Financial Deepening on the Liquidity of Nigerian Stock Market: A Multi- Dimensional Study

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ABSTRACT
This study examined the effect of financial deepening on the liquidity of Nigeria capital market. The objective was to determine the effect of financial deepening variables on the liquidity of capital market. Time series data were sourced from Central Bank of Nigeria Statistical Bulletin. Capital market liquidity measured total market capitalization to all share price index was used as dependent variable while Percentage of Narrow money supply to Gross domestic products, Percentage of broad money supply to Gross domestic products, Percentage of private sector credit to Gross domestic products, Percentage of money outside the bank to Gross domestic products and Percentage of money market instrument to Gross domestic products. Ordinary least square methods of cointegration, granger causality test, unit root test and Vector error correction model. The Parsimonious error correction model showed that the financial deepening variable can explain 57.5% variation on the stock market liquidity, the model summary shows that the model is significant. The financial deepening shows that narrow money supply is negatively related to stock market liquidity at lag 1 but positive at lag 2 and lag 3, money market development is negatively related at lag 2 while broad money supply is negatively related at lag 1 and positive at lag 2. Money outside the bank is negatively related at Lag 1, Lag 2 and Lag 3while private sector credit is negatively related at Lag 1 and Lag 2. The T-statistics and the probability show that the variables are statistically not significant except private sector credit. The study found that financial deepening has significant effect on liquidity of Nigeria capital market. From the findings of the study, there is need to sustain a higher level of financial deepening in Nigeria. Incidences of poor liquidity should be minimized and private sector credits channeled to the real sector of the economy should be enhanced through monetary and macroeconomic policies. Moreover, policy oriented measures should take into consideration the positive causality between money outside the banks and liquidity of commercial banks in Nigeria and with liquidity of Nigeria stock market within the periods covered in the study.

Keywords: *Financial Deepening, on Liquidity, Stock Market, private sector credit, money supply*

INTRODUCTION

Capital markets are fundamental components of well-functioning financial arrangements and important means for national growth (Osamwonyi, 2005). This is because these markets yield capital for long run projects. In fact, domestic markets enhance the execution of fiscal, monetary, and exchange rate policy (Laeven, 2014). Capital market undertakings play a key

part in defining the level of economic undertakings in developing and developed economies, by providing and efficiently allocating resources for ventures, providing suitable platform to engender top business practices that end up expanding investment and developing the economy (Osamwonyi & Kasimu, 2013). The development of capital market is vital in both developed and evolving economies as overall economic performance is strongly related to state of its capital market. Indeed, solid capital market is important since proposed and observed literature has revealed a positive relationship between market development and economic growth (Beck & Levine, 2004; Chakraborty & Ray, 2006).

Sound and developed capital market attracts foreign direct investment in domestic industry and contributes to economic growth (Oshikoya & Ogbu, 2013). The bonds market for instance, is an another avenue for raising funds for public and private sector in funding long term projects such as housing and infrastructure development. Besides, the domestic bond market is used to facilitate large fiscal shortages without turning to financial repression or international borrowing with a risk of exchange rate (Turner, 2002). On other hand, derivative markets enable increased access to finance by allocating finances to the most suitable investments; enable financial risk management by providing businesses with the choice of obtaining insurance against price fluctuations and enhance financial market deepening and assist economies to meet the challenges of globalization by contributing to development of capital market and influencing cross border flows (Mbungu, 2015).

Conceptually, Shaw and McKinnon (1973) refer financial deepening as the improvement or increase in the pool of financial services that are tailored to all the levels in the society. That it also refers to the increase in the ratio of money supply to Gross Domestic Products or price index which ultimately postulates that the more liquid money is available in the economy, the more opportunities exist in that economy for continued and sustainable growth. Financial deepening implies the ability of financial institutions to effectively mobilize savings for investment purposes. It enables the commercial banks perform their intermediary functions and achieve its operational objectives. Financial deepening reduces the extent and significance of information asymmetries (Stiglitz and Greenwald 2003) and allows for commercial banks risk transformation and monitoring (Diamond, 1984).

Financial deepening thus is a quantitative measure of monetary and financial aggregates such as M1, M2 and M3 to the gross domestic product. The concept denotes that, more liquid money is available in the banking sector and the financial market. Lozano-Vivas and Pastor (2006) opined that the depth of the financial market can also be measured in the ratio of money supply to gross domestic product, is a function of domestic credit provided by banking industry as a percentage of gross domestic product, domestic credit to private sector as a percentage of gross domestic product, financial savings to gross domestic product, rate of inflation, real lending rates, deposit money bank assets to gross domestic product, currency outside banks to money supply.

The depth of the financial market effects of high interest rate encourages savings and discourages investments, thus the increased liabilities of the banking system to give more resources to investments is more efficient. However, the problem with financial deepening and liquidity of the commercial banks in the underdeveloped nature of Nigeria financial market, mismatch of policies, financial dualism and influence of the international financial environment on Nigeria financial market.

However, despite these potential benefits to borrowers, investors and the government, the development of capital markets in emerging economies has remained varied. Some nations

have been able to grow large and liquid domestic capital fairs; while some have had their domestic markets deteriorate raising question on positive impacts of financial deepening (Berkes&Panizza, 2012). It is imperative to examine the effect of financial deepening on stock market performance in Nigeria.

The capital market as has been identified as a critical avenue used to mobilize investment funds required for implementation of vision 2020 projects. However, according to government the capital market is facing some challenges which include few firms listed on the exchange and limited long-term financial instrument namely government and corporate bonds. Hence, the government identified implementation of financial deepening as a strategies which could fasten the speed, growth as well as contributions of capital market (Vision 2030, 2007). Nonetheless, despite the well-intended and momentous efforts by the government to foster its development, the capital market is still shallow, narrow and thin (Njuguna & Muronge, 2013).

Precisely, the growth in the number of listed companies on the NSE has been low over years. Ngugi, Amanja and Maana, (2013) asserted that the capital market is still in its infancy stage since its inception in 1960 and the capital market has failed to pick the growth momentum with the exchange contributing less than one percent to economic growth against government expectation of ten percent. The relationship between financial deepening variables such as percentage of narrow money supply to gross domestic products, percentage of broad money supply to gross domestic products, percentage of private sector credit to gross domestic products, money outside the bank to broad money supply and money market development implies that changes on the variables can directly affect capital market performance as it is a transmission mechanisms for monetary policy.

Furthermore, studies done focused on financial deepening and economic growth (Mwendwa et al., 2013; Aduda et al., 2012; Kemboi & tarus, 2012).Others focused on capital market deepening and economic growth (Ngugi et al., 2013; Osamwanyi & Kasimu, 2013). In addition, they focused on direct impact on independent variables and did not establish the mediating effect and interaction effect. These studies also did not establish the casual link of variables. It is against this background that the study sought to fill in the existing gap and established the relationship between financial deepening variables and capital market performance in Nigeria. Further, the study established the interaction and the direction of causal link between financial deepening variables and capital market Liquidity.

LITERATURE REVIEW

Financial Deepening

Financial deepening refers to enlarged delivery of financial facilities by financial institutions to all people in a society (Nnenna *et al.*, 2012). Kromtit and Tsenkwo (2014) posit that financial deepening means expanding ventures through organized markets. It is expanding the size of financial organization, assimilating the casual market into the official economic system in order to improve effectiveness of intermediation, and efficiency of economic policy. Ndebbio (2004), asserts that it is expanding provision of financial assets hence economic growth.

The main aim of expanding the financial system is to raise domestic savings; to deepen the size of monetary system, to reinforce the procedure of gathering savings .Expanding financial ventures allows placement of saving by increasing and differentiating money and capital fairs

which strive for savings streams. Investors are thus provided with a wider choice of different financial instrument (Raman &Mustafa, 2014). Financial markets are deep if they provide investors with different financial assets which differ in terms of gains, risks and maturity. It entails a range of sub-markets, undertaking various financial assets that are assimilated in the foreign market that is connected to a financial organization (Popiel, 1990).

Financial deepening implies the level of development and innovation of traditional and non-traditional financial services in a free-market economy (Valverde, *et al.* 2004 in Chiawa & Abur, 2013). While Nzotta and Okereke (2009) ascertain that financial deepening is the ability of financial institutions in an economy to effectively mobilize savings for investment purposes. The financial deepening vigorously attracts.

There is a financial Sector Deepening Trust (FSD) in Nigeria which was created in 2015 as an independent trust supervised by audit firm KPMG. It uses policy guidance from a Programme Investment Committee (PIC). Current funders include the UK's Department for International Development (DFID), the Swedish International Development Agency (SIDA) and the Bill and Melinda Gates Foundation. Their focus areas include; financial landscape, consumer insights, savings groups, social protection, savings groups, digital finance, payments, SME finance, risk &insurance and credit market development.

Measures of Financial Development

Since financial development means an increase in the supply of financial assets in the economy, it is important to develop some measures of the widest range of financial assets, including money. This will involve identifying these financial assets, determining their measures and summing them up. The sum total of all the financial assets is one broad measure that represents financial deepening; the other, as indicated earlier, is the growth rate of per capita real money balances. The range of financial assets to be considered in this study includes broad money (M2), liabilities of non-bank financial assets (NB), treasury bills (TB), value of shares (VS) and money market fund (MMF). The sum of these financial assets can thus approximate one of the widest measures of financial deepening. The summing up of these financial assets to represent a broad measure of financial deepening is not a problem, but the availability of data for some of them is. Because of narrow and undeveloped capital markets in many Sub Saharan African countries, data on value of shares (VS) and money market funds in particular are not available. It is equally difficult to get consistent annual data on all financial assets except broad money (M2). If data had been available on these financial assets, the degree of financial intermediation, which is an important part of financial deepening (FDY), would be the sum of the measures of these financial assets, thus:

$$FDY = (M2 + TB + NB + VS + MMF)/Y$$

The financial deepening based on such an identity is unlikely to capture a good number of Sub Sahara African countries because these countries have narrow and shallow capital markets. Thus, the market capitalization as a percentage of GDP in these countries has been seen to be quite low compared with much higher percentages in advanced economies (Nyong, 1996). This may be because many companies in SSA are not quoted on the stock exchange. One example is Nigeria, where funds from the capital market in the 1970s formed a negligible 5% of total capital investment (Alili, 1984). In view of the lack of information, our study uses broad money (M2) as a proxy for the measure of financial deepening. Given the empirical/scientific work of Jao (1976), Fry (1978) and Ogun (1986), however, financial

deepening is represented by two variables: the degree of financial intermediation measured, in our case M2/Y, and the growth rate of per capita real money balances (GPRMB). Financial development and long-run endogenous growth variables

Measures of Capital Market Deepening

Market Size

With 269 securities listed and a market capitalization of approximately N300 billion or US$3,000 million, relatively to international standards, the Nigerian Stock Exchange can still be regarded as small. In Africa, Nigeria ranked 4th after South Africa, Egypt and Morocco in term of market size (Standard and Poor's Emerging Stock Markets Fact book, 2015). Among the emerging markets, Nigeria's share of emerging market capitalization out of 54 markets covered by Standard and Poor's was just 0.1% as at the end of 1999 (Standard and Poor's Emerging Stock Markets Factbook, 2000). Alile and Anao, (1986) adduced possible reasons for the small size. One of the reasons is that indigenous entrepreneurs were not too keen in to going public due to fear of losing control. However, an innovative move by the stock market through the creation of second–tier securities market (SSM) tried to find solution to the problem. Measures taken by the governments and the exchange itself are expected to boost the resource base of the stock market in Nigeria. These measures are: Privatization of Public Enterprises, linking up of the exchange with Reuters Electronic Contributors System for on line global dissemination of stock information, launching of the exchange's Intranets System (CAPNET) and the transition of the exchange from manual call-over Trading System to Automated System (ATS) in April 1999. It is also expected that the present democratic dispensation will impact positively on the turnover of the exchange.

b) Liquidity

Basically, liquidity refers to the ease with which an asset (in these case securities) can be turned into cash through an efficient market. That is, the ability to easily buy and sell securities. Demirgüç-Kunt and Levine (1996) identified two main reasons why liquidity is important in the characterization of stock market. The first is that liquidity relates to the riskiness of the investment. An investment is deemed to be less risky where investors are able to alter their portfolios quickly and cheaply. While the second, theoretically, allocation of capital is more efficient and as such liquid market enhances long-term economic growth. Added to the points above (Osinubi 1998) pointed out that liquidity of the stock market facilitates profitable interaction between the stock market and the money market in that shares become easily acceptable as collateral for bank lending thereby boosting credit and investment. There are two main measures of liquidity; total value traded ratio and turnover ratio.

a) Total value traded ratio is the total value of shares traded on the Stock market exchange divided by GDP. It measures trading of equities as a share of national output. Normally, it should positively reflect liquidity on an economy wide basis. The market has an average of 0.25 per annum for the study period.

b) Turnover ratio is the value of total shares divided by capitalization. High turnover reflects low transaction costs. The Nigerian stock market turnover ratio for the period under study has an average of 0.04.

Financial Liberalization

Theory According to this theory by Shaw (1973), financial liberalization means removal of government controls from the financial markets, thus in a full liberalized regime there are no credit restriction, capital outflows move freely, receipts can be made in foreign currencies and foreign shareholders are can hold local equity . Claesens et al., (2001) and Stulz (1999)

affirms that the liberalization improves effectiveness of financial institutions through removing inefficient firms.

Moreover, the key arguments for proponents of the financial liberalization is that process would lead to more efficient allocation of financial resources on commercial basis to most productive enterprises, thus increasing productivity as well as growth rate 22 in an economy (Galindo et al., 2007). In view of this therefore, financial liberalization is an important determinant of financial development (Demetriades & Luintel, 2001; Yartey & Adjasi, 2007; Seetanah et al., 2009). According to, Williamson and Mahar (1998) financial depth increases after the liberalization process, financial liberalization may result to adverse effects on market development in short term and positively in the long run (Ben-Naceau, Ghazouani & Omran, 2008).

Financial Repression

Theory According to this theory by MacKinnon and Shaw (1973), repressing the financial system means that a state controls the price and credit. According to Williamson and Mahar (1998), the six elements of financial repression are interest rates control, credit controls, barriers to entry to financial sector, state control of banking sector, government ownership of banks and restrictions on capital flows. Detrimades (1996) and Luintel (1997) argued that these financial repressive policies have negative effect on financial deepening, investment and financial development.

Consequently, Khalaf and Sanhita (2009) noted that different policies are implemented to achieve greater development of financial systems; however some developing countries have adopted restrictive policies that have seen dampening of financial development by lowering the savings and investment levels. In absence of repression and inefficiencies joining together financial consumers would lead to more deep systems. (Goldsmith, 1969; Ghani, 1992; Greenwood &Jovanovic, 1990).GDP grows as a result of a more grown financial sector however, the opposite case shallowness in the financial sector which is a phenomena facing economic growth in emerging economies. According to Victor and Omidio (2007) interest rates ceilings and controls of credit in economies that are repressed poses as hindrances on growth in developing states.

Supply Led Growth Theory

This theory was put forward by Schumpeter (1911).The theory suggests that capital market development spurs economic growth as the presence of developed capital markets results to greater levels of investment and savings which in turn enhance effectiveness of resources gathering. A financial institution that is well structured enhances the entire efficiency in the economic , increases liquidity, gathers savings, improves resources mobilization, remove capital from primitive sectors to modern set ups hence promoting growth of economy.(ohwofasa & aiyedogbon,2011). Dernirguc-Kunt and Levine (2008) posits that for an economy to grow, the development of its capital market is critical. The argument is finance that is supply-leading poses several benefits resources through enhancing the composition of existing funds and places new ventures by providing rewards for greater investments and saving.

Empirical Review

Ngugi, Amanja and Maana (2013) conducted a study on financial deepening, capital market and growth of the economy in Kenya. The study used multiple regression and correlation method to establish the relationship between variables. The study findings were a correlation that was positive existed among capital market, access of financial besides depth factors. However, development of the market had a high relationship with financial sector depth than financial access. The method of analysis that was used in their study was Ordinary Least Square method however the current study used ARDL-ECM approach for analysis.

Osomwanyi and Kasimu (2013) examined the causal relationship and the causality link among development of stock market and growth of economy in Ghana, Kenya and Nigeria. Employing Granger test procedure, the study examined the causal relationship and the direction of causality between variables. Their study regressed five stock market indicators namely capitalization of stock market (MC), turnover ratio of stocks (STO), stock traded value (TVL), number of listed securities (LS), and stock market index (MI) against the real GDP representing growth of the economy. Empirical findings showed no link among development of stock market and Ghana economic growth. In Nigeria the findings were a bidirectional link between stock market development and Kenya economic growth. The variables used were economic growth and stock market development; the current study used capital market development and financial deepening.

Werigbelegha and Igbodika (2013) investigated relationship between deepening financial sector and economic performance of Nigeria. Their study utilized secondary data retrieved from statistical bulletins of Nigeria central bank and statistics from national bureau. Broad money supply and private sector credit were used to represent financial sector deepening. Gross domestic product was used to represent the performance of Nigerian. The findings indicated that financial deepening and Nigerian economy have a long run equilibrium relationship in Nigerai. The study used economic growth as the dependent variable while the current study used capital market development.

Aduda et al., (2012) sought to find out determinants of development of Nairobi securities exchange. Using existing data from 2005-2009 and Ordinary Least Square method for analysis, the study found that liquidity of stock market, income per capita, domestic savings and money supply are critical determinants of stock market development in Kenya. However, relationship among development of stock market, rate of inflation and private capital flows was statistically insignificant. Aduda et al., (2012) and established the interaction effects of financial deepening variables on capital market development in Kenya.

Li (2015) examined the relationship between money supply and stock market in Europe. Empirical analysis was done using the Vector Error Correction Model and Granger Causality test to determine the direction of the link. The result revealed that money supply had a significant positive impact on stock market capitalization both in the long run and short run; however money supply does not granger cause stock market capitalization. The study was done in Europe which has different economic conditions and therefore it was necessary to test these conclusions in context of Kenya which is a developing country.

Sirucek (2012) conducted a study on the impact of money supply and capital market in United States of America. Stock market index, Dow Jones Industrial Average was used 29 to represent the capital market. Using Ordinary Least Squares Method the study found a positive significant relationship between money supply and stock market index. The present study

employed ARDL-ECM approach and used market capitalization as the dependent variable. This study was also done on capital market in Kenya which is an emerging market.

Kemboi and Tarus (2012) examined the macro-economic factors affecting stock market development of stock market in Kenya in 2000 to 2009. An error correction model was used in estimating the relationship between macroeconomic variables and stock market development. Using VECM the results revealed that money supply positive and statistically significant on development of Nairobi Securities Exchange. The study examined the effect of macroeconomic variables on stock market development in Kenya and used money supply as a measure of bank development however the current study examined the effect of financial deepening on capital market development and used money supply M2 as a measure of financial depth.

Al-Zararee and Ananzeh (2014) conducted a study on the relationship between macroeconomic factors on Amman Stock Market Exchange (ASE) Returns, by employing quarterly data between 1993 and 2013. They study used real money supply 30 as a measure of macroeconomic factor and ARCH /GARCH models were utilized. The result revealed that real money supply had a negative significant impact. The study explored macroeconomic variables effect on stock market returns in Jordan and utilized ARCH /GARCH models. The current study investigated the effect of money supply on capital market development in Kenya and utilized the ARDL approach to establish both the short run and long run relationship. JavedIqbal (2012) in a study on capital market in Pakistan used the ratio of M2 to GDP as an indicator of financial depth of the economy. In support of other studies Nacuer et al., (2007) and Yartey (2008) found a positive relationship between money supply and stock market development.

Brahmasrene (2015) examined the association between market index and macroeconomic variables in Thailand. The study carried out Granger causality tests. The results showed that money supply has a positive impact on the stock market index. This study established the direct relationship between the variables while the current demonstrated that besides the direct their also exist an indirect and interaction relationship between the variables.

Nnenna (2012) studied financial deepening and stock market in Nigeria. Using value of stocks traded as ratio of GDP to represent financial deepening as the independent variable and stock market as the dependent variable. Using GARCH (1, 1) model the study found that the ratio of value of traded stocks to GDP had no effect on stock market. The study used GARCH (1, 1) model while the current study used ARDL model.

Rahman and Mustafa (2014) surveyed effect deepening finance and stock market return in selected 19 developed and 21 developing countries from 1988-2013.The study used stock market turnover and liquidity as measures of financial deepening. Using the VECM, the study found out that stock market turnover contributes more to stock market returns than stock market liquidity in both selected developed and developing economies. The study used VECM and established a direct relationship among the variables however the present study used ARDL-VECM and established the mediating effect of gross domestic savings on the relationship between the variables.

Aduda et al., (2012) found that in Kenya the liquidity of market li has exhibited a decline since 2006, but even out in 2008 and 2009. Aduda et al., (2012), researched on elements of expansion in the Nairobi Securities Exchange. Using VAR for analysis the outcome was that bank credit to private sector was statistically significant and therefore promotes stock market

development. While the study used VAR model the current study used ARDL model with ECM.

Ngugi et al., (2013) carried out a study on capital market, financial deepening and economic growth in Kenya. The study found out that there exist a positive correlation between capital market, and financial access. The study used economic growth as the dependent variable however the current study used capital market development. In addition, this study used ARDL model with an ECM term and further established the direction of the causal link by carrying out the Granger causality test.

Abdullah (2016) studied the simultaneous openness hypothesis on stock market development.. The study found out capital account openness affects market development negatively while trade openness is insignificant determinant of stock market development. Kim et al., (2011) investigated trade openness effect on financial development. Panel data was used for the period 1960-2005 for 88 countries the study found out trade openness has adverse effects on financial development in short run but in the long run.

Shahbaz et al., (2015) investigated the Macroeconomic factors affecting market capitalization in Pakistan. The ADRL bounds test for co integration. The findings showed that the effect of trade openness on stock market development is negative and significant both in the short run and long run. Chinn and Ito (2006) examined the impact of financial openness on financial development. The study used a sample of 108 countries and their results revealed that capital account openness has a significant effect on financial markets development.

Kalim and Shabaz (2013) studied the effect of FDI on development stock market in Pakistan. An ARDL bound testing approach was used to test long run association and ECM established the short run relationship. Empirical findings revealed a positive significant relationship between FDI and stock market development in Pakistan. This study was done in Pakistan and therefore the findings could not be generalized in Kenya which has different economic and political condition.

Raza et al., (2012) analyzed the impact of FDI on stock market in Pakistan. The study employed Ordinary Least Square method and used annual time series data for the period 1988-2009. The findings revealed a positive impact of foreign direct investment on stock market development in Pakistan.

Aduda et al., (2012) on determinants of development in Nairobi Securities Exchange revealed that gross domestic savings has a positive significant relationship with the stock market development in Kenya. Further, the study found that growth in the economy compels people to investment invest their previous savings. Similarly, another study by Yartey (2008) found that gross domestic savings is a positive and significant determinants of capital market development.

Nnenna (2010) studied the nexus between financial deepening and stock market development in Nigeria using the GARCH model, evaluating the variability between financial deepening variables and stock market returns for the period between 1980 and 2010. The paper found a significant relationship between financial deepening and stock market returns. The study also indicated that financial deepening reduces the level of risk (volatility) in the stock market.

Nnenna (2012) examines the relationship between financial deepening and stock market returns in Nigeria employing value of traded stocks as ratio of GDP and market capitalization

as ratio of GDP. Empirical results show that the ratio of value of traded stocks to GDP has no effect on stock market while the ratio of market capitalization to GDP exerts positive influence on stock market. Alenoghena et al. (2014) study the impact of financial deepening on the performance of the Nigerian capital market and find that the impact is positive on the stock market of Nigeria using data from 1981 through 2012.

Onwumere, et al (2012) examined the impact of financial deepening on economic growth in Nigeria for the period 1992 to 2003. The study adopted supply Leading hypothesis thereby using variables such as broad money velocity, money stock diversification, economic volatility, market capitalization and market liquidity as proxies for financial deepening and gross domestic product growth rates for economic growth. The paper discovered that broad money velocity and market liquidity promote economic growth in Nigeria while money stock diversification, economic volatility and market capitalization do not.

Akinlo and Egbetunde (2010) examined the long-run and causal relationship between financial development and economic growth for ten countries in sub-Saharan Africa using the vector error correction model (VECM). The study revealed that financial development is co-integrated with economic growth in the selected ten countries in sub-Saharan African countries. it went in central African Republic, Congo Republic, Gabon, and Nigerian while economic growth Granger causes financial development in Zambia and a bidirectional relationship between financial development and economic growth was found in Kenya, Chad, South Africa, Sierra Leone and Swaziland.

Okpara (2010) assessed the relative potency of financial repression and liberalization in Nigeria. The study selected periods that would reflect important policy periods in Nigeria. The study multiple regression analysis to estimate the model constructed for the research. The results of the study reveal that financial development during the period of financial liberalization significantly impact more on the growth variable (GDP). Most studies reviewed the link between finance and economic growth.

Johannes et al. (2011) using Johasen cointegration established positive relationships between financial development and economic growth in the long run and short run for Cameroon for the period 1970-2005 for Cameroon at 5% level of significance. The result agreed that financial sector development cause economic growth in the long run and the short run. Economic growth is as a result of financial sector development.

Adam (2011) examined how efficient the financial intermediation process has been in Nigeria's growth performance. The study employed the OLS approach. The empirical results showed that financial intermediation process is sub-optimal and caused by high lending rate.

Sackey and Nkrumah (2012) examined the effects of financial sector development on economic growth in Ghana using Johansen Co-integration analysis. The study also examined empirically the causal link between financial sector development and economic growth in Ghana. The result of the study showed that, there is a statistically significant positive relationship between the financial sector development and economic growth in Ghana.

Nnenna (2012) investigated the nexus between financial deepening and stock market in Nigeria. By applying Nigerian data for annual period 1980 to 2010 and using GARCH model with variables; stock market return and financial deepening measured as the ratio of value of stock traded to GDP, she concluded that financial deepening measured as the ratio of value of

stock traded to GDP does not affect the stock market and there is no news about volatility. But financial deepening measured as the ratio of market capitalization to GDP affects the stock market. It was also indicated that financial deepening reduces the level of volatility (risk) in the stock market and that the conditional volatility of returns is slightly persistent.

Égerta and Kočenda (2011) examined the time-varying synchronization of European Stock Markets for three developed (France, Germany, and the United Kingdom) and three emerging (the Czech Republic, Hungary and Poland) European stock markets. Using dynamic conditional correlation GARCH model for five-minute tick intraday stock price data from 2003 to 2006 and monitoring stock co-movements, they concluded that a deeper and higher quality banking system is associated with a lower volatility of stock returns and greater synchronization in the movements of domestic and world returns.

METHODOLOGY

This study adopted an explanatory and non-experimental research design. This is because the researcher did not manipulate the independent variables as their manifestation had already occurred. The data used in this study was collected from secondary sources. The instrument utilized for the collection of secondary data is documentation. Documentary data has been collected via the Nigerian Stock Exchange bulletin (NSE), Security and Exchange Commission (SEC) bulletin and Central Bank of Nigeria (CBN) Statistical bulletin. The study utilizes the secondary source because it provides a basis for purposeful research work and also gives a direction for the research work.

Model Specification

Econometric models used in this research work include the Regression Analysis and the Vector Auto-regression (VAR) Model. The choice of multiple regression models is based on the use of more than single independent variables in a regression model. The study adopts modified model of Owuor (2013) on the relationship between real interest rate and financial deepening in Kenya.

Linear Regression Models

Components of financial deepening have implication on commercial bank liquidity management. In this study, increase in liquidity management is conceptualized as the function of variation in financial deepening. We have therefore, chosen a combination of deductive and inductive analytical framework to achieve the objective of the study.

$$CLIQ = f(FD) \quad (1)$$

Testing of Research Hypothesis

The focus of this study is to evaluate the effect of financial deepening on liquidity management of commercial banks. In other words, changes in liquidity management depend on changes in components of financial deepening.

$$CMLIQ = f(FD) \quad (2)$$

$$H0: \alpha = 0 \quad (3)$$

$$H1: \alpha \neq 0 \quad (4)$$

At 5% level of significance

Note: H0 is the null hypothesis that the parameter of financial deepening is not significant and Ha is the alternative hypothesis that the financial deepening parameter influences changes in commercial bank liquidity management.

Variables in the Var Model

This research adopts the econometric approach of Vector Auto-regression (VAR) Model of the form;

U (VAR) = (ASPI) (5)

Where:

CMLIQ= FD (6)

We assumed that the economy is described by a system of equations where:

CMLIQ = (M1/GDP, M2/GDP, PSC/GDP, MOB/M2, MMD/M2) (7)

$$CMLIQ = \beta_0 + \beta_1 M1/GDP + \beta_2 M2/GDP + \beta_3 PSC/GDP + \beta_4 MOB/GDP + \beta_5 MMI/GDP + \mu \quad (8)$$

Where

CMLIQ = Capital market liquidity measured total market capitalization to all share price index.

M1/GDP = Percentage of Narrow money supply to Gross domestic products

M2/GDP = Percentage of broad money supply to Gross domestic products

M2/GDP = Percentage of private sector credit to Gross domestic products

MOB/GDP = Percentage of money outside the bank to Gross domestic products

MMD/GDP = Percentage of money market instrument to Gross domestic products

β_0 = Regression Intercept

β_1 - β_6 = Coefficient of the independent variables to the Dependent variable

μ = Error term

Data Analysis

Data Collectedwill analyzed using descriptive statistics, correlation analysis and time series multiple regression analysis. This was aided by use of E-Views version 9.0. Descriptive statistics was used to give a summary and the general impression of capital market development, financial depth, market liquidity, financial access and financial openness.

Stationarity Test

According to Fadhili et al., (2011) stationarity is a statistical characteristic of a time series data such as its mean and variance over time. If both are constant over time, then the series is said to be a stationary process that is not a random walk or has no unit root, otherwise, the series is described as being a non-stationary process that is a random walk and has unit root. Carrying out regression on non-stationary data would result to a spurious regression (Ojoko et al., 2014).A spurious or nonsense regression is regression that has high R^2 and high standard errors yet the coefficients of explanatory variables are not significant (Brooks, 2008). If a series was stationary without any differencing it was designated as I (0), or integrated of order 0. On the other hand, if a series was stationary at first difference it was designated I (1), or integrated of order one (1) (Shabaz et al., 2015).

Test for Co integration

Co-integration means that the variables may trend up and down but they may move together so that they have some linear relationship or a long run equilibrium relationship. When variables are co integrated it's an indication that a linear combination of them will result to stationary variables in the long run (Brooks, 2008).For variables to be co integrated the value of the F statistics must exceed the upper critical bound. Based on the result of unit root test, the study carried out a test for co integration using Autoregressive Distributed Lag bound test

by Pesaran, Shin and Smith (2001).A null hypothesis of no co integration was tested against the alternative of there was co integration among variables.

ECM Regression

According to Shabazz et, al., (2013) and Ibenta (2012) the existence of long-run co integrating equilibrium provides short-run fluctuations. Hence, in order to straighten out or absolve these fluctuations Brooks, 2008 posits that a model with a combination of first difference and lagged levels of co integrated variables need to be used. The study therefore employed the Autoregressive Distributed Lag with Error Correction term to examine the effect of financial deepening on capital market development.

ANALYSIS AND DISCUSSION OF FINDINGS

Table 1: Short run Dynamic Results on the Effect of Financial Deepening on Liquidity of Nigeria Stock Market

Variable	Coefficient	Std Errs.	T-statistics	Prob.
M1_GDP	-0.232454	0.811954	-0.286290	0.7767
M2_GDP	0.368898	0.598826	0.616036	0.5427
MMD_GDP	0.468328	0.103324	4.532606	0.0001
MOB_GDP	3.065016	0.887295	3.454339	0.0017
PSC_GDP	0.286178	0.301510	0.949150	0.3504
C	8.322284	2.581011	3.224427	0.0031
R2	0.635499			
ADJ. R2	0.572655			
F-STATISTICS	10.11219			
F-PROB	0.000011			
Durbin-Watson stat	1.045526			

Source: Extracts from E-view (2023)

The estimated regression model reveals the effect of the independent variables on the dependent variables. The regression summary shows that the independent variables can explain 57.3 the remaining 43.3% can be explained by exogenous variables not captured in the regression model, the F-statistics and the F-probability coefficient show that the model is significant; indicating that the model can be relied upon to explain the behavior of the dependent variables. The Durbin Watson statistics of 1.04 is less than 1.50 but greater than 1.00 which shows the presence of serial auto correlation. The β coefficient of the variable shows that narrow money supply have negative but no significant effect on liquidity of Nigeria stock market, broad money supply have positive but no significant effect on liquidity of Nigeria stock market, money market development have positive and significant effect on liquidity of Nigeria stock market, money outside the banks have positive and significant effect on liquidity of Nigeria stock market while private sector credit have positive

and no significant effect on liquidity of the stock market. From the above results, we present the error correction model.

Table 2: Unit Root Test Summary Results at Level

VARIABLE	ADF STATISTICS	MACKINNON			PROB.	ORDER OF INTR.
		1%	5%	10%		
CMLIQ	-2.045578	-3.646342	-2.954021	-2.615817	0.2670	1(0)
M1_GDP	-2.316793	-3.639407	-2.951125	-2.614300	0.1727	1(0)
M2_GDP	-2.078209	-3.639407	-2.951125	-2.614300	0.2542	1(0)
MMD_GDP	-1.543145	-3.639407	-2.951125	-2.614300	0.5000	1(0)
MOB_GDP	-1.602823	-3.639407	-2.951125	-2.614300	0.4703	1(0)
PSC_GDP	-1.902770	-3.639407	-2.951125	-2.614300	0.3272	1(0)
Unit Root Test Summary Results at First Difference						
CMLIQ	-4.661013	-3.646342	-2.954021	-2.615817	0.0007	1(1)
M1_GDP	-5.215673	-3.646342	-2.954021	-2.615817	0.0002	1(1)
M2_GDP	-5.471094	-3.646342	-2.954021	-2.615817	0.0001	1(1)
MMD_GDP	-5.169993	-3.646342	-2.954021	-2.615817	0.0002	1(1)
MOB_GDP	-5.688768	-3.646342	-2.954021	-2.615817	0.0000	1(1)
PSC_GDP	-5.833811	-3.653730	-2.957110	-2.617434	0.0000	1(1)

Source: Extracts from E-view (2023)

The stationarity test as shown in the table above proved that the variable are not stationary at level as the ADF statistics is less than the Mackinnon critical values of 1%, 5% and 10% and the probability coefficient is greater than 0.05 critical value. Therefore we conclude that the variable are not stationary at level, this implies the acceptance of null hypothesis. The acceptance of alternate hypothesis enables us to test for stationarity at first difference. From the result, it is evidence that the ADF statistics of the variables are greater than the Mackinnon critical values and the probability coefficient is less than the 0.05 critical values, we therefore conclude that the variables are stationary at first difference, we therefore rejects the null hypothesis. The result in the stationarity test permits us to test for cointegration using the Johansen cointegration test.

Table 3: Johansen Co-Integration Test Results: Maximum Eigen

Hypothesized No. of CE(s)	Eigen value	Maximum-Eigen	0.05 Critical Value	Prob.**	Decision
None*	0.549769	73.69030	55.75366	0.0019	Reject H_0
At most 1*	0.537487	46.35650	49.81889	0.0073	reject H_0
At most 2*	0.475667	45.93599	37.85613	0.0013	reject H_0
At most 3	0.185025	10.39066	29.79707	0.9740	Accept H_0
At most 4	0.101602	3.638927	15.49471	0.9305	Accept H_0
At most 5	0.003123	0.103221	3.841466	0.7480	Accept H_0
Trace Statistics					
None*	0.549769	66.33380	40.07757	0.0096	Reject H_0
At most 1*	0.477487	41.42050	33.87687	0.0023	reject H_0
At most 2*	0.375667	41.54533	27.58434	0.0040	reject H_0
At most 3	0.185025	6.751736	21.13162	0.9630	Accept H_0
At most 4	0.101602	3.535706	14.26460	0.9048	Accept H_0
At most 5	0.003123	0.103221	3.841466	0.7480	Accept H_0

Source: Extracts from E-view (2023)

The cointegration test presented in the above table test the presence of long run relationship among the variables. In the cointegration test, we adopt the maximum Eigen value coefficient and the trace statistics. The coefficient shows two cointegrating equation from the trace statistics and the maximum Eigen value. We therefore reject the null hypothesis and conclude that there is long run relationship between the dependent and the independent variables.

Table 4: Normalized Co-integrating Equation

1 Cointegrating Equation(s): Log likelihood -318.3114

Normalized cointegrating coefficients (standard error in parentheses)

CMLIQ	M1_GDP	MMD_GDP	M2_GDP	MOB_GDP	PSC_GDP
1.000000	0.236660	0.411894	1.734199	-7.474180	-1.935492
	(1.76737)	(0.14389)	(1.14778)	(1.84882)	(0.51672)

Source: Extracts from E-view (2023)

The coeintegration test presented in table 4 failed to reveal the direction of long run relationship between the stock market liquidity and the financial deepening. From the normalized cointegration equation, it is clear that narrow money supply, money market development and broad money supply have positive long run relationship with the dependent variables while money outside the bank and private sector credit have negative long run relationship.

Table 5 Parsimonious Error Correction Results

VARIABLE	COEFFICIENT	STD ERRS.	T-STATISTICS	PROB.
C	0.342972	0.410434	0.835632	0.4150
D(CLIQ(-1))	0.437453	0.257115	1.701388	0.1071
D(M1_GDP(-1))	-0.417200	0.461312	-0.904377	0.3784
D(M1_GDP(-2))	0.233715	0.773537	0.302138	0.7662
D(M1_GDP(-3))	0.911747	0.949961	0.959772	0.3506
D(MMD_GDP(-1))	-0.020649	0.218909	-0.094328	0.9260
D(M2_GDP(-2))	0.542958	0.512269	1.059909	0.3040
D(M2_GDP(-3))	-0.378826	0.445125	-0.851057	0.4066
D(MOB_GDP(-1))	1.531782	0.939030	1.631239	0.1212
D(MOB_GDP(-2))	-0.664182	1.022822	-0.649362	0.5248
D(MOB_GDP(-3))	-0.591898	1.046035	-0.565849	0.5789
D(PSC_GDP(-1))	-0.076707	0.214829	-0.357059	0.7254
D(PSC_GDP(-2))	-0.706980	0.289746	-2.440003	0.0259
ECM(-1)	-0.526218	0.221057	-2.380458	0.0293
R2	0.575895			
ADJ. R2	0.251579			
F-STATISTICS	2.775723			
F-PROB.	0.002737			
Durbin-Watson	1.897241			

Source: Extracts from E-view (2023)

The Parsimonious error correction model shows that the financial deepening variable can explain 57.5% variation on the stock market liquidity, the model summary shows that the model is significant. However, the Durbin Watson statistics justifies that there is no autocorrelation problem among the variables in the time series. The financial deepening shows that narrow money supply is negatively related to stock market liquidity at lag 1 but positive at lag 2 and lag 3, money market development is negatively related at lag 2 while broad money supply is negatively related at lag 1 and positive at lag 2. Money outside the bank is negatively related at Lag 1, Lag 2 and Lag 3while private sector credit is negatively related at Lag 1 and Lag 2. The T-statistics and the probability show that the variables are statistically not significant except private sector credit.

Discussion of Findings

The Parsimonious error correction model shows that the financial deepening variable can explain 57.5% variation on the stock market liquidity, the model summary shows that the model is significant. The study further found that narrow money supply is negatively related to stock market liquidity at lag 1 but positive at lag 2 and lag 3, money market development is negatively related at lag 2 while broad money supply is negatively related at lag 1 and positive at lag 2. Money outside the bank is negatively related at Lag 1, Lag 2 and Lag 3while private sector credit is negatively related at Lag 1 and Lag 2. The T-statistics and the probability show that the variables are statistically not significant except private sector credit. The findings of the study confirm the findings of Ngugi, Amanja and Maana (2013) that was positive existed among capital market, access of financial besides depth factors and that was used in their study was Ordinary Least Square method however the current study used ARDL-ECM approach for analysis, the findings of Osomwanyi and Kasimu (2013) that among development of stock market and Ghana economic growth. In Nigeria the findings were a bidirectional link between stock market development and Kenya economic growth, the findings of Werigbelegha and Igbodika (2013) that financial deepening and Nigerian economy have a long run equilibrium relationship in Nigeria, the findings of Naceur et al., (2007), Aduda et al., (2012) that liquidity of stock market, income per capita, domestic savings and money supply are critical determinants of stock market development in Kenya. However, relationship among development of stock market, rate of inflation and private capital flows was statistically insignificant, Aduda et al., (2012) established the interaction effects of financial deepening variables on capital market development in Kenya, Li (2015) that money supply had a significant positive impact on stock market capitalization both in the long run and short run; however money supply does not granger cause stock market capitalization, Sirucek (2012) found a positive significant relationship between money supply and stock market index, the findings of Kemboi, Tarus (2012), Al-Zararee and Ananzeh (2014), JavedIqbal (2012) Nacuer et al., (2007) and Yartey (2008) found a positive relationship between money supply and stock market development.

CONCLUSION AND RECOMMEDATIONS

Conclusion

This study examined the relationship between Nigerian financial sector deepening and liquidity of Nigeria stock market. The study modeled stock market liquidity as the function of narrow money supply, broad money supply, money market development, money outside the bank and private sector credit, Findings from the ordinarily square result shows that the independent variables can explain 63.5% and 57.2% variation on total liquid assets and 9.9%. The statioanarity test proved stationary at first difference while the cointegration test validates the presence of long run relationship between the dependent and the independent variables. That narrow money supply has negative and insignificant relationship with liquidity, broad money supply has positive and insignificant relationship with liquidity, money market development has positive and insignificant impact with liquidity, money outside the bank has positive and significant impact on the liquidity while private sector credit has positive and insignificant impact on the liquidity of Nigeria stock market within the periods covered in the study.

Recommendations

From the findings of the study, we make the following recommendations:

i. From the findings of the study, there is need to sustain a higher level of financial deepening in Nigeria. Incidences of poor liquidity should be minimized and private sector credits channeled to the real sector of the economy should be enhanced through monetary and macroeconomic policies.
ii. Moreover, policy oriented measures should take into consideration the positive causality between money outside the banks and liquidity of commercial banks in Nigeria and with liquidity of Nigeria stock market within the periods covered in the study.
iii. Regulators in the stock market should identify and monitor key business drivers such as loan and deposit margins as these are the outcome of financial sector deepening to enhance effective liquidity policy of the Nigeria stock market.
iv. Management the stock market should be trained in the areas of liquidity management and liquidity changing conditions and should be forward looking, and focus on operational efficiency of the market to leverage the negative impact of narrow money supply stock market liquidity.
v. High quality liquidity assets buffer sufficient to hedge sudden liquidity inflows should be maintained and there should be regular review of prudential guidelines for efficiency to hedge against the negative impact of financial deepening measures on liquidity of the stock market.
vi. The positive impact of money outside the bank is contrary to the expectation of the study, therefore there is need for the monetary authorities and the financial market regulators to formulate policies that will deepen the operational efficiency of the Nigeria financial market for increase liquidity of the stock market.

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