Analysis of Short and Long Run Relationship between Money Supply and Stock Market Liquidity in Nigeria.

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Abstract

The study analyzed the short and long-run relationship between Money Supply and Stock Market Liquidity in Nigeria. Secondary data was adopted covering 35 years (1983 – 2018). Data were generated from the Central Bank of Nigeria Statistical Bulletin. Both Ordinary Least Squared and Co-integration methods were used to analyze the short and long-run relationship between money supply and stock market liquidity in Nigeria, while, Unit Root Test was also employed to test for the stationary status of both dependent and independent variables. Turnover Ratio served as indicator of Stock Market Liquidity while Broad Money (M2), Interest Rate (INTR), and Inflation Rate (INFR) act as proxies for Money Supply. The unit root test indicates that all the series are integrated at first difference order of one that is, 1(1) and at a 5% significance level. The regression analysis test shows an inverse relationship between the dependent variable (Turnover Ratio) and independent variables (Broad Money Supply, Deposit Interest Rate, and Inflation Rate) in the short-run. The result is significant with the value of R2 (67.57%) and adjusted R2 (62.58%). However, in the long-run, after testing for co-integration Broad Money Supply (M2) and Inflation Rate (INFR) displayed a positive relationship with coefficients 0.0009 and 0.2932 respectively.

Key Words: Turnover, Deposit Rate, Inflation Rate

1. INTRODUCTION

In every economy, there often exists financial imbalances and disequilibrium, which calls for the existence of financial markets. Financial markets are institution or arrangements which facilitate the exchange of financial assets such as; deposit and loans, stock and bonds, government securities and so on. Thus, a financial market is a market that brings buyers and sellers together to trade in financial assets such as stocks, bonds, commodities, derivatives and currencies. In economics, a financial market is a mechanism that allows people to easily buy and sell (trade) financial securities (such as stocks and bonds), commodities (such as precious metals or agricultural goods), and other fungible items of value at low transaction costs and at prices that reflect efficient markets (Kristina, 2015).

According to World Finance (2015), the financial market is composed of: (i) money market, used to facilitate short-term debt financing and investment; (ii) capital market which consists of stock market and bond market; (iii) commodity Market that provides for trading in commodities; (iv) derivatives market which specializes in financial risk sharing and risk management; (v) futures market, used to issue contracts for trading commodities at some future date; (vi) insurance market which specializes in re-distribution of various risks; and (vii) foreign exchange market which also specializes in trading of foreign exchange and international currencies.

Capital market provides long term capital to government and corporate bodies with maturity over a year, and often prone to greater risk of default. Capital market is the market for dealing in longer-term loanable funds, it comprises of equity (stock) market and debt (bond) market. It can be further classified into the primary and secondary markets. Primary market is concerned with the raising of new funds, while the secondary market exists for the sale and purchasing of existing securities that are already in people's hands, thus, enabling savers who purchased securities when they had surplus funds to recover their money when they are in need of cash (Afolabi, 1991). Organizations and institutions both in private and public sectors often sell securities on the capital markets in order to raise funds. Apart from playing central role of generating and facilitating capital formation; capital market also provides the stock exchange with the environment to implement its functions. The basis of distinction between the money market and the capital market lies in the degree of liquidity of instruments bought and sold in each of the market, as well as the period of maturity and differing interest rates.

The concept of liquidity has been a source of worry to the management of firms about the uncertainty of the future. Liquidity is a financial term that means the amount of capital that is available for investment. Today, most of this capital is credit, not cash. That is because the large financial institutions that do most investments prefer using borrowed money.

High liquidity means there is a lot of capital because interest rates are low, and so capital is easily available. However, interest rates are important in controlling liquidity because these rates really dictate how expensive it is to borrow. Low interest rates mean credit is cheap, so businesses and investors are more likely to borrow. The return on investment only has to be higher than the interest rate, so more investments look good. In this way, high liquidity spurs economic growth (Olagunju *et al,* 2011).

Liquidity can be defined as the state or condition of a business organization which determines its ability to honour or discharge its maturing obligations. These maturing obligations are composed of current liabilities and long-term debts. Liquidity can also be defined as a measure of the relative amount of asset in cash or which can be quickly converted into cash without any loss in value available to meet short term liabilities. Liquidity is a complex concept as the rate of liquidity among different liquid assets differs. For instance, a savings or time deposit is more liquid than common stock and common stocks in turn are more liquid than real estate. Liquidity is a relative concept because there is no specific level of any balance sheet ratio that indicates that the firm is no longer liquid (Olagunju, *et al* 2011).

According to Olagunju, *et al* (2011), they opined that liquidity involves three elements namely Marketability, Stability and Conservatism. Liquid assets should be more marketable or transferable. That means, they are expected to be converted to cash easily and promptly, and are redeemed prior to maturity. All assets that cannot be redeemed at maturity are said to be illiquid. Another quality of liquid asset is price stability. Based on this characteristic, bank deposits and short term securities are more liquid than equity investments such as common stocks and real estate's due to the fact that the prices of the former are fixed and have lesser variability than the prices and value of the later that experience considerable fluctuation. Conservatism quality of liquidity refers to the ability of the holders of liquid assets to recover the cost of the asset on the time of resale. On this basis, common stocks are not considered highly liquid asset despite its ready marketability.

Stock market is an important institution in a country and is of great concern to investors, stakeholders and the government. It is part of the broader market referred to as financial market that deals in exchange of securities issued by publicly quoted companies and the government (Fabbozi and Modigliani,1995). The provision of liquidity is a very important role played by any thriving stock market in a country's economy. In this way, the stock market provides investors with an efficient mechanism to liquidate their investments in securities as and when they want (Jepkemei, 2017).

Stock markets may experience a general increase in price level referred to as a bull market or general decrease in price level referred to as bear market. Stagnant prices or sudden big price movements downward is referred to as stock market crash. Stock market performance is affected by a wide array of factors such as economic, political, and international and company specific issues. The determinants of stock market performance include performance of the economy, monetary policies, fiscal policies, inflation, availability of substitute investments, change of investor preferences and market sentiments. Activities of government and general performance of the economy influence stock market activity and therefore the performance of stock markets (Jepkemei, 2017).

Monetary and fiscal measures enacted by various agencies of national governments influence the aggregate economies of those countries. The resulting economic conditions influence all industries and companies in an economy positively or negatively which in turn affect the performance of stock markets (Reilly and Brown 1997). Among the main measures of stock market performance are; Stock market indexing, market capitalization and stock turnover. Other stock market

performance variables include, market volatility, market risk, returns on the market portfolio, market activity and liquidity. In this study however, particular attention is paid to stock market liquidity.

STATEMENT OF THE PROBLEM

The Nigerian capital market was seriously affected following the global financial crisis of 2008. The prices of shares in the market nose-dived and investors lost huge sum of money. The crisis also crept into the banking sector as a result of excess exposure to the capital market as well as the oil gas sector (Ujunwa et al, 2011).

Arunma (2010) revealed that the global financial crisis triggered large portfolio outflows as international investors exited the Nigerian capital markets to address challenges in their home countries, stock prices started to decline, prompting margin calls and local investors who were unaccustomed to huge and persistent declines started to panic, fueling more sell orders, further depressing prices and eroding investor confidence. The crisis manifested itself globally in the form of liquidity and credit crunch, breakdown of confidence in the banking system, de-leveraging and banks inability to improve capital adequacy, weak consumer demand, and fall in global output, which affected Nigeria economy through both the financial and real (trade, remittances and aid) channels.

The undiversified nature of the Nigerian economy and the high dependence on exports of crude oil as well as foreign capital inflows compounded the impact of the external shock arising from the crisis. In specific terms, Nigeria experienced low demand for its oil export due to recession in the economies of her major trading partners. This however, led to low accretion to foreign exchange reserves and demand pressure in the foreign exchange market followed by volatility and substantial depreciation of the naira exchange rate (Usman et al, 2018).

It is perhaps in the stock market that the greatest impact was felt. The prolonged downturn in the stock market induced by significant divestment by foreign investors and compounded by lingering liquidity tightness, waning public confidence, and panic selling by domestic investors led to significant losses by investors. The stock market which remained bullish between December 2005 and March 2008, suddenly became bearish in April 2008 and had remained nearly so since then with only marginal recovery (Sanusi, 2010).

Recent crisis in the financial markets have triggered studies on how to better judge the state of market liquidity and ideally to better predict and prevent systemic liquidity crises (Abdourahmane and Tonny, 2002). As creditors and counterparties seek to reduce their exposure to future losses, actions intended to limit individual exposure to risk may increase overall risk. Also, there is no much information about what makes markets more or less vulnerable to this type of acute shock. Hence, this is in part because liquidity itself is not easy to measure.

To this effect, this paper analyzes the short and long run relationship between money supply and stock market liquidity in Nigeria. The objectives of the paper is thus, to examine the short run

relationship between money supply and stock market liquidity in Nigeria as well as the long run relationship between money supply and stock market liquidity in Nigeria.

This study is therefore divided into five sections with introduction discussed above. Section two dwells on the literature review while section three explains the methodology. Section four analyses and discusses the findings of the study and section five ends with conclusion and recommendation.

2. LITERATURE REVIEW

Financial markets have evolved significantly over several hundred years and are undergoing constant innovation to improve liquidity, both general markets, where many commodities are traded and specialized markets (where only one commodity is traded) exist. Markets work by placing many interested sellers in one "place", thus making them easier to find prospective buyers. The purpose of a financial market is to set prices for global trade, raise capital and transfer liquidity and risk. Thus, an efficiently functioning domestic financial market can better position a country's competitiveness in the market for global capital (Senbet and Otchere, 2005).

For an investor, there are numerous opportunities available in the different financial markets. Some of these investments trade on regulated, organized and formalized markets (known as exchanges); other investments trade on an informal basis between buyers and sellers. Informal trading can take place over a counter, by telephone or even electronically via computer systems. Informal trading where an instrument does not trade through an exchange is known as over-the-counter trading (OTC trading). The financial instruments traded in the above markets can be classified into different categories according to the nature of the instruments and the market (Syed, 2010).

According to Inanga and Emenuga (1997), stock market development can be measured by three basic traditional characteristics. These include stock market size measured by stock market capitalization and stock market liquidity measured by total value traded ratio and turnover ratio. This was also affirmed in the works of Levine and Sara (1998). A common index often used, as a measure of stock market size is the market capitalization. Market capitalization equals the total value of all listed shares. In terms of economic significance, the assumption is that market size and the ability to mobilize capital and diversify risk are positively correlated. Also, absolute measures of capital market development usually involve the liquidity and efficiency of stock markets and/or bond markets.

Liquidity is used to refer to the ability of investors to buy and sell securities easily. It is an important indicator of stock market development because it signifies how the market helped in improving the allocation of capital and thus enhancing the prospects of long-term economic growth. This is possible through the ability of the investors to quickly and cheaply alter their portfolio thereby reducing the riskiness of their investment and facilitating investments in projects that are more profitable though with a long gestation period. Two main indices are often used in the performance and rating of the stock market: total value traded ratio; and turnover ratio (Alajekwu and Achugbu, 2012). Total value traded ratio measures the organized trading of equities as a share of the national output. Turnover ratio is used as an index of comparison for market liquidity rating and level of transaction costs. This ratio equals the total value of shares traded on

the stock market divided by market capitalization. It is also a measure of the value of securities transactions relative to the size of the securities market.

The Regulatory Bodies of the Nigerian Capital Market include:

The Federal Ministry of Finance

The Federal Ministry of Finance owes its origin in part to the Finance (Control & Management) Act, Cap.144 of 1958. The enactment of this Act created the ministry as a replacement for the then Finance Department and conferred on it the responsibility for the control and management of Public Finances of the Federation. The Act became operational from July 31, 1958. The broad functions and responsibilities of the Ministry as provided by the Act fall into the following categories:

a. General supervision and control of public funds of the Federation, including Development and Contingencies Funds;
b. Management and control of Consolidated Revenue Fund;
c. Securing and managing the investments of the Federation;
d. Preparation of Annual (budgetary) estimates in Appropriation Bill including Supplementary and Unexpected votes;
e. Control and management of public expenditures;
f. Control and management of external finances of the federation (SEC Report, 2009).

The Central Bank of Nigeria (CBN)
The Central Bank of Nigeria began operations on July 1, 1959. Some of the roles of the CBN are:
a. Establish the Nigerian currency
b. Control and regulate the banking system
c. Serve as banker to other banks in Nigeria
d. Carry out the government's economic policy in the monetary field.

The government economic policies included control of bank credit growth, credit distribution, cash reserve requirements for commercial banks, discount rates-interest rates the Central Bank charges commercial and merchant banks, and the ratio of banks' long-term assets to deposits. Consequently, the government, through the central bank, has been actively involved in building the nation's money and equity centers, forming securities regulatory board and introducing treasury instruments into the capital market (SEC Report, 2009).

The Securities & Exchange Commission (SEC)

The SEC is the apex regulatory body in the Nigerian capital market and is supervised by the Federal Ministry of Finance. In 1962, the CBN established a Capital Issues Committee in order to regulate public issues of securities. Its mandate was to examine applications from companies seeking to raise capital from the market and to recommend the timing of such issues. The Committee, however, had no legal backing, but operated unofficially as a capital market consultative and advisory body within the CBN. An increase in the level of economic activities, after cessation of the civil war hostilities, coupled with the promulgation of the Nigerian Enterprises Promotion (Indigenization) Decree in 1972 which mandated minimum Nigerian equity participation in some classes of enterprises broadened public participation in the stock market and

significantly increased capital market activities. To provide stronger institutional support to the securities issuance process, primarily to regulate the pricing and timing of securities to be offered to the public, necessitated the creation of another body, the Capital Issues Commission in March 1973 to take over the activities of the Capital Issues Committee.

The growth in market activities received a further boost from the promulgation of the Nigerian Enterprises Promotion Decree 1977, the second indigenization exercise, which expanded mandatory local equity participation in Nigerian enterprises. It is historically significant that like the Committee, the Commission had on its Board representation from The Lagos Stock Exchange. Neither the Committee nor the Commission was conceived as the apex regulatory agency for the market. These were the precursors to the Securities & Exchange Commission ("SEC"). As a result of this historical antecedents, The Lagos Stock Exchange (now the NSE) has been perceived as the premier capital market institution (SEC Report, 2009).

Following the acceptance of the recommendations of the Financial System Review Committee led by Dr. Pius Okigbo in 1976, the Federal Government endorsed the establishment of the SEC to supersede the Capital Issues Commission. The SEC was established in 1979 by the Securities and Exchange Commission Act 1979 (re-enacted as Decree No. 29 1988) and became the apex regulator for the market with a mandate to: • Regulate and develop the Nigerian Capital Market • Determine the prices of securities, and • Set the basis of allotment of securities. Others include: The Central Securities Clearing System and the Investments & Securities Tribunal

3. METHODOLOGY

The type of data used in this research work is the secondary data. The relevant data for the study were obtained from publications from Security and Exchange Commission (SEC) and Statistical Bulletin of Central Bank of Nigeria (CBN) between 1983 and 2018.

The formulation of this model was based on the empirical review of Musa Al-Faki (2006) and Ogunmuyiwa (2010) who opined that stock market liquidity is denoted by the turnover ratio of the market. Hence, turnover ratio (TOR) was used as proxy for stock market liquidity. The independent variables are; Broad Money (M2), Interest Rate (INTR), and Inflation Rate (INFR) which act as proxy for money supply.

Thus, the model is given as;

SML = f (TOR)

$$TOR = f\ (\beta_1 + \beta_2 + \beta_3 + \mu) \qquad \ldots\ldots\ldots\ldots\ldots (1)$$

$$TOR = f\ (M2,\ INTR,\ INFR) \qquad \ldots\ldots\ldots\ldots\ldots (2)$$

Hence, the functional relationship is given as;

$$TOR = \beta_0 + \beta_1 M2_t + \beta_2 INTR_t + \beta_3 INFR_t + \mu \qquad \ldots\ldots\ldots\ldots\ldots (3)$$

Where

SML = Stock Market Liquidity

TOR = Turnover Ratio

M2 = Broad Money

INTR = Interest Rate

INFR = Inflation Rate

β_0 = regression constant
$\beta_1 - \beta_3$ = slope coefficients
μ = error term

4. RESULTS AND DISCUSSIONS

In order to avoid a spurious regression result, Unit Root Test was used to test for the stationary status of both dependent and independent variables. This is important as it shows the number of times the variables have to be differentiated in order to clear the unit root and make the data stationary.

The test results shown in Table 1 below indicates that all the series are integrated at first difference order of one that is, 1(1) and at 5% significance level.

Table 2 below shows the short-run relationship between money supply and stock market liquidity. This result was achieved after correcting for serial correlation by introducing one (1) period lag of the dependent variable. The result however, shows an inverse relationship between the dependent variable (Turnover Ratio) and the independent variables (Broad Money Supply, Deposit Interest Rate and Inflation Rate) in the short-run. The result is significant with the value of R^2 (67.57%) and adjusted R^2 (62.58%). The regression results conform with that of Aziza (2014) who concluded that M2 and INFR have negative relationship with stock market liquidity in the short-run.

In the long-run however, after testing for co-integration Broad Money Supply (M2) and Inflation Rate (INFR) displayed a positive relationship with coefficients 0.0009 and 0.2932 respectively as shown in Table 3 below. This means that if M2 increases, TOR will increase and that if INFR increases, TOR will also increase. Conversely, DINTR shows a negative relationship with TOR in the long-run meaning that if DINTR increases, TOR will reduce. By principle, increase in DINTR will encourage investors to invest in short-term securities rather than long-term securities.

Hence, the hypothesis stating that there is no long-run relationship between money supply and stock market liquidity is hereby rejected. This is because out of three variables, two (that is, M2 and INFR) are positively related with TOR in the long-run. Only DINTR has negative relationship with TOR in the long-run.

Table 1: Unit Root Test Results

Variables	Order of Stationarity	ADF Test Statistics	Remark
TOR	1	-3.321	Stationary
M2	1	-3.719	Stationary
DINTR	1	-3.658	Stationary
INFR	1	-3.331	Stationary

Source: Author's Research, 2019

Table 2: Short-run Regression Result

Dependent variable	Independent variable	Coefficient	Standard Error	T	P>|t
TOR	M2	-0.000246	0.000196	-1.25	0.22
	DINTR	-0.139237	0.278853	-0.49	0.62
	INFR	-0.024971	0.050494	-0.49	0.63
	Constant	4.004523	3.578524	1.12	0.27
R-Squared =0.6757	Adjusted R-Squared = 0.6258	Prob > F = 0.0001	F = 13.54		

Source: Author's Research, 2019

Table 3: Long-run Regression Result

Dependent variable	Independent variables	Coefficient	Standard Error
TOR	M2	0.000917	0.00024
	DINTR	-0.976861	0.22253
	INFR	0.293212	0.04625
	Constant	-3.534673	
Log likelihood = -505.8107			

Source: Author's Research, 2019

5. SUMMARY OF FINDINGS AND RECOMMENDATIONS

This study analyzed the short and long run relationship between money supply and stock market liquidity in Nigeria using time series data for the period of 1983 to 2018. The study used Ordinary Least Square Regression Analysis method to estimate the empirical models of the study with the aid of E-views 9. The result of the analysis however, showed that the regression equation for money supply and stock market liquidity is consistent with economic a priori expectation in the long run. The coefficient of the constant term is 4.0045 which is positive and statistically significant. The coefficient of broad money supply (M2) is positive. This means that increase in money supply has the potential to increase the rate of buying and selling of securities. Also, the coefficient of Inflation Rate (INFR) is positive in the long-run which suggests that increase in the rate of inflation will increase the rate of buying and selling of securities in the long-run. However, this is contrary to the findings of Tamtom (2002) who concluded that inflation rate has a negative long-run effect on stock performance.

On the other hand, Deposit Interest Rate (DINTR) has a negative relationship with Turnover Ratio (TOR) both in the short-run and long-run. This however, supports the assertion made by Blanchard (1997) that lower interest rate will result in high liquidity and ultimately increase stock performance.

Based on the results of the dependent variable as explained by the independent variables, it can conclusively be said that broad money supply and inflation rate have negative impact on stock market liquidity (Turnover Ratio) in the short-run but are positively related in the long-run. While Deposit Interest Rate enhances stock market liquidity (Turnover Ratio) negatively both in the short-run and long-run. The economic implication is that a reduction in Deposit Interest Rate will increase the performance of stock market which is in line with the a priori expectation. It is therefore recommended, that the illiquidity status of the capital markets should be improved upon by the Securities and Exchange Commission (SEC) through attractive interest rates in other to make them viable for investors to invest in.

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