excess kurtosis is zero, against the alternative hypothesis of non-normal distribution. If the probability value as presented in 1 exceeds 5%, then the null hypothesis of normal distribution is accepted, otherwise the null hypothesis of normal distribution is rejected. Hence, an observation of Table 1 above shows that given the acceptance criteria, we fail to reject interest rate (INT), exchange rate (EXR) and foreign direct investment

(FDI) as their probability values are greater than 5%, implying that it is normally distributed. However, the null hypothesis of normal distribution is rejected for market capitalisation (MCA), broad money supply as a ratio of GDP (MSS), private sector credit as a ratio of GDP (CPS), Cash reserve requirement (CRR) and value of transaction (VLT) as their probabilities are less than 5%, implying they are not normally distributed.

Table 2: Correlation Matrix Result

	CPS	EXR	FDI	INT	CRR	MCA	MSS	VLT
CPS	1.00							
EXR	0.93	1.00						
FDI	0.72	0.75	1.00					
INT	-0.40	-0.33	-0.33	1.00				
CRR	0.17	0.30	0.11	-0.17	1.00			
MCA	0.97	0.92	0.72	-0.43	0.19	1.00		
MSS	0.93	0.86	0.70	-0.39	-0.03	0.90	1.00	
VLT	0.70	0.65	0.76	-0.33	0.05	0.73	0.71	1.00

Source: Author's Computation using Data from CBN 2021 Annual Statistical Bulletin

Table 2 shows that there is no perfect correlation between the explanatory variables as the highest degree of relationship between the explanatory variables are 0.93 and this is between credit to private sector and exchange rate; and broad money supply and credit to private sector and it is not perfect as the correlation coefficient is not 1.

4.2 Unit Root Test

The study used Augmented Dickey-Fuller (ADF) test to examine the stationarity of the time series and test the null

hypothesis of unit root. It is expected that the series do not contain unit root in order to find relationship that exist among the variables in the long run. The test is carried out at level, and first difference using 5% Mackinnon Critical value.

Table 3: Augmented Dickey-Fuller (ADF) Unit Root Test Result

Variable	Method	At Level			At First Difference			Order
		ADF statistics	5% critical value	Prob	ADF statistics	5% critical value	Prob	
CPS	ADF	5.29	-2.946	1.0000	-5.30**	-2.981	0.0000	I(1)
EXR	ADF	2.70	-2.946	1.0000	-3.42*	-2.948	0.0168	I(1)
FDI	ADF	-1.58	-2.946	0.4816	-6.62**	-2.951	0.0000	I(1)
INT	ADF	-0.61	-1.950	0.4472	-5.86**	-1.951	0.0000	I(1)
CRR	ADF	-1.31	-1.950	0.1721	-6.48**	-1.951	0.0000	I(1)
MCA	ADF	2.82	-2.946	1.0000	-4.48**	-2.948	0.0011	I(1)
MSS	ADF	0.94	-2.946	0.9949	-2.64**	-1.951	0.0098	I(1)
VLT	ADF	-2.14	-2.945	0.2320	-5.94**	-2.957	0.0000	I(1)

* Implies significant at 5% meaning that the variable is stationary at that order
 ** Implies significant at 1% meaning that the variable is stationary at that order

Source: Author’s Computation using Data from CBN 2021 Statistical Bulletin

From Table 3, the ADF reported market capitalisation, broad money supply as a ratio of GDP, private sector credit as a ratio of GDP, interest rate, liquidity ratio, exchange rate, foreign direct investment and value of transactions in the Stock Exchange to be stationary at first difference. This finding implies that the series contains no unit root at the level and at first difference; hence, their seasonal variation has been corrected for, making them fit for regression.

4.3. Co-Integration Test

4.3.1 Engle Granger Cointegration Test

We employ Engle-Granger’s (1987) co-integration test to determine if the variables in the system are co-integrated. The Engle-Granger procedure needs an estimation of the co-integrating regression equation. Thus, if there are n series, Y_{1t}, \dots, Y_{nt} , the co-integrating regression is given by: $Y_{1t} = \beta_0 + \sum \beta_j Y_{jt} + \epsilon_t$. The residual from the regression is tested for the presence of a unit root using the tau statistic and z-statistic. If the residuals, ϵ_t from the regression are I (0), i.e. stationary at level, then variables are said to be co-integrated and hence interrelated with each other in the long-run. The long-run relationship and test the stationarity of the error term were regressed. It is expected that the error term should be stationary at level for co-integration to exist. Then, the test for the stationarity of the error term was done and the result obtained is given in Table 4.

Table 4: Engle Granger Cointegration test of the error term at level

Model	Dependent	tau-statistic	Prob.*	z-statistic	Prob.*
Model One	ECM01	-6.6371**	0.0059	-39.07334**	0.0077
Model Two	ECM03	-5.82451*	0.0299	-38.65898**	0.0090

* Implies significant at 5%; the model is co-integrated

Source: Author’s Computation using Data from CBN 2021 Statistical Bulletin

4.4 Test of Hypotheses

Given that the preliminary analyses of tests conducted on each variable reveals various information on the stationarity and the co-integration of the result, the error correction model (ECM) was adopted.

Table 5: Model One Method: Error Correction Model Result Dependent Variable: D(LOG(MCA))

ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MSS)	0.027155**	0.009573	2.836539	0.0096
DLOG(CPS)	0.730698**	0.130648	5.592868	0.0000
D(INT)	0.003453**	0.000785	4.401287	0.0000
D(CRR)	-0.006834**	0.002256	-3.029233	0.0062
D(EXR)	-0.002914*	0.001093	-2.666009	0.0413
DLOG(FDI)	0.002480	0.047938	0.051733	0.9592
CointEq(-1)*	-0.744940**	0.102950	-7.235948	0.0000
R-squared	0.834008			
Adjusted R-squared	0.758285			
Ramsey RESET t-stat	1.791760			
Ramsey RESET Prob.	0.1950			
Breusch-Pagan-Godfrey f-stat	0.488256			
Breusch-Pagan-Godfrey Prob.	0.7648			
Durbin-Watson stat	1.949819			
Breusch-Godfrey serial t-stat	2.447226			
Breusch-Godfrey serial prob.	0.1120			
Jarque-Bera t-stat.	1.076798			
Jarque-Bera prob.	0.5837			

* Implies significant at 5%
 ** Implies significant at 1%

Source: Author’s Computation using Data from CBN 2021 Statistical Bulletin

Table 6: Model Two Method: Error Correction Model Result Dependent Variable: D(LOG(VLT))

ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MSS)	0.041804*	0.014191	2.945894	0.0346
DLOG(CPS)	0.909178**	0.280112	3.245769	0.0037
D(INT)	-0.016915**	0.002856	-5.923200	0.0000
D(CRR)	-0.005259**	0.000859	-6.122801	0.0000
D(EXR)	-0.006388	0.003412	-1.872022	0.0746
DLOG(FDI)	0.049919	0.104304	0.478591	0.6370
CointEq(-1)*	-0.419508**	0.088605	-4.734589	0.0001
R-squared		0.826599		
Adjusted R-squared		0.728654		
Ramsey RESET t-stat		1.179844		
Ramsey RESET Prob.		0.2513		
Breusch-Pagan-Godfrey f-stat		0.423623		
Breusch-Pagan-Godfrey Prob.		0.9438		
Durbin-Watson stat		2.115555		
Breusch-Godfrey serial t-stat		2.411622		
Breusch-Godfrey serial prob.		0.1153		
Jarque-Bera t-stat.		3.034909		
Jarque-Bera prob.		0.2193		

* Implies significant at 5%

** Implies significant at 1%

Source: Author's Computation using Data from CBN 2021 Annual Statistical Bulletin

V. DISCUSSION OF FINDINGS

The result from Table 5 shows that broad money supply, credit to private sector and interest rate all positively and significantly impact market capitalisation. This implies that increases in broad money supply, credit to private sector and interest rate increase market capitalisation. Then, the implication of this result is that an increase in the supply of money in the economy, the amount of credit available to the private sector and increase in the interest rate increase the total value of all the companies' shares of stock in the Nigerian Stock Exchange. Cash reserve requirement and exchange rate have negative and significant effect on market capitalisation, while foreign direct investment has positive and insignificant effect on market capitalisation. The implication of this result is that both cash reserve requirement and exchange rate had impacted adversely on the performance of the Nigerian capital market overtime. The result showed that an increase in cash reserve requirement and exchange would lead to a decrease in market capitalisation, while foreign direct investment proved statistically insignificant to the model. Considering the statistical properties of the ECM result reported in Table 5, the R-squared value of 0.83 indicates that about 83% variation in stock market capitalisation is

explained in the model by the explanatory variables. This confirms that all the independent variables jointly have a significant influence on the dependent variable. The Durbin-Watson statistic of 1.95 indicates that absence of serial correlation is associated with the regression result as this can be approximated as 2.

Considering the Post Diagnostic test results, the Breusch-Pagan-Godfrey (BPG) tests for the presence of heteroskedasticity in the regression result. The BPG tests the null hypothesis of no heteroskedasticity against the alternative hypothesis of heteroskedasticity and it was discovered that the BPG probability value was greater than 5%, implying there is no presence of heteroskedasticity in the regression result. The B-G Serial Correlation Lagrange Multiplier (LM) tests for higher order Autoregressive Moving Average (ARMA) errors and is applicable whether or not there is lagged dependent variable(s). The B-G tests the null hypothesis of no serial correlation against the alternative hypothesis of serial correlation. The result of the B-G Serial Correlation LM probability was 0.1120 and this is greater than 5%, hence we fail to reject the null hypothesis of no serial correlation, implying that the model has no higher-order ARMA (p) correlation.

The Ramsey (Regression Specification Error Test) RESET in Table 5 was used to examine the stability of the ARDL model. The Ramsey RESET tests for specification error in terms of omitted variables, incorrect functional form and correlation between the explanatory variables and the error term. The Ramsey RESET tests the null hypothesis of unbiasedness and consistency, producing a zero-mean vector against the alternative of specification error. The result revealed that the probability is greater than 5%, thereby failing to reject the null hypothesis; this implies that the model is free from specification error. The Jarque-Bera statistics in Table 5 test for the normality distribution of the equation, against the alternative hypothesis. The probability of the Jarque-Bera test concludes that the equation is normally distributed as the probability value is greater than 5%.

In the model for Table 5, the error correction term ECM01(-1) is well specified and correctly signed. The coefficient of the ECM01(-1) is approximately -0.74. It means that about 74 percent departure from long-run equilibrium is corrected in the short run. The negative sign in the ECM01(-1) confirms the co-integrating relationship. Hence, about 74% of the variations in the short run converged.

Also, Table 6 shows that broad money supply and credit to the private sector all have positive and significant effects on the volume of transactions in the stock market. This implies that increases in broad money supply and credit to the private sector led to an increase in the volume of stock traded in the Nigerian Stock Exchange. However, increases in interest rate, cash reserve requirement and exchange rate lead to a reduction in the volume of transactions in the stock market while foreign direct investment is insignificant to the model. Considering the statistical properties of the ECM result

reported in Table 6, the R-squared value of 0.82 indicates that about 82% variation in volume of liquidities traded in the stock market is explained in the model by the explanatory variables. This confirms that all the independent variables jointly have a significant influence on the dependent variable. The Durbin-Watson statistic of 2.1 indicates that no serial correlation is associated with the regression result as this can be approximated as 2.

Considering the Post Diagnostic test results, the Breusch-Pagan-Godfrey (BPG) tests for the presence of heteroskedasticity in a regression result. The BPG tests the null hypothesis of no heteroskedasticity against the alternative hypothesis of heteroskedasticity. The BPG probability value was greater than 5%, implying there is no presence of heteroskedasticity in the regression result. The B-G Serial Correlation Lagrange Multiplier (LM) test was used to test for higher-order Autoregressive Moving Average (ARMA) errors and is applicable whether or not there is lagged dependent variable(s). The B-G tests the null hypothesis of no serial correlation against the alternative hypothesis of serial correlation. The result of the B-G Serial Correlation LM probability was 0.1153 and this is greater than 5%, hence we fail to reject the null hypothesis of no serial correlation, implying that the model has no higher-order ARMA (p) correlation.

The Ramsey (Regression Specification Error Test) RESET in Table 6 was used to examine the stability of the ARDL model. The Ramsey RESET tests for specification error in terms of omitted variables, incorrect functional form and correlation between the explanatory variables and the error term. The Ramsey RESET tests the null hypothesis of unbiasedness and consistency, producing a zero-mean vector against the alternative of specification error. The result showed that the probability is greater than 5%, thereby failing to reject the null hypothesis; the model is free from specification error. The Jarque-Bera statistics in Table 5 test for the normality distribution of the equation, against the alternative hypothesis. The probability of the Jarque-Bera test concludes that the equation is normally distributed as the probability value is greater than 5%.

In the model for Table 6, the error correction term ECM01(-1) is well specified and correctly signed. The coefficient of the ECM01(-1) is approximately -0.4195. It means that about 41.95 percent departure from long-run equilibrium is corrected in the short run. The negative sign in the ECM01(-1) confirms the co-integrating relationship. Hence, about 41.95% of the variations in the short-run converged.

VI. CONCLUSION AND RECOMMENDATIONS

Broad money supply and credit to private sector have positive effect on both market capitalisation and volume of transactions. The two variables also proved statically significant to the models. It can therefore be concluded that broad money supply and private sector credit have positive and significant effect on capital market growth in Nigeria. Also, cash reserve requirement and exchange rate have

negative and significant effect of both market capitalisation and volume of transactions. It is concluded that cash reserve requirement and exchange rate have negative and significant effect on capital market growth in Nigeria. Interest rate have significant positive effect on market capitalisation and significant negative effect on volume of transaction of stock.

The two hypotheses specified are rejected because the probabilities of the coefficients of broad money supply, credit to private sector, interest rate, cash reserve requirement and exchange rate are statistically significant and thus, we reject the null hypotheses and accept the alternatives. Therefore, the financial sector liberalisation has a significant effect on the efficiency and liquidity of the Nigerian capital market.

It is recommended that monetary authority in Nigeria must continually improve on the monetary policy to control the money supply in the economy and reduce the interest rate to enhance capital market expansion. High interest rate will reduce spending, stock market participation and decrease stock prices but when interest rate rise, spending will increase and stock prices will rise. Also, the Nigerian government should encourage more exports to create a positive relationship between exchange rate and stock prices. This will make local currency depreciate and local firms will become more competitive, leading to an increase in stock prices.

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