Stock Market Liquidity and Capital Formation in Nigeria

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Abstract

This study empirically examined the effect of stock market liquidity on capital formation in Nigeria. An ex-post facto research design was adopted while secondary data, which ranged from 1985 to 2022, were used. These data were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletins and the Nigerian Exchange Group (NGX) fact book. The study is based on the financial intermediation theory and the efficient market hypothesis. Descriptive analysis, regression analysis, and unit root tests were employed, as well as the Bounds Auto Regressive Distributed Lag (ARDL) testing approach for evaluation. Post-estimation tests were also conducted to check the validity and reliability of the model. The results conclude that there is a positive and significant relationship between market capitalization and gross fixed capital formation in Nigeria, a positive and significant relationship between the turnover ratio and gross fixed capital formation in Nigeria, a negative and significant relationship between the total value traded ratio and gross fixed capital formation in Nigeria, and a positive and significant relationship between the all-share index and gross fixed capital formation in Nigeria. The study recommends that a reliable regulatory framework should be put in place by the government that could actively carry out the surveillance of the stock market. The study further recommends that policies focusing on promoting long-term investments, aligning stock market activity with productive sectors, deepening financial instruments for infrastructure financing, and ensuring regulatory frameworks support stability and long-term growth be implemented.

Keywords: Capital formation, Financial markets, Stock market liquidity, Stock market.

1. Introduction

Financial markets, especially stock market have grown considerably in developed and developing countries over the last two decades. As economies develop, more funds are needed to meet the rapid expansion. Thus, stock market serves as a veritable tool in mobilizing and allocating savings among competing users which are critical to the growth and efficiency of the economy (Ogunleye and Adeyemi, 2021). Stock markets is one of the relevant constituents of the financial system, which help firms or companies to raise capital by issuing their shares and also create an enabling environment which allows for trading of the shares. It is obvious that the stock market plays a very critical role in capital formation as well as economic growth and development of any nation. Therefore, the development of stock market is regarded as key and important vehicle in accelerating the growth of economy (Araoye, Ajayi and Aruwaji, 2018).

According to Salihu and Mohammed (2017) the stock market is a common feature of every modern economy and is reputed, amongst other things, to perform critical capital allocation functions which promote economic growth and stimulate manufacturing sector development. In many advanced countries where stock markets correlate directly with the economy, the stock market is viewed as the primary gauge for the economy's performance (Salihu and Mohammed, 2017). The stock market plays a major role as an economic institution which enhances the efficiency in capital formation and allocation. It enables both corporations and the government to raise long-term capital which enables them finance new projects and expand other operations. In this manner, the performance of the economy is boosted when capital is supplied to productive economic units (Popoola, 2021). Popoola et al (2017) asserted that the stock market is a medium through which funds can be mobilized and channeled efficiently. It enables the government and industries to finance new and existing projects, expanding and modernizing industrial commercial concern.

Apart from judicious mobilization of idle savings into productive use, the stock market creates an avenue for foreign investment and the influx of foreign capital for developing projects which in turn increases the welfare of citizens. Given the importance of high productivity in the industrial sector in boosting economic growth and the standards of living of the people, the degree of liquidity of the stock market cannot but be of importance to policy

makers (Ogunrinola and Motilewa, 2020). Apparently, it is widely known that money or cash in hand is the most liquid asset which can be used immediately to perform economic actions like buying, selling, or paying debts, meeting immediate needs and wants, etc. A liquid market is one whose assets are easily and rapidly sold with minimum loss of value, at any time within market hours. Also, liquid markets are characterized by ready and willing buyers and sellers at all times. Thus, stock market liquidity is an essential market characteristic whose presence ensures smooth functioning of the market, whereas its absence causes uneasiness in the market.

Brennan, Chordia, Subrahmanyam and Tong (2017) referred to stock market liquidity as the ability of the market to absorb a huge volume of securities at a lower execution cost within a short period without having a significant effect on security prices. Stock markets may affect economic activities through the creation of liquidity. Liquid stock market make available savings for profitable investments that require long-term commitment of capital, thereby leading to capital formation.

Furthermore, the liquidity of stock market offers a wide range of importance to the economy. First, liquid markets make investments less risky and more attractive. This is because they allow savers to acquire asset (that is, equities) and to sell them quickly and cheaply. Secondly, liquid stock markets improve the allocation of capital and enhance prospects for long term economic growth through the facilitation of longer term, and more profitable investments. Thirdly, stock market liquidity help provoke the establishment of more investment by making investment less risky and more profitable (Ogunrinola and Motilewa, 2020). According to Osinubi (2014) liquidity of stock markets also facilitates profitable interactions between the stock market and the money market. In this way, shares become easily acceptable as collateral for bank lending, thereby boosting credit, investment and sufficient capital formation. In line with the foregoing, this study aims to determine the relationship between stock market liquidity and capital formation in Nigeria.

2. Conceptual Framework

The stock market is a market which deals in long term loans (Jhingan, 2004). It supplies firms with fixed and working capital and finance medium term and long term borrowings of the federal, state and local governments. Thus, the stock market encompasses institutions and mechanisms through which long term funds are pooled and made available to corporate entities and governments. The stock market has been recognised as an institution that contributes to the socio-economic growth and development of emerging and developed economies. Donwa and Odia (2010) noted that this is made possible through some vital roles it played, such as channelling resources, promoting reforms to modernize the financial sectors, financial intermediation capacity to link deficit to surplus sector of the economy, and a veritable tool in the mobilization and allocation of savings among competitive uses which are critical to the growth and efficiency of the economy. Stock market is one of the relevant constituents of the financial system, which help firms or companies to raise capital by issuing their shares and also create an enabling environment which allows for trading of the shares. The stock market form an integral part of the financial system that serves important functions in an economy by means of providing liquidity for investors. One of the preferred definitions is Fapohund (2011) agrees that stock market means so many things. First, it is a place where debts and equity securities (bonds, stocks and shares) of various types are traded openly. Secondly, it is a market for capital mobilization through which funds can be raised by the public companies and government institutions on competitive terms. He went further to say that the facility for trading in existing securities removes the restriction that would have prevented individuals from investing their savings. Levine (2001) suggested that stock market activities spur economic growth basically in two ways. First, stock markets make property changes possible in the companies, whilst not affecting their productive process. Second, stock markets offer higher possibilities of portfolio diversification to the agents.

Stock market liquidity refers to the stocks that have sufficient trading volume to allow traders to enter and exit positions straightforwardly. Stocks that are not liquid and do not have sufficient volume cannot be bought or sold as easily. This is simply because it is harder to find buyers and sellers for such stocks. Liquidity can be measured by share turnover, which is calculated by dividing the total number of shares traded over a given period by the average number of shares outstanding for the period. If a company has a high share turnover it will have liquid company shares. Stock market liquidity is an essential market characteristic whose presence ensures smooth functioning of the market, whereas its absence causes uneasiness in the market (Bradrania, Peat and Satchell, 2015). Brennan, Chordia, Subrahmanyam and Tong (2012) referred to stock market liquidity as the ability of the market to absorb a huge volume of securities at a lower execution cost within a short period without having a significant effect on security prices. Whereas, Amihud, Mendelson and Pedersen (2006) indicated that market liquidity portrays the presence of willing buyers and sellers who agree to exchange a certain quantity of securities at the stated price without any time delay. The presence of market liquidity is important for a trader as it determines the magnitude of his returns and thereby helps in devising appropriate trading strategies (Bradrania, Peat and Satchell, 2015).

Stock market liquidity is of prime importance even to the economy. Ellington (2018) emphasized that during the period of crisis, lower liquidity levels adversely hamper economic growth. Market liquidity depicts the level of strength of the market to withstand any form of economic crisis or shocks. Stock markets, like financial intermediaries, channel savings to investment projects. Usually, the larger the savings, the higher the amount of capital flows through the stock market. Thus, one expects savings and investment to be important determinants of stock market development. Some studies use gross domestic savings as percentage of GDP and gross fixed domestic investment as a percentage of GDP. Another independent variable is stock market liquidity. This is the ease and speed to which an investor can off-load his investment for cash; and it is one of the most important functions of the stock market.

Liquid stock markets allow investors to alter their portfolios quickly and cheaply, it makes investment less risky and facilitates longer-term, more profitable investments (Smith and Starr, 2010). Consequently, the more liquid the market, the larger the amount of savings are channeled through the stock markets. Therefore, one expects a more liquid market to lead to a higher market capitalization. Some studies measure stock market liquidity using value of equity transactions relative to GDP. This measure is said to not directly measure how easily

investors can buy or sell shares at posted prices. However, it does measure the degree of trading relative to the size of the economy. It therefore, reflects stock market liquidity on an economy-wide basis as stated by Levine and Zervos (2008).

Capital formation basically refers to the net additions to the (physical) capital stock in an accounting period, or the value of the amount of increase of the capital stock. Capital formation also refers to as saving drives, setting up financial institutions' fiscal measures, development of stock markets, privatization of financial institutions etc. In this road sense, it refers to any method used in mobilizing or utilizing capital resources for investment purpose. This variable is related to stock market development because it is an investment in fixed assets (with long gestation period) which in part is financed with funds raised through the stock market. How developed an economy's stock market is will be partly measured by the amount of fixed capital and investment in fixed assets it can generate for the economy (Panshak and Shingil, 2016). However, gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales, and "work-in-progress (Adeleye, 2018).

3. Theoretical Framework

This study is premised on financial intermediation theory and the efficient market hypothesis. Whereas the financial intermediation theory advocates that capital or stock market should provide a mechanism for the mobilization and transfer of savings from the fund-owners to investments that promise better and higher returns on investment. The Efficient Market Hypothesis (EMH) states that all relevant information are immediately and fully reflected in a security's market price.

Since regulation and quantification of direct stock market activities of borrowing is difficult, it is expected that financial institutions should mediate between owners and users of funds in the impersonal but formal way like the marketable securities created and traded on the Nigerian Stock Exchange (Gorton and Winton, 2002). Financial intermediation entails arrangements covering the activities of stock or capital market with respect to providing mechanism for organizing and managing the payment system, mechanism for the collection and transfer of savings, mechanism covering the investment in long-term financial securities and arrangements covering the activities of financial market complementary to the money and capital markets such as the foreign exchange markets and the futures markets (Nzotta, 2004). Financial intermediation refers to a financial framework that provide a medium of exchange necessary for specialization, mobilization and transfer of savings from those who generated the funds to those who use the funds for investment in the economic system where the funds will yield the highest return. This arrangement enhances productive activities and positively influences aggregate capital formation in the economy. Diamond (1984) showed that reduced monitoring costs are a source of comparative advantage. Diamond posited that intermediaries provide services by issuing secondary financial assets to buy primary financial assets. If an intermediary provided no services, investors who buy the secondary securities issued by the intermediary might as well purchase the primary securities directly and save the intermediary's costs. Financial market frictions can be the critical mechanism for generating persistent income inequality or poverty traps. These market frictions include information asymmetry and transaction costs and play a central role, influencing key decisions regarding human and physical capital accumulation and occupational choices. Demirgüç-Kunt et al (2008) noted that capital accumulation, financial market imperfections determine the extent to which the poor can borrow to invest in schooling or physical capital. Also, financial market imperfections determine the extent to which talented but poor individual can raise external funds to initiate projects. Thus, the evolution of financial development, growth, and intergenerational income dynamics are closely intertwined. Finance influences not only the efficiency of resource allocation throughout the economy but also the comparative economic opportunities of individuals from relatively rich or poor households.

The Efficient Market Hypothesis (EMH) was developed by Fama in 1965. The Efficient Market Hypothesis, according to Fama (1965) is an academic concept which provides a framework for examining the efficiency of the stock/capital market. According to Efficient Market Hypothesis, financial markets are efficient and prices of traded assets have already reflected all known information and therefore unbiased because they represent the collective beliefs of all investors about future prospects (Olawoye, 2011). Furthermore, an analysis of past or current data cannot identify undervalued stocks. Applying this to the securities markets, the Efficient Market Hypothesis implies that no trading mechanism can consistently beat the market. Hence, for a given level of risk, speculators cannot earn supernormal returns. Similarly, no betting system can consistently earn super normal returns.

Though varying degrees of market efficiency exist, Fama (1965) provides the traditional framework through which the Efficient Market Hypothesis is examined. The weak form simply states that all past information is reflected in current prices. The semi-strong form states that all publicly available information is incorporated in prices, while the strong form which is an extension of the first two, states that all information, including insider information, is included in share prices. In practice, market efficiency is categorized by the strength of the efficiency that can be established with respect to a particular information set. Previous test of the Efficient Market Hypothesis has relied on long-range dependence of equity returns. It shows that past information has been found to be useful in improving predictive accuracy. This assertion tends to invalidate the EMH in most developing countries (Nagayasu, 2003). According to Nyong (2003) equity prices would tend to exhibit long memory or long-range dependence, because of the narrowness of their market arising from immature regulatory and institutional arrangement. Note that, where the market is highly and unreasonably speculative, investors will be discouraged from parting with their funds for fear of incurring financial losses. Situations like the one mentioned above has detrimental effect on economic growth of any country, meaning investors will refuse to invest in financial assets. The implication is that companies cannot raise additional capital for expansion. Thus, it suffices to say that efficiency of the stock market is a necessary condition for capital formation as well as the growth and development economy.

3.1. Empirical Review

Alaba, Ahmed, Malik-Abdulmajeed, and Hussain (2024) examined Stock Market Liquidity and Stock Market Performance in Nigeria: Evidence from the Nigerian Exchange Limited and opined that, insufficient liquidity can become a significant obstacle to stock trading and impede the smooth operation and performance of the stock market. The empirical study however concludes that stock liquidity significantly affects stock market performance. It further recommended that the Security and Exchange Commission (SEC) should implement policies that encourage the participation of more traders to increase the number of actively traded stocks; support measures that improve the depth of the market by promoting transparency and fairness; improve the infrastructure for trade execution to enhance liquidity immediacy; and develop mechanisms to promptly identify and mitigate market risks.

Andabai, P. W. (2024) Studied stock market liquidity and stock market performance in Nigeria. The study explored the implication of stock market liquidity on stock market performance in Nigeria for the period ranging from 1993-2023. The findings reveal that there is a favourable and substantial implication of stock market liquidity value traded ratio on all share index in Nigeria. However, there is also a positive significant impact of turnover ratio on all share index in Nigeria. The study concludes that market liquidity significantly affects stock performance in Nigeria. The scholarly investigation proposes that in order to enhance and maintain the magnitude of the stock market liquidity variable in Nigeria, thereby exerting a greater influence on the performance of the stock market sector in Nigeria, it is vital to facilitate the accessibility of a wider array of investment instruments, including derivatives, convertibles, futures, swaps, and options, within the market. This will effectively augment the rate of turnover. Consequently, this phenomenon will engender a surge in the demand for the services rendered by the stock market, thereby fostering an augmented level of market liquidity. It further recommends that the commission should formulate policies that encourage firms to increase their post-tax profits and dividends, as these variables have been empirically demonstrated to have robust significance in influencing the fluctuations of the company's performance and the market's value.

Ogunleye and Adeyemi (2021) examined the impact of stock market development on economic growth between1970 and 2018. Cointegration Analysis and Error Correlation Mechanism were adopted as the estimating techniques to verify the existence of long-run relationship between stock market development and economic growth. Questionnaires were administered to access the investor's confidence in the Nigerian stock exchange and to authenticate the impact of stock market development on economic growth in the period under review. The empirical results revealed that there is existence of long-run relationship between stock market development and economic growth in Nigeria. The findings also showed that there is positive relationship between market capitalization and money supply with economic growth while total value traded, turnover ratio and gross capital formation have inverse relationship with the growth. Market capitalization is highly significant and appears to be the major stock market indicator. Based on these findings, the study recommended that government should address the shortage of investment assets through effective policy measures that enhance the performance of stock market in Nigeria and to restore confidence of the investors.

Ogunrinola and Motilewa (2020) examined the impact of stock market liquidity on economic growth of Nigeria between the years 1980 and 2012. With the use of EViews 5.0 econometric software, tests for stationarity using the Augmented Dickey-Fuller approach was carried out while the ordinary least square (OLS) technique was employed to estimate the basic model specified for the study. The result of the analysis of data revealed that variables were stationary at their first difference while the Johansen co-integration approach confirmed the existence of co-integrating relationship at the 5 percent level of significance. The study found, surprisingly, that stock market liquidity was not a statistically significant variable explaining economic growth in Nigeria for the periods under study.

Adeleye (2018) investigated capital formation in the Nigerian capital market and its effect on economic growth. The study covered a period of twenty-five years spanning from 1990-2014. The econometric methodology adopted is the Ordinary Least square method (OLS). Secondary data was obtained from the Central Bank of Nigeria (CBN) statistical bulletins, Nigerian Stock Exchange (NSE) fact books, Security and Exchange Commission (SEC) market Bulletins and relevant journals. The independent variables are market capitalization, number of quoted companies and traded value and the dependent variable is gross domestic product. Result revealed that the stock market had a significant but weak impact on the Nigerian economy. Absence of an efficient stock market starved economy of long term funds for sustainable growth and development. The study recommended that government should formulate policies that will improve and develop the capital market for accessibility of long term investment funds by the industrial sector. A stricter regulatory environment is recommended for the capital market to curb their nebulous activities and relaxing some of the stringent requirements for viability of the Small and Medium Enterprises (SME's) listing on the stock exchange.

Araoye, Ajayi and Aruwaji (2018) examined the impact of the Nigerian Stock market development on the nation's economic growth from 1985 to 2014. The economic growth was proxy by the GDP while the stock market variables considered included; market capitalization and market turnover ratio as proxy for stock market development in terms of size and liquidity. The study utilizes the Johansson's co integration test in establishing if a long run relationship does exist between stock market development and economic growth in Nigeria. The empirical results suggest that the stock market is significant in determining economic growth in Nigeria using the error correlation model and it was found that the stock market has impacted insignificantly on the economic growth. It is recommended that policy makers should ensure improvement in the market capitalization, by encouraging foreign direct investment participation in the market.

Popoola, Ejemeyovwi, Alege Adu and Onabote (2017) investigated the short run effect, long run effect and causal relationship between stock market and economic growth in Nigeria. The Augmented Dickey Fuller unit root test, Ordinary Least Squares, Johansen Cointegration test and Pairwise granger causality methods were applied to the variables. The OLS result showed that the All Share Index had a significant but negative relationship with economic growth; The Johansen cointegration test showed that a long run relationship exists between the stock market performance and economic growth in Nigeria in the long run while the Granger causality test results showed that stock market performance does not granger cause economic growth but economic growth granger

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causes stock market performance at 5 percent significance level. The study suggested some of the possible reasons for the negative impact of stock market on the Nigerian economic growth and recommended that efforts should be made to improve the stock market performance to have a positive effect on the real gross domestic product of Nigeria overtime.

Osakwe and Ananwude (2017) explored the long run relationship between stock market development and economic growth in Nigeria from 1981 to 2015. Market capitalization ratio and turnover ratio were used to measure the depth of development of Nigerian stock market, whereas growth rate of real gross domestic product facets economic growth. Secondary data were sourced from Nigerian Stock Exchange (NSE) and National Bureau of Statistics (NBS) were analysed using Autoregressive Distributive Lag (ARDL) model. From the analysis performed, the depth of development in Nigeria's stock market has positive but insignificant relationship with economic growth both in short and long run. The granger causality analysis dispelled the adeptness of Nigeria stock market to propel growth. Stock market is growth inducing but in the context of Nigeria, economic growth is independent of stock market operation.

Brown and Nyeche (2017) examined the imperative of stock market on economic performance in Nigeria. The objectives of the study were to examine the relationship between total value traded in the stock market, market capitalization, trade openness, inflation rate and economic growth in Nigeria. The study was basically time series data based relating to market capitalization, total value traded ratio, real GDP per capita, inflation rate and trade openness of the economy. The data was sourced from Nigerian Stock Exchange annual reports, CBN statistical bulletin, the Nigerian Stock Exchange fact book, World Bank database publication and publication from relevant plurals and articles. The study adopted the Ordinary Least Squares (OLS) techniques of multiple regression and co integration test. The E-view 7.1 econometric software was used to run the model. The coefficient of ECM appeared with the right sign and statistically significant at the 5% level. Therefore, it corrects any deviation from long-run equilibrium. Durbin Watson value of 2.3 which is approximately 2.0 suggests a lesser level of autocorrelation. The overall fit is satisfactory with an R-squared of 0.790. The F-statistic of 6.51706 is significant at the 5% level. Moreover, the lag one and two forms of the independent variables (Mcap, TVT and TOP) were positively signed. While the lag one and two forms of the independent variable (INF) are negatively signed

4. Methodology

The study adopts the ex-post facto research design because it shows the cause-effect relationship between the independent variables and dependent variable with a view to establishing a link between them. It contains a description of methods and procedure employed in data collection, design and validation of test instrument. It x-rays the format employed by the researcher in order to systematically apply the scientific methods in problem investigation. More importantly, this type of research design is employed because this study relies on historic data, and as such, the event under investigation had already taken place and the researcher cannot control or manipulate the variables. Relevant data for this study is obtained from Central Bank of Nigeria (CBN) statistical bulletin and Nigerian Exchange Group (NEG). These sources of data are considered reliable and dependable. The data for the study cover the periods from 1985 to 2022, indicating thirty-eight (38) years sample observations.

4.1. Model Specification

The model employed for this study is a multiple regression model. Since our study seeks to investigate relationships between variables and possible projections, we specified our model in the multiple regression form as follows:

$$Y = b_0 + b_1X_1 + b_2X_2 + \ldots + b_nX_n + u \qquad (1)$$

Where;

Y = the dependent variable, capital formation indicator.

$X_1 \ldots X_n$ = the independent variables representing stock market liquidity indicators.

b_0 = the intercept, that is, the value of the dependent variable y, when the explanatory variable X assumes a value of zero.

$b_1 \ldots b_n$ = coefficients of the explanatory variable or the slope; that is, the rate at which a change in the explanatory variable affects the behaviour of the dependent variable.

This model is further disaggregated below:

Functional Model

$$GFCF = f(MCAP, TOR, TVTR, ASI) \qquad (2)$$

Mathematical Model:

$$GFCF = \alpha_0 + \alpha_1 MCAP_t + \alpha_2 TOR_t + \alpha_3 TVTR_t + \alpha_4 ASI_t \qquad (3)$$

Econometric Model:

$$GFCF = \alpha_0 + \alpha_1 MCAP_t + \alpha_2 TOR_t + \alpha_3 TVTR_t + \alpha_4 ASI_t + \varepsilon_t \qquad (4)$$

Where:

GFCF = gross fixed capital formation

MCAP = market capitalization

TOR = turnover ratio

TVTR = total value traded ratio

ASI = all share index

f = Functional relationship

α_0 = Intercept.

$\alpha_1 - \alpha_4$ = Coefficients or parameters attached to the independent variables.

ε_t = Stochastic or error term which captures the impact of variables that are not included in the model.

4.2. A Priori Expectation of the Variables

$$\text{Model: MCAP} > 0, \text{TOR} > 0, \text{TVTR} > 0, \text{ASI} > 0 \qquad (5)$$

From the above model, we expect a positive and significant relationship between market liquidity and gross fixed capital formation

5. Results and Discussions

Table 1. Descriptive Statistics.

	GFCF	MCAP	TOR	TVTR	ASI
Mean	10271.64	9100.235	60.34429	8.263421	18239.24
Median	4284.975	1735.900	58.09250	5.011000	19218.31
Maximum	64528.66	47398.10	175.5880	42.88100	50424.70
Minimum	87.14000	6.600000	2.479000	0.406000	117.2833
Std. Dev.	15441.49	12663.97	35.93150	9.477016	15922.64
Skewness	2.271261	1.549209	0.705873	1.975657	0.384896
Kurtosis	7.577094	4.702118	4.102818	7.006543	1.896936
Jarque-Bera	65.84178	19.78754	5.081283	50.13668	2.864771
Probability	0.000000	0.000050	0.078816	0.000000	0.238739
Sum	390322.4	345808.9	2293.083	314.0100	693091.2
Sum Sq. Dev.	8.82E+09	5.93E+09	47769.69	3323.112	9.38E+09
Observations	38	38	38	38	38

From the table above presents the results of the descriptive analysis of the variables covered in this study. These include mean, median, standard deviation, minimum, maximum and so on. The variables covered in this study include gross fixed capital formation (GFCF), market capitalization (MCAP), turnover ratio (TOR), total value traded ratio (TVTR) and All Share Index (ASI) which ranged from 1985 and 2022. Specifically, the results of the descriptive statistics as presented in Table 2 showed that gross fixed capital formation (GFCF) recorded an average value of 10271.64 with a maximum and minimum values of 64528.66 and 87.14 respectively. Also, market capitalization (MCAP) has a mean value of 9100.23 with maximum and minimum values of 47398.10 and 6.6 respectively. furthermore, turnover ratio (TOR) has a mean value of 60.34 with maximum and minimum values of 175.588 and 2.479 respectively. Moreover, total value traded ratio (TVTR) recorded an average value of 8.26 with maximum and minimum values of 42.88 and 0.406 respectively. Lastly, All Share Index (ASI) has a mean value of 18239.24 with maximum and minimum values of 50424.7 and 15922.64 respectively

Table 2. Time Series Unit Analysis of Variable.

Variables	Level	1st Difference	Critical value at 5%	Conclusion
LNGFCF	1.441958	4.702414***	2.943427	I(I)
LNMCAP	1.422840	4.749952***	2.943427	I(I)
LNTOR	2.175380	10.48766***	2.943427	I(I)
LNTVTR	1.891227	7.267580**	2.943427	I(I)
LNASI	3.145509**	4.272350***	2.943427	I(0)

Note: that ***, **, * indicates significance at 1%, 5% and 10% respectively.

The above results show stationarity test conducted using the Augmented Dickey-Fuller (ADF) test for each variable at different levels (level and first difference). The purpose of the ADF test is to determine if a time series is stationary (i.e., has a constant mean and variance over time). The notations I(0) and I(1) indicate the order of integration of the series, where I(0) means the series is stationary at the level, I(1) means the series is stationary after first differencing. From the above, log of gross fixed capital formation (LNGFCF), log of market capitalization (LNMCAP), log of turnover ratio (LNTOR), and log of total value traded ratio (LNTVTR) are stationary at first difference meaning that they are cointegrated at order one I(I) while log of all share index (LNASI) is stationary at level suggesting that the variable is cointegrated at order zero I(0). Since the results from our unit root test is a mixed cointegration we shall proceed to conduct bound cointegration test.

Table 3. ADRL Bounds Cointegration Test.

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	16.06073	10%	2.2	3.09
K	4	5%	2.56	3.49
		2.5%	2.88	3.87
		1%	3.29	4.37

From the table above, the F-statistic is greater than the upper bound limit at 5%, 2.5% and 1%. The test results indicate strong evidence of a long-run (cointegrating) relationship between the dependent variable and its regressors in the ARDL model. This means the variables move together over the long term, maintaining a stable relationship despite any short-term fluctuations. The high F-statistic suggests the presence of a significant cointegration relationship, implying that any deviation from this long-run equilibrium will be corrected over time. This results also suggest that we analyze both the short run and long run estimates of the variables.

Table 4. Short and Long Run Estimates.

Dependent Variable: LNGFCF				
Short Run Equation				
D(LNTOR)	0.337381	0.051467	6.555267	0.0000
D(LNTOR(-1))	-0.135451	0.047723	-2.838283	0.0089
D(LNTVTR)	-0.440802	0.056922	-7.743914	0.0000
D(LNTVTR(-1))	0.217214	0.047945	4.530470	0.0001
D(LNASI)	-0.089821	0.087410	-1.027588	0.3140
CointEq(-1)*	-0.622601	0.057898	-10.75348	0.0000
Long Run Equation				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNMCAP	0.742044	0.036883	20.11883	0.0000
LNTOR	1.053813	0.149923	7.029014	0.0000
LNTVTR	-1.139360	0.121761	-9.357388	0.0000
LNASI	0.199332	0.059717	3.337955	0.0026
C	-0.511191	0.311559	-1.640751	0.1134

From Table 4 above, the ARDL estimation show that in the short run log of turn over ratio (LNTOR) has a positive and significant relationship with log of gross fixed capital formation (LNGFCF), This implies that a percent increase in the LNTOR will lead to a 0.33 percent increase in LNGFCF in the short run. The p-value (0.0000) indicates that this relationship is statistically significant at any conventional level, however the LNTOR lag one has a negative and significant relationship with LNGFCF suggesting that past values of LNTOR has a negative effect on LNGFCF. The results also show that log of total value traded ratio (LNTVTR) has a negative and significant relationship with log of gross fixed capital formation (LNGFCF) in the short run. The lag value of LRTVTR however suggest that pas values of LRTVTR has positive and significant relationship on LNGFCF. On the other the log of all share index (LNASI) has a negative relationship with log of gross fixed capital formation (LNGFCF) in the short run although the relationship is not statistically significant.

In the long-run, the results show that all the variables have positive and significant relationship with LNGFCF except LNTVTR that has a negative and significant relationship with LNGFCF. Again. in the long run, a percent increase in market capitalization leads to a 0.7420 percent increase in capital formation. This relationship is positive and highly significant (p < 0.05), indicating that higher market capitalization boosts capital formation. This result is in line with the result of Okonkwo Ananwude and Echekoba (2015) which stated that market capitalization is an important stock market liquidity variable that is capable of contributing positively and significantly to capital formation in Nigeria. Furthermore, a percent increase in turnover ratio leads to a 1.0538 percent increase in capital formation in the long run. This positive relationship is significant (p < 0.01), showing that turnover plays a crucial role in increasing the dependent variable over time. This result is in line with the result of Alajekwu and Achugbu (2012) which stated that turnover ratio has a very strong positive correlation with economic growth. On the other hand, a percent increase in the total value traded results in a 1.1394 percent decrease in capital formation in the long run. This inverse relationship is significant (p < 0.05), suggesting that higher trading activity may negatively affect capital formation in the long term. This result suggest that the stock market may be overly focused on short-term speculative trading, which could divert funds away from long-term capital investment These findings contradict the findings of Panshak and Shingil (2016) which established that total value traded positively enhances allocation of funds to desired sectors and projects which are meaningful for economic prosperity. A percent increase in the all-share index results in a 0.1993 percent increase in capital formation in the long run. This positive relationship is significant (p < 0.05), indicating that a rising all-share index is beneficial to capital formation. This result conforms to the result of Yakubu, Baba and Ibrahim (2016) which established a significant positive effect of number of deals and all share index on capital formation and economic growth in Nigeria.

From the above results it is noted that all the results conform with the a priori expectation of the study except total value traded ratio.

Table 5. Post Estimation Test.

Test Type	Test Stat.	Prob
Normality Test	Jarque-Bera Stat.(2.123989)	0.3458
Breusch-Godfrey Serial Correlation LM Test:	Prob. Chi-Square Stat (0.1710)	0.3049
Heteroskedasticity Test	Chi-Square (0.7900)	0.7974
Ramsey RESET Test	F-Stat (3.568669)	0.0710

The results presented in table 5 above assesses the adequacy and reliability of our model, focusing on normality, serial correlation, heteroskedasticity, and model specification. The null hypothesis for normality test is that the residuals are normally distributed. With a p-value of 0.3458, which is greater than 0.05 we fail to reject the null hypothesis; therefore the residuals of the model are normally distributed, suggesting that the assumption of normality holds. The null hypothesis for Breusch-Godfrey Serial Correlation LM Test is that there is no serial correlation in the residuals. The p-value is 0.3049, which is greater than 0.05. Therefore, we fail to reject the null hypothesis. Therefore, we conclude that the model does not exhibit serial correlation, meaning the residuals are independent across observations. The null hypothesis for Heteroskedasticity test is that the residuals have constant variance (no heteroskedasticity). The results above show a p-value of 0.7974, which is greater than 0.05. Therefore, we fail to reject the null hypothesis. We conclude that the model does not exhibit heteroskedasticity, indicating that the variance of the residuals is constant across observations. Finally, the results of Ramsey RESET test suggest that the model is correctly specified.

6. Conclusion and Recommendations

This research empirically examines the effect of stock market liquidity on capital formation in Nigeria. Ex-post facto research design was adopted while secondary data which ranged from 1985 to 2022 were used. These data were sourced from Central Bank of Nigeria (CBN) Statistical Bulletins and Nigerian Exchange Group (NGX) fact book. Econometric techniques adopted in the study include descriptive statistics and regression technique. Following the number of preliminary investigations, the ARDL estimating strategy was adopted as the right mechanism for estimating the parameters of variables under consideration. Pretests, including the unit root test and others were conducted to determine how the time series would behave in the future. The results suggests that the series were mixed integrated hence the use of ARDL. After the mixed integration it was necessary to conduct a ARDL Bounds Cointegration test to determine if there is a long run associationhsip among the variable. The results confirms that there is a long run relationship between the variable. This was a precondition for us to estimate both the ARDL long run and short run estimates. Specially, in the long run the results shows that there is a positive and significant relationship between market capitalization and gross fixed capital formation in Nigeria., a positive and significant relationship between turnover ratio and gross fixed capital formation in Nigeria, a negative and significant relationship between total value traded ratio and gross fixed capital formation in Nigeria and a positive and significant relationship between all share index and gross fixed capital formation in Nigeria. Finally, a number of post estimation were conducted to test the reliability and validity of our model. The various results confirms that our model is heathy, reliability, and valid in predicting the dependent variable. Based on the findings from the study, the study recommend that a reliable regulatory framework should be put in place by the government that could actively carry out the surveillance of the stock market. This will go a long way in encouraging Nigerians and foreigners to trust the services of the stock market and thus invest their money in the stock market. That there should be sustained effort to stimulate productivity in both the public and private sectors. This will thus increase the demand for the services of the stock market thus, encouraging more liquidity of the market. Finally, the study recommend that regulators of the stock market should introduce policies that encourage long-term investments in the stock market rather than short-term speculation.

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