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FINANCIAL DEEPENING, STOCK MARKET RETURNS AND LIQUIDITY MANAGEMENT IN NIGERIA

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Abstract

The capital market is an engine room of economic growth but the extent to which financial deepening influences this institution (capital market) that spur economic advancement of the country is still blurred and subject to debate among researchers. Therefore, this study investigates the causal relationship and impact of three financial deepening indicators on stock market returns and liquidity in Nigeria for the period 1985-2018. The study adopts correlational research design and obtains secondary annual time series data from the Central Bank of Nigeria statistical bulletin. The two-stage least squares regression and pairwise Granger causality test are methods of data analysis used. Findings reveal that financial deepening indicators-the ratio of money supply to gross domestic product, and market capitalization as a ratio of Gross Domestic Product (market capitalization ratio) have positive significant effect on stock market liquidity while ratio of credit to private sector to Gross Domestic Product, though positive but is not significantly related with market liquidity in Nigeria. Empirical findings also reveal that, though, the three financial deepening indicators are positively signed with stock market returns, only market capitalization ratio is found to exert significant effect on the stock market returns in Nigeria. Moreover, stock market liquidity is found to granger-cause financial deepening while a bi-directional causality exists between stock market returns and stock market deepening. Using multivariate modelling approach, this study contributes to financial deepening-stock market nexus literature by emphasizing the positive impact of three different financial deepening indicators on stock market performance in terms of returns and liquidity. This study concludes that financial deepening is a catalyst to capital market performance in Nigeria and therefore recommends that Government of Nigeria should further deepen the financial sector and its synergistic effect on capital market.

Keywords: Financial deepening; Liquidity; Money supply; Stock market, Stock market returns.

1. Introduction

Capital market is a financial market where medium to long-term funds in the form of financial securities such as bonds, shares and derivatives, are traded. Through the market, loanable funds are mobilized for business, trade, investment, returns from which are positively felt in the real economic sector in the form of increased income, demand, employment and ultimately in gross domestic product increase. Considering the critical role of the capital market in any economy, any effort to develop the sector is considered not wasteful but an action capable of creating growth-enhancing synergistic effect in the economy. To develop the financial industry is to deepen the sector. Financial deepening defined as the expansion of financial services of wide varieties to all strata of the society (Alrabadi & Kharabsheh, 2016); leads to improved economic conditions via highly competitive and efficient financial markets, thus resulting in indirect benefits to the non-financial sectors of the country (Nwaolisa & Cyril, 2018; Torruam et al., 2013). Financial deepening also helps in increasing the provision and choices of financial services (Nwaolisa & Cyril, 2018). According to Okoli (2010), financial deepening is a product of the growth of financial intermediation. This suggests that the increased capacity of the sector in her financial intermediation function signals the deepening of the sector. Kromtit and

Umejiaku (2016) also consider financial inclusion as a bye-product of financial deepening. This implies that financial deepening is a necessary but not a sufficient condition for financial inclusion.

The positive role of capital market in economic growth has been confirmed in empirical literatures (Abina & Lemea, 2019; Acha & Akpan, 2019; Adenuga, 2010; Edame & Okoro, 2013; Ologunwa & Sadibo, 2016; Taiwo et al., 2016). This notwithstanding, the extent to which financial deepening influences this institution (capital market) that spur economic advancement of the country is still blurred and subject to debate among researchers. In the same vein, there seems to be relatively scarce empirical works on the financial deepening-stock market nexus compared with a large pool of empirics on financial deepening-growth relationship. This study is thus a contribution to knowledge on the relationship between financial deepening and stock market performance in developing economies like Nigeria.

Based on these premises, this study attempts to examine the impact of financial deepening indicators on stock market returns and liquidity in Nigeria for the period 1985 to 2018 using the two-stage least squares (2SLS) regression and pairwise granger causality technique. The main aim of this study is to investigate the causal relationship as well as the impact of financial deepening on stock market performance in Nigeria for the period 1985-2018. The specific objectives are:

- i. To examine the relationship between financial deepening indicator-the ratio of money supply (M2) to Gross Domestic Product (GDP) and stock market returns in Nigeria.
- ii. To determine the relationship between the indicator of financial deepening-the ratio of credit to private sector (CPS) to GDP and stock market returns in Nigeria.
- iii. To analyse the relationship between financial deepening measured as the ratio of stock market capitalization (MCAP) to GDP and stock market returns in Nigeria.
- iv. To investigate the relationship between the financial deepening indicator- M2/GDP and stock market liquidity in Nigeria.
- v. To assess the relationship between financial deepening indicator- CPS/GDP and stock market liquidity in Nigeria.
- vi. To evaluate the relationship between financial deepening measured as MCAP/GDP and stock market liquidity in Nigeria.

In this paper, in addition to this introduction, section two is on literature review while the description of the methods of analysis and estimation are reported in section three. Empirical results and discussion of findings are contained in section four while section five concludes the paper and offer some policy recommendations.

2. Literature Review

Financial deepening, which focuses more on the process and growth of financial intermediation, refers to the expansion of the financial services in terms of depth. It also signals a greater penetration of all strata of the society with varieties of financial services. Alenoghena, et al. (2014) also conceptualise financial deepening as the capacity of financial institutions to execute effectively financial intermediation function of savings mobilisation for investment purposes. According to Bakang (2015), financial deepening is the increase in the supply of financial assets in the economy. In other words, financial deepening refers to the ability of financial institutions to facilitate financial intermediation; create and develop financial services and render these

services at affordable rate in an economy to facilitate growth of business enterprises (John & Ibenta, 2017). Financial deepening is variously defined as an increase in the stock of financial asset, sub markets, money supply, access to credit; which brings about increased provision of financial services, of a wider choice of services and better access for different socio-economic groups and individuals (Godfrey & Agwu, 2020; Wanja, 2017).

Four theories that are related to financial deepening/development reviewed in this paper are the finance-growth led hypothesis, the supply-leading theory, the financial liberalization theory and the Keynesian theory of financial deepening. The finance-growth led hypothesis of the Schumpeterian school of thought recognizes the cardinal positive role of financial institutions and markets such as the capital market in making loanable and investible funds available, by intermediating between the savers and borrowers. These funds when made available to business enterprises could facilitate innovation, technology and other productive operation capable of contributing to real sector growth. The supply-leading hypothesis postulates that financial development is positively signed with economic growth with a unidirectional causality running from the financial development to economic growth. This emphasises the positive role of the financial sector in promoting the growth of the economy. Financial deepening leads to expansion in financial products and services, thereby resulting in financial development, in terms of depth, size, of the financial sector. The supply leading theory is reinforced by the financial liberation theory. Financial liberalization has been defined as a set of measures intended to remove any undesirable government-imposed constraints on the free working of the financial markets, such as the capital market (Alenoghena, et al., 2014). Thus, financial liberalization means removal of government imposed restrictions, controls from the financial markets, like restriction on credit, capital mobility, currency convertibility and interchangeability. For the financial sector to actually spur economic growth, though it needs regulation, but the sector should be given some of liberalization that could curtail their initiatives and activities, so as to be able to actually spur economic growth.

In the Keynesian theory of financial deepening, the emphasis is on the role of the public sector expenditure, which brings about liquidity injection in the economy, which ultimately increases aggregate demand and income, thereby raising demand for money. This money injection is what drives financial deepening. Thus, according to this theory, financial deepening is increase in money indicators relative to the other assets in the economy as well as its contribution to the gross domestic product. This cash injection will ultimately facilitate full employment, and ultimately economic growth. However, this study is underpinned by the financial liberalization and the Keynesian theory of financial deepening. The choice of former is due to postulation of removal of any form restrictions that could limit the expansion of financial craftsmanship that could ultimately reduce the expansion of financial products and services. Keynesian theory specifically focuses on money supply by the state as a stimulant to financial sector deepening, hence its relevance to this study.

Empirically, financial deepening and capital market returns in Nigeria investigated by Godfrey and Agwu (2020) via the error correction model reports evidence that financial deepening proxy by M2/GDP has a positive and significant impact on capital market returns in Nigeria. The authors also found that financial deepening- CPS/GDP has negative and significant influence on the return of the capital market in Nigeria. In a related study, Adeyeye et al. (2017) examine via

the Generalized Autoregressive Conditional Heteroscedasticity (GARCH) model, the effect of financial liberalization on the volatility of an emerging stock market in Africa and Nigeria in particular. The author asserts that there is a positive association between financial liberalization and market risk (volatility).

In a recent study, Yusuf et al. (2020) investigate the effect of financial deepening on stock market returns in Nigeria via Vector Error Correction Model (VECM) model framework. The study confirms that private sector credit is positive but insignificant while money supply is positive and significant in enhancing stock market returns in both the military and democratic eras in Nigeria. Furthermore, the authors argue that, unlike a unidirectional causality that runs from financial deepening to stock turnover in the democratic era, however, the study confirms evidence of a bidirectional causality between financial deepening and stock market returns in the military era.

Moreover, Okoli (2010) analyses the relationship between financial deepening and stock market returns and volatility in the Nigerian stock market via the GARCH model. The study submits that the financial deepening measured as the ratio of value of stock traded to GDP does not have significant effect on the stock market but financial deepening measured as MCAP/GDP, has significant positive effect on the stock market. Finally, the study concludes that financial deepening reduces stock market volatility in Nigeria.

In their paper, Alenoghena, et al. (2014) determine the impact of financial deepening on the performance of the Nigerian capital market. Specifically, the study finds that credit to private sector has positive but non-significant effect on capital market performance. Having found evidence of a cointegration among the variables, the authors conclude that financial deepening variables positively impacted Nigerian stock market.

In another study, Wanja (2017) assesses the effect of financial deepening on capital market development in Kenya using Autoregressive Distributed Lag- Error Correction Model (ARDL-ECM). The study indicates that financial depth and market liquidity has positive significant bearing on capital market development. Furthermore, the author submits that financial deepening measured by financial access and openness has adverse but significant impact on development of capital market in Kenya. Finally, the researcher found evidence of a positive significant interaction between financial deepening and the market development.

In a recent study, Okeya and Dare (2020) apply the vector auto-regression (VAR) and vector error correction (VECM) to the analysis of the Nigerian stock market development and its long and short run relationship with five financial deepening indicators, namely, broad money/GDP ratio (M2/GDP); financial sector contribution to GDP ratio; CPS/GDP ratio; commercial banks liabilities/GDP ratio and banking sector liquidity. The authors conclude that financial deepening have significant positive effect on stock market development in the long run but negative insignificant effect in the short run. In addition, the study shows among others, that a unidirectional causality flows from capital market development to M2/GDP, CPS/GDP and to liabilities of commercial banks' liabilities to GDP.

In summary, from the empirical review it is clear that, while most study conclude positive relationship between financial deepening and stock market performance, there are still few showing evidence of negativity. Methodologically, unlike most studies reviewed that use techniques ranging from VECM/VAR, GARCH, to ARDL, this study situates this current work within the 2SLS regression and granger causality techniques.

3. Methodology

This study adopts correlational research design It is also based on cause-and-effect approach where historical data was used to examine the relationship between financial deepening indicators and stock market performance in terms of return and liquidity. This study employs secondary data, in the form of annual time series, obtained from the Central Bank of Nigeria statistical bulletin. The study covers a period of 33 years, 1985 to 2018. The chosen study period is due to data availability. The study employs three indicators of financial deepening, namely monetization ratio, defined as M2/GDP; the credit to private sector ratio, defined as CPS/GDP; and market capitalization ratio, defined as MCAP/GDP. In addition to the trio, exchange rate is included in the model to control for macroeconomic stability effect. The study applies multivariate equations, by measuring the impact of financial deepening indicators on the returns and liquidity of the Nigerian Stock Exchange(NSE). The return is captured by the All-share Index(ASI) while the liquidity is proxy by the total values of shares traded ratio (TVSTR) measured as the total values of shares traded on the stock exchange divided by GDP.

Econometric techniques and models are employed in the analysis of data in this study. After descriptive statistics, the augmented Dickey-Fuller (ADF) unit root test was applied to test the stationarity of each variable to avoid the incursion of spurious regression results. Then, the variables are tested for any evidence of long run relationship among them using the Johansen co-integration test. The impact analysis and the direction of causality between the variables are determined via the 2SLS regression and pairwise granger causality test respectively.

In line with similar studies like Okeya and Dare (2020), this study adapts Godfrey and Agwu (2020)'s model of financial deepening and capital market returns in Nigeria. Whereas Godfrey and Agwu regressed all-share index against two financial deepening indicators (credit to private sector, narrow money) in this study, three financial deepening indicators were examined in terms of their impact on the market returns and market liquidity whose models are represented in the following equations.

$$ASI = f(CPSR + MNTR + MCAPR + EXCHR) \quad (1)$$

$$TVSTR = f(CPSR + MNTR + MCAPR + EXCHR) \quad (2)$$

The econometric version of the above models are as follows.

Model 1:

$$ASI_t = \beta_0 + \beta_1 CPSR_t + \beta_2 MNTR_t + \beta_3 MCAPR_t + \beta_4 EXCHR_t + U_t \quad (3)$$

Model 2:

$$TVSTR_t = \beta_0 + \beta_1 CPSR_t + \beta_2 MNTR_t + \beta_3 MCAPR_t + \beta_4 EXCHR_t + U_t \quad (4)$$

Where, ASI_t = all share index of the NSE at time t, as a measure of stock market returns(Godfrey & Agwu, 2020).

$TVSTR_1$ = Total values of shares traded ratio, measured as the total values of shares traded on the stock exchange divided by GDP at time t, as a measure of stock market liquidity (Onwumere, et al.,2012).

$CPSR_1$ = Credit to private sector ratio, as an indicator of financial deepening, defined as ratio of credit to private sector to gross domestic product (CPS/GDP) % (Godfrey & Agwu, 2020; Yusuf et al., 2020; Okeya & Dare, 2020).

$MNTR_1$ =Monetisation ratio, as an indicator of financial deepening, defined as ratio of broad money supply(M2) to gross domestic product at time t (M2/GDP) % (Okeya & Dare, 2020; Yusuf et al., 2020).

$MCAPR_1$ = Market capitalization ratio, as an indicator of financial deepening, measured as the ratio of stock market capitalization to GDP at time t (MCAP/GDP) % (Godfrey & Agwu, 2020; Okoli, 2010).

$EXCHR_1$ = Exchange rate, defined as the official Naira/Dollar average exchange rate in Nigeria at time t.

β_0 is the intercept while β_1 - β_4 are coefficients of the explanatory variables; U_t =Error term; t =1, 2, 3, ...33 years.

It is expected that $\beta_1 - \beta_3 > 0$; $\beta_4 < 0$.

Moreover, the pairwise causality test equations are specified thus. Equations (5) to (8) are the pairwise granger causality equations of financial deepening indicators and stock market returns.

$$ASI_t = \sum_{t=1}^n CPSR_t + \sum_{t-i}^n MTNR_t + \sum_{t-j}^n MCAPR_t + U_{1t} \quad (5)$$

$$CPSR_t = \sum_{t=1}^n ASI_t + \sum_{t-i}^n MTNR_t + \sum_{t-j}^n MCAPR_t + U_{2t} \quad (6)$$

$$MTNR_t = \sum_{t=1}^n CPSR_t + \sum_{t-i}^n ASI_t + \sum_{t-j}^n MCAPR_t + U_{3t} \quad (7)$$

$$MCAPR_t = \sum_{t=1}^n CPSR_t + \sum_{t-i}^n ASI_t + \sum_{t-j}^n MTNR_t + U_{4t} \quad (8)$$

Finally, specified in equations (9) to (12) are the pairwise granger causality equations of financial deepening indicators and stock market liquidity.

$$TVSTR_t = \sum_{t=1}^n CPSR_t + \sum_{t-i}^n MTNR_t + \sum_{t-j}^n MCAPR_t + U_{6t} \quad (9)$$

$$CPSR_t = \sum_{t=1}^n TVSTR_t + \sum_{t-i}^n MTNR_t + \sum_{t-j}^n MCAPR_t + U_{7t} \quad (10)$$

$$MTNR_t = \sum_{t=1}^n CPSR_t + \sum_{t-i}^n TVSTR_t + \sum_{t-j}^n MCAPR_t + U_{8t} \quad (11)$$

$$MCAPR_t = \sum_{t=1}^n CPSR_t + \sum_{t-i}^n TVSTR_t + \sum_{t-j}^n MTNR_t + U_{9t} \quad (12)$$

4. Findings and Discussions

The descriptive statistics presented in Table 1 shows that except for total value of shares traded ratio (TVSTR), which displays wide dispersion(volatility); all other variables are not widely dispersed (relatively stable) as their mean values are not less than their standard deviation values. Also, the descriptive statistics show that all the variables are platykurtic (flat peaked with lighter tails) relative to normal as their kurtosis do not exceed 3. Also, all the series are positively skewed, implying that they may not be symmetrical around the mean and thus deviating from normal distribution. Finally, except for all-share index (ASI), monetization ratio (MNTR) and exchange rate (EXCHR) (with p-value of the Jarque-Bera (J-B) stat. of high value) which are normally distributed; all other variables that whose J-B's p-value is generally low (<5%), suggests the rejection of normal distribution for the other series at 5%. Credit to private sector ratio (CPSR) however, attains normality at 5% level.

Table 1: Descriptive statistics

	ASI	TVSTR	CPSR	MNTR	MCAPR	EXCHR
Mean	194426.1	873.943	11.550	14.613	11.449	99.011
Median	130901.7	567.572	8.249	13.097	7.853	115.255
Maximum	605096.4	4288.137	20.773	21.307	39.950	306.080
Minimum	1407.400	40.617	6.217	9.151	3.053	0.893
Std. Dev.	184630.8	987.235	5.473	3.951	8.496	86.462
Skewness	0.606	1.836	0.714	0.439	1.205	0.683
Kurtosis	2.214	6.303	1.692	1.669	4.663	2.893
Jarque-Bera	2.958	34.576	5.313	3.601	12.152	2.664
Probability	0.227	0.000	0.070	0.165	0.002	0.263

Source: Eviews Output, 2021

The results of the ADF unit root tests reported in Table 2 show that all the variables are non-stationary in levels but became stationary after first differences. All the variables are therefore, said to be integrated of order one.

Table 2: ADF unit root results

Variables	ASI	TVSTR	CPSR	MNTR	MCAPR	EXCHR
ADF	-5.925	-6.090	-4.556	-5.298	-6.342	-4.039
p-value	0.000***	0.000***	0.001***	0.000***	0.000***	0.003***
I(d)	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)

Source: Eviews Output, 2021

Note: *** denotes stationarity of the variables at 1%, significant level; I(d) signifies order of integration.

The Johansen co-integration results in Table 3 represent the Trace statistics for the models. The Trace statistics indicates that there is one cointegrating equation for model 1 while two cointegrating equations for model 2. This implies there is a long run relationship between financial deepening and stock market performance in Nigeria, in line with similar findings of Alenoghena, et al. (2014).

Table 3: Johansen cointegration test

Model 1: ASI CPSR MNTR MCAPR EXR				Model 1: TVSTR CPSR MNTR MCAPR EXR			
Unrestricted Cointegration Rank Test (Trace)				Unrestricted (Trace)	Cointegration Trace	Rank 0.05	Test Critical
Hypothesized		Trace	0.05 Critical				
No. of CE(s)	Eigenvalue	Statistic	Value	Eigenvalue	Statistic	Value	
None	0.614	72.763*	69.818	0.651	85.405*	69.818	
At most 1	0.418	42.238	47.856	0.525	51.635*	47.856	
At most 2	0.388	24.901	29.797	0.417	27.809	29.797	
At most 3	0.196	9.187	15.494	0.209	10.520	15.494	
At most 4	0.066	2.189	3.841	0.089	3.013	3.841	

* denotes rejection of the hypothesis of absence of cointegration among the variables at the 0.05 level

Source: Eviews Output, 2021

Examined in this sections are the 2SLS regressions estimates for the two models, viz, financial deepening on stock market returns and financial deepening on stock market liquidity. The 2SLS regression results of the financial deepening-stock market returns nexus shown in table 4 indicate that increase in credit to private sector ratio (CPSR) and monetisation ratio (MNTR) have positive and non-significant effect on all share index (ASI) such that a 1% increase in the two financial deepening indicators (CPSR and MNTR) could respectively results in about 644% and 816% increase in stock market return, as represented by ASI. The respective p-value of CPSR (0.910) and MNTR (0.924) suggests that the two financial deepening indicators are not significant determinants of stock market returns in Nigeria in the period of investigation.

Furthermore, the financial deepening indicator, market capitalization ratio, (MCAPR) exhibit strong positive influence on stock market returns, such that 1% increase in MCAP will lead to 16294 increase in stock market returns, as measured by ASI. This implies that larger stock market capitalization, the higher the market returns.

The exchange rate reported in table 4, with a 524.730 and a p-value of 0.011 suggests that exchange rate has a positive and significant impact on stock market returns, as represented by ASI. Generally, the results of the model 2 indicate that financial deepening and exchange rate have significant positive effect on the Nigerian Stock market returns in the period of study.

Furthermore, the statistical properties of model 1 reported in table 4 indicates that model is of good fit, going by the F-stat (87.650) and the J-stat (29.000), all significant at 1%. The coefficient of determination (R^2) shows that the explanatory variables jointly account for 92% variation in the dependent variable.

Table 4: 2SLS regression coefficients and post-estimation diagnostic tests for model 1

Dependent Variable: ASI (Stock Market Returns)							
CPSR	MNTR	MCAPR	EXCHR	R ²	Adj. R ²	F-stat	J-stat
643.929	816.256	16293.51***	524.730**	0.923	0.913	87.650***	29.000***
[0.910]	[0.924]	[0.000]	[0.011]			[0.000]	[0.000]
Heteroscedasticity Test: ARCH:				0.178[0.675]			
Breusch-Godfrey Serial Correlation LM:				2.138[0.343]			
Ramsey RESET:				4.773[0.0374]			

Source: Eviews Output, 2021

Note: Values in parentheses are the probability values; ***, ** and * denote statistically significant at 1%, 5% and 10% levels respectively.

Furthermore, also contained in Table 4 are the results of the post-estimation diagnostic tests for model 1. Based on the large p-value of each of the test statistics, the study fails to reject the null hypothesis of homoscedasticity, zero serial correlation and parameter stability of the model respectively. These suggest that the estimates of the model are reliable, consistent and considered suitable for policy purposes and forecasting. The 2SLS regression results of financial deepening and its impact on stock market liquidity reported in table 5 indicate that increase in credit to private sector ratio (CPSR) exhibits negative and non-significant (P-value of 0.1748) relationship with total values of shares traded ratio (TVSTR) to the extent that a 1% increase in the financial deepening indicator (CPSR) could lead to 64% reduction in stock market liquidity, as represented by TVSTR. This inverse relationship suggests that changes in CPSR does not exert significance influence on the stock market liquidity in the period of investigation.

Moreover, the monetisation ratio (MNTR) also displays a negative and statistically significant (0.0640) relationship with stock market liquidity to the extent that 1% increase in the financial deepening indicator (MNTR) could bring about 141% improvement in the stock market liquidity. This implies that a rise in the monetisation ratio (money supply) will increase the amount of liquidity in the NSE. Unlike credit to private sector, this financial deepening indicator is a determinant of stock market liquidity in Nigeria.

Furthermore, from the 2SLS, financial deepening indicator-market capitalization ratio, (MCAPR) exhibits strong positive influence on stock market liquidity such that a 1% increase in MCAPR may lead to about 112% increase in stock market liquidity in the economy. This suggest that larger the side of the market, the more liquidity it possesses. In the same vein, table 5 also shows that exchange rate is negatively signed with stock market liquidity. The coefficient of -3.983 and p-value (0.022) suggests the higher the depreciation rate of the Nigerian currency, the lower the liquidity available in the Nigerian Stock Exchange. This suggests the negative role of macroeconomic instability (in terms of exchange rate depreciation) on economic indicator such as the stock market liquidity.

Generally, this study finds that financial deepening and exchange rate have significant positive and negative influence respectively on the Nigerian Stock market liquidity position in the period under review. The statistical properties and diagnostic tests of model 2 (reported in Table 5) indicates that the regression model is of good fit, going by the F-stat (30.186) and the J-stat (29.000), all significant at 1%. The coefficient of determination (R^2) shows that the explanatory variables jointly account for about 81% variation in the dependent variable.

Table 5: 2SLS regression coefficients and post-estimation diagnostic tests for model 2

Dependent Variable: TVSTR (Stock Market Liquidity)

CPSR	MNTR	MCAPR	EXCHR	R^2	Adj. R^2	F-stat	J-stat
-67.456	140.536*	111.864***	-3.983**	0.806	0.779	30.186***	29.000***
[0.174]	[0.064]	[0.000]	[0.022]			[0.000]	[0.000]
Heteroscedasticity Test: ARCH:				0.941 [0.339]			
Breusch-Godfrey Serial Correlation LM :				1.309 [0.519]			
Ramsey RESET:				2.537 [0.122]			

Source: Eviews Output, 2021

*Note: Values in parentheses are the probability values; ***, ** and * denote statistically significant at 1%, 5% and 10% levels respectively.*

Furthermore, the results of the post-estimation diagnostic tests for model 2 reported in table 5, with the large p-value of each of the test statistics, led to the non-rejection of the null hypothesis of homoscedasticity, zero serial correlation and parameter stability respectively. Hence, the model does not suffer heteroscedasticity, serial correlation and parameter (specification error) problems. These suggest that the model is robust and its estimates perceived to reliable, and consistent. The granger causality results in Table 6 indicate no causality between the two financial deepening indicators-monetisation ratio (MNTR) and credit to the private sector ratio (CPSR) in Nigeria. However, there is a unidirectional causality flowing from stock market returns(ASI) to credit to private sector and monetization ratios. Further evidence of a unidirectional causality was also found running stock market liquidity(TVSTR) to credit to private sector ratio, and monetization ratio.

Like Okeya and Dare (2020), this study found evidence of a unidirectional causality flowing from market capitalisation ratio to credit to the private sector, and money monetization ratios. In the same vein, there is a partial feedback effect between market capitalisation ratio and stock market liquidity, with the former leading. Lastly, we find an evidence of a bi-directional causality between market capitalisation ratio and stock market returns (all share index) in Nigeria in the period of study.

It can be inferred from above that stock market liquidity granger-causes financial deepening while stock market returns and stock market deepening granger-causes each other.

Table 6: Pairwise Granger Causality Tests

ASI→CPSR	ASI→MTNR	TVSTR→PCSR	MCAPR↔ ASI
MCAPR→ CPSR	MCAPR→ TVSTR	TVSTR→MTNR	CPSR–MTNR

Source: Eviews Output, 2021

Note: →, *Bidirectional Causality*; ↔, *Bidirectional Causality*; –, *No Causality*.

5. Conclusion and Recommendations

In this paper, we have established via two-stage least squares(2SLS) regression analysis, that financial deepening indicators-credit to private sector, money supply, and market capitalization contributions to gross domestic product have positive effect on stock market liquidity in Nigeria. Except for credit to private sector ratio, the effect of the other two indicators of financial deepening are significant explaining stock market liquidity in the period of study (1985-2018). Furthermore, empirical findings reveal that, though, all the financial deepening indicators are positively signed with stock market returns, only market capitalization ratio is found to exert significant effect on the stock market returns in Nigeria in the period of study.

Moreover, this study, via pairwise granger causality technique, also confirms evidence of a unidirectional causality flowing from stock market liquidity to financial deepening while a bidirectional causality exists between stock market returns and stock market deepening. In support of previous studies (Alenogbena et al. (2014; Okeya and Dare (2020)), this study therefore, concludes that financial deepening is germane to Nigerian stock market positive performance in terms of returns and liquidity. This suggests that the more deepened the financial system, the greater the stock market development in Nigeria. Specifically, the study submits that two financial deepening indicators, namely broad money supply and stock market capitalisation contributions to gross domestic product are significant determinants of stock market performance in Nigeria.

This study, therefore, recommends that the Government of Nigeria, Central Bank of Nigeria and organised private sector to consciously collaborate to implement policies, incentives, and programmes to further develop the banking sector, capital market and improve liquidity in the economy of Nigeria. There is also a further need to deepen Nigerian financial sector by increasing the range of financial assets in the economy. Exchange rate policy should be geared towards strengthening the value of Nigerian currency (Naira) in order to stem the tide of domestic currency depreciation.

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