

Monetary Policy Transmission Channels on the Performance of Nigerian Stock Market

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ABSTRACT

This study examined the effect of monetary policy transmission channels on the performance of Nigeria stock market. The objective is to study the extent to which monetary policy transmission channels effect performance of Nigeria stock market. Time series data were sourced from Central Bank of Nigeria Statistical Bulletin. Stock market performance measured by liquidity of the market was modeled as the function of interest rate channel, exchange rate channel, assets pricing channel and exchange rate channel. The study adopted ordinary least square as data analysis methods. The study found that 57.7% and 41.5% variation or changes in liquidity of Nigeria stock market can be traced to monetary policy transmission channels as modeled in the regression model while the remaining 42.3% and 58.5% can be explained by variables not captured in the regression model. The F-statistics which measures the model significant proved that the model is statistically significant and good to predict variation on the dependent variable. The Durbin Watson statistics of 1.543 is less than 2.00 but greater than 1.5. It proved that there is presence of negative serial autocorrelation among the variables. The beta coefficient shows that the variables have positive effect except credit channel. From the findings the study concludes that monetary policy transmission channels have moderate effect on performance of the stock market. The study recommends that Nigeria exchange rate per US dollar should be well structured and defined. Policies to leverage the depreciation naira exchange rate should be formulated and there is need to strengthen Nigeria bilateral, unilateral and multilateral trade and investment relationship for better naira exchange rate that will enhance Nigeria stock market performance and Nigeria asset prices such as a treasury bill rate should be properly factored into the monetary policy objective to encourage cross boarder flow of financial asset and investment into the Nigeria financial market.

Keywords: Monetary Policy, Transmission Channels, Performance, Nigeria Stock Market

INTRODUCTION

The capital markets enhance resource allocation and increase economic growth and development through different channels by reducing transaction costs, liquidity costs and positively affecting the average productivity of capital (Levine 1991; Bencivenga, et al. 1996) by pooling resources on larger projects which would otherwise have difficulty accessing finance and mobilize savings which in turns encourage high rate of investment (Greenwood and Smith 1997). However,

through increase in the acquisition of information about firms, the capital markets can promote and improve resource allocation and the average productivity of capital (Kyle 1984; Holmstrom and Tirole 1993). The stock markets positively affect firms' investment decisions and the average return on investments (Jensen and Murphy 1990; Laffont and Tirole 1988; Scharfstein 1988). Improving risk diversification through internationally-integrated capital markets and increasing the array of possible investments, capital markets augment on the rate of saving and the rate of investment (Saint- Paul 1992; Devereux and Smith 1994; Obstfeld 1994) as it relate to monetary policy transmission mechanisms can have direct effects on the activities and the performance of the capital market should it be considered and made a policy thrust (Akani, 2017).

Monetary policy transmission mechanism describes how policy induced changes in the nominal money stock or the short-term nominal interest rates impact real variables such as aggregate output and employment and this specific channels of monetary transmission operate through the effects that monetary policy has on interest rates, exchange rates, equity and real estate prices, bank lending and the balance sheets (Akani, 2017). The analysis of the monetary policy transmission proves how monetary policy changes affect the real economy.

The direct effect is through positive manipulation of monetary indicators while the indirect has to do with the negative manipulation of monetary variables. In expansionary monetary policy such as lower interest the capital market is bullish with strong, equity and bond prices. Investors prefer investment in financial instruments rather than parking it in deposits that provides minimal returns and home owners and investor takes advantage of low mortgage rates to own properties, while in a contractionary monetary policy prices of stocks slumps and investors prefers deposit to investment. This implies that an expansionary monetary policy can affect positively while contractionary monetary policy can affect negatively liquidity of the capital market. Also, expansionary monetary policy regime, relative macroeconomic fundamentals, financial institution expand their balance sheet through collateralized borrowing as a consequence, the supply of liquidity increases. However when monetary policy is contractionary institutions shrink their balance sheet reducing the stocks of naira and the overall supply of liquidity (Tobians & Shin, 2008).

The relationship between monetary policy and the performance of capital market can only work in the developed financial market where monetary policy is well managed and its objectives on the financial market is achieved compared with financial market of the developing countries like Nigeria where the financial market is emerging and the monetary policy is characterized with ill timing and policy mismatch. Also, there are limited studies of citable significance on the effect of monetary policy transmission mechanisms on the liquidity of the capital market.

The belief and assumption that an efficient and well-structured financial system can facilitate the realization of monetary and macroeconomic goals dates back to the classical theories of monetary policy and Schumpeter in 1912 which noted that services provided by the financial intermediaries are the essential driven for innovation and growth (Akani et al, 2016). The effects of monetary policy capital market depend on the effectiveness of the monetary policy.

Monetary economics has proven to be a controversial and complex area in macroeconomics; these seem from the ambiguity on the concept of money, its origin, nature and the purpose in the economy. Significant proportion of the debates in monetary economics focuses on the nature of money supply, monetary policy, the transmission mechanisms and effectiveness of monetary

policy (Abbassi & Linzert, 2011). After the great depression of 1929, the new macroeconomic debate has expanded the concept of money to include endogenous money and the effects of money outside the banking sector.

There are several schools of thought that offer theoretical explanation for the behaviour of the capital market in relation to monetary variables. To the fundamentalists, the activities such as stock price are determined by expectations regarding future earnings considering the future discount rate (Kevin, 2000). The Technical school believes that present stock price is a linear function of the preceding price. The Random Walk Hypotheses opined on the market efficiency that stock price are essentially random therefore, there is no change for profitable speculation in the stock market (Butler and Malaikah, 2002). The macroeconomic approach argues that stock prices are sensitive to changes in macroeconomic variables (Inegbedion, 2009). Gordon, Miller and Modigliani argued stock price based on dividend policy of the firm, (Maku and Atanda, 2009), while Capital Assets Pricing Model (CAPM) and the Arbitrage Pricing Model (APM) argued that the price of stocks is a fundamental function of the risk factor and the market rate of return. In Nigeria, it is difficult to determine factors that influence the performance as the monetary and the macroeconomic environment is prone to external and internal forces.

The debate on the effectiveness of monetary policy has been a point of departure between the classical and the Keynesians economist and the controversies have deepened as more schools of thoughts emerged over the years. The inability of the classical economists to provide solution to the great depression of the 1929 challenged the monetary policy theories, cornerstone of neoclassical monetary policy is based on the tenets of classical theory which assumes perfect competition, use of real variables in decision making and application of representative agent models with agents that have the same preferences and act alike in every way. Neoclassical economics with classical monetary model based on quantity equation says less about the transmission channels of monetary policy. The main criticism toward Neoclassical is based on their main assumption of optimizing rational representative agents; firm and household. from the above, this study wants to examine the effect of monetary policy transmission mechanism on the liquidity of Nigeria capital market.

LITERATURE REVIEW

Monetary Policy Transmission Mechanism

This is the process through which monetary policy decisions affect the economy in general and the price level in particular. The transmission mechanism is characterized by long, variable and uncertain time lags. Thus it is difficult to predict the precise effect of monetary policy actions on the economy and price level. There are four channels of monetary policy transmission mechanism as discussed below:

Exchange Rate Channels

The exchange rate channel is one of the primary transmission channels in open economy macroeconomic models, although it may not be one of the primary channels in closed economy models. The link between monetary policy and exchange rates under the Uncovered Interest Parity (UIP) condition has gained increasing attention since the studies of Fleming (1962), Mundell (1963), and Dornbusch (1976).

Under UIP conditions, the difference between interest rates of domestic and foreign assets equals the expected change in the exchange rate. The change in the exchange rate affects the domestic economy via both aggregate demand and supply. On the demand side, a monetary tightening that increases domestic real interest rates results in a real appreciation of the domestic currency through the uncovered interest rate parity condition. Consequently, domestic produced goods become more expensive than foreign produced goods. This decreases the net exports, leading to a fall in domestic output (Obsfeld and Rogoff, 1995; Taylor, 1993).

However, on supply side, a real appreciation of the domestic currency decreases the domestic price of imported goods, which decreases the domestic inflation directly, via the so-called exchange rate pass through effect (McCallum and Nelson, 2001). The level of pass through to the local currency price of imported goods and, hence, to the overall inflation rate depends on the import share, the magnitude of the appreciation and its timing, as well as the macro environmental characteristics of the economy (Alper, 2003; Campa and Goldberg, 2004; Kara et al., 2005). For example, Devereux, Engel and Storgaard (2003) point out the importance of macro level stability to have a low level of exchange rate pass through. They argue that countries with low volatility of money growth experience low rates of exchange rate pass through whereas countries with highly volatile money growth have higher pass through. Changes in exchange rates may exert significant balance sheet effects which change the net worth and debt-to-asset ratios. These changes lead to important adjustments in spending and borrowing especially for highly dollarized countries (Kamin, Turner and Van't dack, 1998). Consequently, fewer goods will be exported since the value of domestic goods will be expensive to foreign countries. This weakens the demand for domestic products thereby easing inflationary pressure. This analysis can be presented in the following mechanism:

$$\text{Imports} \downarrow \rightarrow \text{Exports} \uparrow \rightarrow M_C \downarrow \rightarrow r \uparrow \rightarrow E \uparrow \rightarrow \text{Imports} \uparrow \rightarrow \text{Exports} \downarrow \rightarrow P \downarrow \quad (2.1)$$

Interest Rate Channel

The interest rate channel is the primary monetary transmission mechanism in conventional Keynesian models. For example, given some degree of price stickiness, a monetary tightening leads to an increase in nominal interest rates; the increase in nominal interest rates leads to an increase in real interest rates which raises the cost of capital (Kuttner & Mosser, 2002; Mishkin, 1995); the increase in the cost of capital decreases investment spending; the decrease in investment leads to a decline in aggregate demand and output. In contrast, an easy monetary policy leads to a decrease in nominal interest rates that causes a decrease in real interest rates; this decrease lowers the cost of capital which increases investment and eventually increases real output.

The basic mechanism of the interest rate channel remains unchanged in recently developed theories based on rational expectations and forward-looking expectations (Clarida, Gali & Gertler, 1999; Rotemberg & Woodford, 1998). Yet, the recent research expands the theory by incorporating new variables into the model such as consumers' decisions on housing and durable expenditures, and substitution effects in consumption spending (Els, Locarno, Morgan & Viletelle, 2003; Taylor, 1995).

The original theory of the interest rate channel operates through businesses' decisions about investment spending. Taylor (1995) expanded the theory by incorporating the effects of consumers' decisions on housing and consumer durable expenditures into investment decisions. In this way, an increase in the nominal interest rate which leads to an increase in the real interest rate after a monetary tightening decreases business fixed investment, residential housing investment, consumer durable expenditures and inventory investment, which decreases aggregate demand and output. A policy-induced change in nominal interest rates generates a substitution effect by consumers (Els et al., 2003).

A policy induced fall in interest rate by the Central Bank will directly affect the interbank rate which is the rate at which banks borrow from each other. This also affects the retail market interest rate that is the lending rate. Thus, a fall in the lending rate will increase aggregate demand since saving is discouraged and borrowing as well as spending is encouraged. This will eventually lead to an increase in prices. In other words, the cost of credit declines and the demand for credit rise when the Central Bank reduces interest rate. In effect, investment and consumption rises leading to an increase in aggregate demand consequently, higher inflation (Mishkin, 2004). This analysis can be presented schematically as follows:

$$Me \uparrow \rightarrow r \downarrow \rightarrow I \uparrow \rightarrow AD \uparrow \rightarrow P \uparrow \quad (1)$$

Where *Me* is an expansionary monetary policy, *r* is interest rate, *I* is investment, *AD* is aggregate demand *P* and is price levels.

The Asset Price Channel

This reflects the impact of monetary policy on prices of domestic assets such as bonds, shares, and real estate, among others. It operates through changes in firms' stock market values and household wealth. Tobin's (1969) Q-theory of investment and Ando and Modigliani's (1963) life-cycle theory of consumption are two famous views of the asset price channel in the MTM. Tobin's Q is defined as the ratio of the market value of a firm to the replacement cost of capital owned by that firm. The Tobin's Q-theory explains the mechanism of how monetary policy affects the economy through the policy's effect on the valuation of equities. All else equal, a policy-induced increase in the short term nominal interest rate makes debt instruments more attractive than equities in the eyes of the investors. Hence, following a monetary tightening, equity prices fall (Ireland, 2005). This leads to a decrease in value of Q due to a decrease in the firm's value relative to the replacement cost of capital owned by the firm (Mishkin, 1995).

In the case of a lower Q, investment becomes costlier for the firm; thus investment projects marginally profitable before the monetary tightening go unfunded after the fall in Q (Ireland, 2005). This gives rise to a decline in output. The reverse applies when Q is high; investment spending increases leading to an increase in output. Ando and Modigliani (1963), in their life-cycle theory of consumption, posit another view of the asset price channel Ando and Modigliani (1963) emphasized the role of wealth, in addition to income as primary determinants of consumer spending.

Credit Channel

The impact of monetary policy on the real economy operates through various channels. Under the conventional approach, referred to as the ‘money view’, monetary policy influences the economy via the interest rate. The alternate channel, that emphasizes credit conditions as the route of monetary transmission, is of relatively recent origin and is referred to as the ‘credit view’. Genesis of the credit view could be traced to the celebrated work of Bernanke and Blinder (1988), which presented the IS-LM framework augmented with bank intermediated loans. It argued that since loans and bonds are not perfect substitutes, monetary policy operates not only through the conventional money channel but also through the credit channel.

According to the ‘credit view’, a change in monetary policy that raises or lowers open market interest rates tends to change the external finance premium in the same direction. External finance premium is the difference between the cost of funds raised externally and the funds raised internally. Because of this additional effect of policy on the external finance premium, the impact of monetary policy on the cost of borrowing and consequently on real spending and real activity is magnified (Bernanke and Gertler, 1995). There are three reasons for which the credit channel is important. The effect of monetary policy can be shown systematically as follows:

$$Me \uparrow \rightarrow Bank \ Loans \uparrow \rightarrow I \uparrow \rightarrow AD \uparrow \rightarrow P \uparrow \quad (2)$$

How monetary policy affects the net worth of firms of borrowers can be shown in the balance sheet channel. This is based on the balance sheets of borrowers and income statements. Equity prices of borrowers may fall as a result of a decrease in money supply which is induced by a contractionary monetary policy (Mc).

In effect, lending will decline since lenders will get less collateral from borrowers for their loans. Moral hazard problems and an increase in adverse selection are expected to occur due to a fall in investment spending and aggregate demand. Adverse selection occurs when a decline in net worth leads to a decrease lending to finance investment. This is because they are likely to pay a higher premium or interest on loans since there is a loss in the value of collateral. However, moral hazard problems arise when firms have lower net worth which gives them the incentive to riskier portfolios which are likely to be defaulted (Bernanke and Gertler 1995). This process is summarized schematically as follows:

Adverse Selection and Moral Hazard lending

(3)

$$Me \downarrow \rightarrow Pe \downarrow \rightarrow Adverse \ Selection \uparrow \text{ and } moral \ Harzard \uparrow \rightarrow Lending \downarrow \rightarrow I \downarrow \rightarrow AD \downarrow \rightarrow P \downarrow$$

Liquidity of Capital Market

Liquidity of a stock market relate to the ease with which shares are traded in the market (Ifeoluwaand Motilewa, 2015). Liquidity is measured by the ratio of the securities traded to the total national output, which are computed as: total value traded/GDP. The liquidity of the stock market according to Osinubi (2002) facilitates profitable interactions between the equity and the money market. Hence, with a liquid stock market, shares are accepted as collateral by banks for lending purposes, consequently increasing access to credit for growth. Oke and Mokuolu (2004) highlighted liquidity as an important characteristic of a stock market and point to its ability

efficiently to allocate capital as well as allowing investors to divest their assets easily. Total value traded ratio and turnover ratio are the two main measures of stock market liquidity. The liquidity of stock markets offers a wide range of importance to the economy. First, liquid equity markets make investments less risky and more attractive (Adigwe, Nwanna and Amala, 2015). This is because they allow savers to acquire an asset (that is, equities) and to sell them quickly and cheaply. Secondly, liquid markets improve the allocation of capital and enhance prospects for long term economic growth through the facilitation of longer term, and more profitable investments. Thirdly, stock market liquidity help provoke the establishment of more investment by making investment less risky and more profitable. Osinubi (2001) opined that liquidity of stock markets also facilitates profitable interactions between the stock market and the money market.

Keynesian's Theory of Monetary Policy

Keynesian monetary economics revolves around the liquidity preference theory - Keynesian demand for money introduced in the monetary sector (Belke & Polleit, 2009). This liquidity preference theory is one of the hallmarks that differentiate Keynesian monetary theory from the general family of neo-classical theories. It explains why people individually express demands for money; the motives for money as liquid asset (Lewis & Mizen, 2000). In this theory, the demand for money is determined by interactions between income and interest rate that is, the price of demand. Thus, Keynesians argue that, to influence the demand for money, we should either control directly the price for money or indirectly by inducing changes through real income. Theoretically, a change in interest rate, other things being equal, affects individual preferences for holding liquid (cash) and illiquid assets.

Keynesians recognize the importance of the role of money, because it is "first and foremost a financial asset" (Lewis & Mizen, 2000). Money does not affect only the absolute price and quantity of trade, but it affects also the level of financial intermediation, stock prices, and its' own price -interest rates- (Knoop, 2008). Although there is a clear recognition for active roles of money in the money market, Keynesians assume that money is exogenous. This is usually demonstrated with the two graphs that depict a downward money demand curve and a vertical money supply curve the later represents the monetary policy instrument in the hand of monetary authority to manipulate it at its own wills. The Keynesian demand for money is divided into three components, although there should not be a sharp divide in the mind of the holder of money (Lewis & Mizen, 2000). These reasons are transaction motives; the precautionary motives, and the speculative motives.

Monetarism Theory of Monetary Policy

Cagan (1989) defines Monetarism as a theory associated with the view that the quantity theory of money affects economic activity and price level, and that, to control inflation, monetary policy must target the growth of money supply. This school of thought was spearheaded by the Chicago School of economics and Milton Friedman, acclaimed to be the torch bearer was later joined by Anne Schwartz. As the name implies Monetarists emphasize the role of money and the link between money growth and inflation (De Long, 2000). The monetary policy transmission mechanism is directly described by money inflation in the quantity equation as opposed to indirect link through financial markets described earlier in the Keynesian monetary theory. In his early works, Milton Friedman (1968), the god-father of monetarism asserts that there were clear

evidences that monetary policy strongly affects the real variables in the short term. Thus, on this ground the growth rate of money formed a target base in order to achieve economic growth in the short term. In the early 1950s Friedman led a counter-revolution against Keynesian activism to reestablish neoclassical economics with some modification. Thus, Cagan (1989), Friedman and Laidler (1982) advocated the control of money supply as a policy instrument superior to

The Capital Asset Pricing Model (CAPM)

The CAPM is a model for pricing an individual security or a portfolio. The CAPM model was developed independently by William Sharpe (1964), and Parallel work was performed by Lintner (1965) and Mossin (1966) these model marks the birth of asset pricing theory. The CAPM suggests that the only variables that we need in calculating the expected return on security are: the risk-free rate (a constant), the expected excess return on the market, and the security's beta (a constant). The CAPM model is attractive because of its effectively simple logic and intuitively pleasing predictions relating to how it measures risk and the relation between expected return and risk. Unfortunately, the CAPM simplicity causes the empirical record of model to be poor, poor enough to invalidate the method used in the application of the model. The models empirical problems may reflect true failings or they may also be due to the shortcomings of the empirical tests, most notably, poor proxies for the market portfolio of invested wealth, which plays a crucial role in the models predictions.

The CAPM is built on the model of portfolio choice developed by Harry Markowitz (1959). The Markowitz model is often known as a "mean-variance model", it describes the relationship between risk and the expected return of an asset under the conditions of market equilibrium in a capital market where all investors undertake optimal portfolio selection. The model assumes investors are not risk takers and that they care only about the mean and variance of their one-period investment return when choosing among portfolios.

Arbitrage Pricing Theory (APT)

The Arbitrage Pricing Theory (APT) is another model of asset pricing based on the idea that equilibrium market prices should be perfect, in such a way that prices will move to eliminate buying and selling without risks (arbitrage opportunities).

The basis of this theory is the analysis of how investors construct efficient portfolios and offers a new approach to explaining the asset prices and also states that the return on any risky asset is a linear combination of various macroeconomic factors that are not explained by this theory. Therefore unlike CAPM model this theory specifies a simple linear relationship between assets, returns and the associated k factors. There are two empirical testable versions of the APT, the statistical APT and the macro variable APT. However, the macro variable model differs from the statistical factor model mainly because the factors are specified in advance and they are interpretable.

The APT equilibrium rests on investors, ability to construct an arbitrage portfolio by simultaneously holding a short and a long position in two different portfolios which offers positive expected return with zero risk and zero net investment. Asserted risk-expected return relation is known as the Arbitrage Pricing Theory, Which is formulated by Ross (1976). It is probably safe to assume that both the CAPM and APJ will continue to exist and will be used to price capital assets.

Assumptions of the APT

Asset markets are perfectly competitive and frictionless; all investors have homogeneous expectations that returns are generated randomly according to a k-factor model. Investors have monotonically increasing concave utility functions; the number of assets existing in the capital market from which portfolios are formed is much larger than the number of factors. There are no arbitrage opportunities. (Because there is no arbitrage condition holding for any subset of securities, it is unnecessary to identify all risky assets or a market portfolio to test the APT) There are no restrictions on short selling. (This assumption is crucial to the equilibrium, as it constitutes one side of the arbitrage portfolio; equally important is the requirement that the proceeds from short selling are immediately available).

Empirical Review

Asiedu, Opong and Gulnabat (2020) analysed of the dynamics in stock market performance following changes in monetary aggregates in ten (10) selected African countries from 1993 to 2019. We adopted three stock market performance indicators; namely S & P global equity index, stock turnover and stock market capitalization as dependent variables and inflation, broad money growth, exchange rate, real interest rate and commercial bank and lender serving as independent variables. We then employed the random effect model based on our results from the Hausman test and VECM after co-integration was established among the variables. The study established the presence of a monetary transmission mechanism following changes in money supply. We found that growth in broad money positively affects the stock market performance through the interest rate channel. Interest rate and inflation recorded negative effects on stock market performance indices. We also found that changes in monetary policy are highly significant in stock market performance in the West African market due to the relatively high level financial openness in the countries under consideration.

Goonoo (2021) analyzed the monetary policy transmission mechanism of the economy of Bangladesh. This study analyzes the impacts of reserve money and repo rates on the interest rate, broad money supply (M2), and consumer price index inflation via vector autoregression impulse responses. The authors did not find strong evidence that reserve money and repo rates are effective as monetary policy tools. Also examined were the effects of the issuance of National Savings Certificates (NSCs) on the economy. This study found that the issuance of NSCs affects the interest rate, M2, and inflation in a similar way to open market operation. The findings suggest that government loans via NSCs may weaken the effectiveness of the monetary policy transmission mechanism.

Akani and Imegi (2017) examined the effects of monetary policy transmission mechanism on liquidity of Nigerian capital market from 1981-2016. The required data were sourced from Central Bank of Nigeria (CBN) statistical bulletin. The study have capital market liquidity as dependent variable while treasury bill rate, savings rate, prime lending rate, net domestic credit, monetary policy rate, maximum lending rate, exchange rate and credit to private sector as the independent variables. The Ordinary Least Square multiple regressions with econometric view were used as data analysis techniques. Co integration test, Granger Causality Test, Augmented Dickey Fuller Test and Vector Error Correction Model were used to examine the variables and its relationship to the dependent variables. The study found that monetary policy transmission

mechanism has significant impact on the liquidity of the capital market. It therefore recommends that monetary policies should be aimed at enhancing the liquidity of Nigerian capital market in view of its impact on the capital market and that the channels of monetary policy transmission should achieved liquidity of the objective of the capital market.

Akani and Lucky (2014) examined the relationship between money supply and aggregate stock prices in Nigeria using time series data from 1980 – 2012, Dickey Fuller Unit Root Test, Engle-granger and Johansen- Joselinus method of co-integration in a Vector Error Correction Model setting. Empirical results demonstrated that there exists a long-run relationship between Currency in Circulation (CR) and Demand Deposit (DD) and Aggregate Stock Price, Time Deposit (TD), Savings Deposit (SD) and Net Foreign Assets (NFA) have negative relationship with aggregate stock prices.

Akani, Okonkwo and Ibenta (2016) examined the effects of monetary policy on capital market activities using evidence from Nigeria Economy, 1980 – 2013. The empirical result demonstrate that there exists a long-run equilibrium relationship between monetary policy tools such Broad Money Supply (M2), Liquidity Ratio (LIR), Interest Rate (INTR), which has a positive significant effect on Market Capitalization (MC) while Monetary Policy Rate (MPR) and Treasury Bill Rates (TBR) has negative and insignificant relationship on Market Capitalization (MC). In model II, the results shows that the independent variables have positive and significant relationship with the dependent variables of All Share Price Index (ASPI) except Monetary Policy Rate (MPR). The model summary revealed an R2 of 75% in model I and R2 of 94% in model II meaning that there is a strong and positive relationship between the dependent and independent variables during the period. The study also shows that there is no bi and uni directional causality running from the dependent and independent variables in the models except a uni directional causality running from Money Supply (M2) to Market Capitalization (MC) in model I.

Jimenez, Ongena, Peydro and Saurina (2011) have revealed that the identification of monetary policy effects through the credit channel is a steep challenge'; this is because monetary policy tightening affects bank credit in both supply and demand. Thus, to overcome this problem individual studies devised different techniques; this makes the results from these models rarely comparable, but nevertheless very informative. Jimenez, Ongena, Peydro and Saurina (2011) used the firms'loan application to gauge the monetary policy effects on the probability that a particular loan is granted. Another avenue that explores the effects of monetary policy on output through credit channel is the use of credit rationing models. Credit rationing models suggest that there is a threshold level after which monetary policy effects become stronger when credit market rigidity surpasses this particular point (Shao, 2010). However, the weakness of credit rationing models is that the threshold level is unknown, and it depends on the sample space in the study; it changes from sample to sample.

Fetai and Izet (2010) examined the effects of exchange rate on real GDP and prices in Macedonia. Using a SVAR method they find that changes in money stocks and exchange rate do not show significant effects on real GDP. However, exchange rate shock effects are rather significantly observed on the price level in Macedonia. Arratibel and Michaelis (2014) examined the impact of monetary policy and exchange rate shocks in Poland. Using a time-

varying VAR method they found significant time-varying effects from exchange rate shock on output and consumer prices. Specifically, consumer prices are more responsive to exchange rate than the response from other macroeconomic variables. Other works on exchange rate include (Kim & Roubini, 2000) who investigated the transmission mechanism in a group of small developing countries. They find that the exchange rate channel plays an influential role in transmitting effects from monetary policy to output and prices.

Beivin, Kiley and Mishkin (2010) examined that the existing relationship between stock market return and sets of macroeconomic variables which are exchange rate, inflation, money supply, industrial production index, long term bond rate and call money rate using Vector Error Correction Model (VECM) in Japan. Findings revealed that the sets of macroeconomic variables are co-integrated with Japanese stock price. Anderson and Gascon (2009) investigated the effect of macroeconomic variables as systematic influence on stock market returns using equity return and non-equity return as dependent variables. Results of the estimated models indicates that industrial production, anticipated and unanticipated inflation, yield spread between long and short term government bonds has significant relationship with Stock market return in United State.

Courtois-Halton and Hatebondo (2011) examined the relationship between stock market return in Malaysia, Indonesia, Philippines, Singapore and Thailand using macroeconomic variables such as Gross National Product (GNP), Inflation, money supply, interest rate and exchange rate from 1985-1996 using monthly data. The study found that stock prices of the five countries are having long-run positive relationship with growth in output but negatively related to aggregate price level. Interest rate has positive relationship with the stock price of Philippine, Singapore and Thailand but positively related to Indonesia and Malaysia.

Gerdesmeier (2013) examined monetary policy transmission on Economic growth in Kenya suggests that there is positive contribution of treasury bill rate and required reserve ratio to the cost of credit. Monetary transmission mechanism has strong influence on credit growth, cost of credit and amount of deposit in Kenya. Further analysis by the author suggests that there is an inverse relationship between real money supply, required reserve ratio and Treasury bill rate. The researcher therefore concludes that an action by CBK to lower the required reserve ratio, Treasury bill rate or both will immensely increase the amount of money supply in the economy. The author used data between 1997 and 2009 and the Structural Vector Autoregressive Model (SVAR).

Cevik and Teksoz (2012) notes that one weakness of the SVAR model is that the estimation results are sensitive to the identifying assumptions which sensitivity can lead to substantial variations in the estimated effects of monetary policy and in their relative importance over the sample period. Munyanzwe (2011) noted that the exchange rate transmission channel is not significant in explaining the variability of the consumer price index when it interacted with financial innovation variables M2/M1 (ratio of broad money to narrow money and bank credit to GDP). The researcher's study sought to examine the effectiveness of exchange rate transmission chance of monetary policy in Kenya amidst rapid financial innovation using the regression analysis. The research observed the impact of exchange rate in explaining CPI volatility when the exchange rate is interacted with financial innovation variables.

Nyanmo and Misati (2011) examined financial innovation variables represented by (Bank to GDP ratio and M3/M2). They found that with increased financial innovation will lead to efficiency in access of finances to households and firms and therefore, more investments which lead to increased output. However, the overall effects suggest that with financial innovation, the effectiveness of interest rate channel in monetary transmission is weakened and so, as financial innovation intensifies, the more positive the output gap is likely to be.

Mburu, Kethi and Maana (2012) suggests that changes in money supply are the predominant determinants of changes in inflation, as the coefficient of change in money supply is highest at 41%, which was consistent with the monetarists' theory that the effect of an expansionary monetary policy on an economy operating at optimum is inflationary in nature. Also, the results suggest that change in interest rate follow closely with changes in exchange rate being the last significant variable with a coefficient rate of 21%. The author used the error correction model and granger causality test and found that changes in money supply, granger cause change in prices and that changes in exchange rate granger cause changes in money supply and changes in interest rate.

Masati and Nyamongo (2011) examined asset prices and monetary policy in Kenya, results shed light on issues on linkages between monetary policy and financial stability. Empirical analysis based on quantitative analysis which incorporates both descriptive analysis and empirical approach where the study employed use of the VAR approach. Findings were that while monetary policy effects on stock prices volatility don't last for long, instability in the stock market prices creates instability in GDP and inflation and that the asset price channel of monetary transmission mechanism in Kenya is not compelling.

Davoodi, Dixit and Pirter (2013) suggest that channel of monetary transmission mechanism differ across EAC with exchange rate and credit channel being important in Kenya, credit in Rwanda and interest rate in Burundi. More so, a loose policy stance increases prices significantly in Kenya and Uganda and output in Burundi, Kenya and Rwanda. Also, monetary policy measured by shock to policy rate has long lags to prices and output of all countries while policy measured by shock to reserve money, has short lags in Uganda but long lags in Burundi and Rwanda. They applied the use of a Bayesian VAR model which has affected way of dealing with problem of over-parameterization by using previously acquired information.

Morales and Raei (2013), in their study on the evolving role of interest rate and exchange rate channels in monetary policy transmission in EAC countries, generally concluded that there was evidence for the existence of interest rate and exchange rate channels of transmission of monetary policy in the EAC. Move over, for countries with imperfect financial markets the exchange rate channel proves a strong vehicle. They noted that deposit rates are more responsive to changes in discount rate in across all EAC countries in the short run. More so for leading rate, the contemporaneous pass through of both discount and Treasury bill rate is significant only for Kenya and Tanzania.

Saborowski and Weber (2013) results suggest that structural characteristics that matter for interest rate transmission are exchange rate flexibility, regulatory quality, financial development, dollarization, inflation and finally, banking sector related variables such as competition, ratio of liquidity to assets and as an indicator of asset quality, the performance of bank's loan portfolios. Their findings suggest that an increase in banking sector liquidity from 20th to 80th percentile is

associated with a fall in pass through of around 20 percentage points. An increase of between 25 and 50 percentage points was as a result of moving from a pegged to a floating exchange rate regime. The major weakness with the approach was that they imposed coefficients to be the same across countries, which may be problematic because the characteristics they used did not fully explain pass through heterogeneity across countries.

Andrle, Berg and Morales (2013) examined Forecasting and monetary policy analysis in low income countries, with a focus on Kenya, they developed a semi structural new Keynesian open-economy model, by use of existing Forecasting and Policy Analysis (FPAS) frame works which embody the fairly general view that aggregate demand and monetary policy matter for output dynamics in the short run. At their core, they consist of a forward looking IS equation, a hybrid Philips curve with two separate Philips curve, one for food and the other for nonfood, a monetary policy rule and an uncovered interest parity equation. They used in sample and out of sample forecasting where the results suggest that imported food price shocks accounted for some inflation dynamics in 2008 and that an accommodative monetary policy played an important role. Davoodi, Dixil and Pinter (2013) results generally suggest that monetary policy measured by shock to policy rate has long lags to prices and output of all EAC nations. The results are equally shared by Morales and Raei (2013) who suggest there was evidence for existence of interest rate and exchange rate channels of monetary policy in EAC.

METHODOLOGY

This study sourced data from Central Bank of Nigeria use quasi experimental research design approach for the data analysis. This approach combines theoretical consideration (a-priori criterion) with the empirical observation and extract maximum information from the available data. It enables us therefore to observe the effects of explanatory variables on the dependent variables.

Model Specification

In attempting to investigate the relationship between macroeconomic variables and financial market stability the study adopt the following models

$$\text{CMLIQ} = f(\text{IRC}, \text{CC}, \text{APC}, \text{EXRC}) \quad 4$$

Transforming equation 1 above to econometrics method, we have

$$\text{CLIQ} = \beta_0 + \beta_1 \text{IRC} + \beta_2 \text{CC} + \beta_3 \text{APC} + \beta_4 \text{EXRC} + \mu_t \quad 5$$

Where

CMLIQ = Capital market liquidity

IRC = Interest Rate Channel

CC = Credit Channel

APC = Assets pricing channel

EXRC = Exchange rate Channel

μt = Error term

Data Analysis Method

The technique used in this study is the Ordinary Least Square (OLS) estimation technique. The test instruments in the OLS are the T-statistics and F-test which were used to test the significance of variables and the overall significance of the regression respectively. Other test instruments also employed were the Durbin Watson test which was used to test the presence or absence of auto correlation between and among the explanatory variables and the adjusted R square used to test the percentage variation of the dependent and the independent variables.

ANALYSIS AND DISCUSSION OF FINDINGS

Table 1: Presentation of OLS results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ITR	0.036931	0.038428	0.961060	0.3465
CC	-0.077588	0.714141	-0.108646	0.9144
APC	0.118441	0.126120	0.939117	0.3574
EXRCC	0.877186	0.421188	2.082650	0.0486
C	-1.197199	10.10151	-0.118517	0.9067
R-squared	0.577678			
Adjusted R-squared	0.415334			
F-statistic	2.326397			
Prob(F-statistic)	0.016707			
Durbin-Watson stat	1.543195			

Source: Computed from E-view

From the results presented above, the coefficient of determination (R^2 and adjusted R^2) shows that 57.7% and 41.5% variation or changes in liquidity of Nigeria stock market can be traced to monetary policy transmission channels as modeled in the regression model while the remaining 42.3% and 58.5% can be explained by variables not captured in the regression model. The F-statistics which measures the model significant proved that the model is statistically significant and good to predict variation on the dependent variable. The Durbin Watson statistics of 1.543 is less than 2.00 but greater than 1.5. It proved that there is presence of negative serial autocorrelation among the variables. The beta coefficient shows that the variables have positive effect except credit channel.

Discussion of Findings

The purpose of this study is to examine the relationship between monetary policy transmission channels and performance of Nigeria stock market. The R-square of the model found that 57.7% and 41.5% variation or changes in liquidity of Nigeria stock market can be traced to monetary policy transmission channels as modeled in the regression model while the remaining 42.3% and 58.5% can be explained by variables not captured in the regression model. The study found that F-statistics which measures the model significant proved that the model is statistically significant and good to predict variation on the dependent variable while the Durbin Watson statistics of 1.543 is less than 2.00 but greater than 1.5. It proved that there is presence of

negative serial autocorrelation among the variables. The beta coefficient shows that the variables have positive effect except credit channel.

The findings of the study are in line with efficient market hypothesis and validates Arbitrage pricing model. Empirically, the study confirm the findings of Asiedu, Oppong and Gulnabat (2020) presence of a monetary transmission mechanism following changes in money supply and that growth in broad money positively affects the stock market performance through the interest rate channel. Interest rate and inflation recorded negative effects on stock market performance indices, that changes in monetary policy are highly significant in stock market performance in the West African market due to the relatively high level financial openness in the countries under consideration, the findings of Goonoo (2021) that the issuance of NSCs affects the interest rate, M2, and inflation in a similar way to open market operation. The findings suggest that government loans via NSCs may weaken the effectiveness of the monetary policy transmission mechanism, the findings of Akani and Imegi (2017) that monetary policy transmission mechanism has significant impact on the liquidity of the capital market, the findings of Akani and Lucky (2014) that there exists a long-run relationship between Currency in Circulation (CR) and Demand Deposit (DD) and Aggregate Stock Price, Time Deposit (TD), Savings Deposit (SD) and Net Foreign Assets (NFA) have negative relationship with aggregate stock prices and the findings of Akani, Okonkwo and Ibenta (2016) that the independent variables have positive and significant relationship with the dependent variables of All Share Price Index (ASPI) except Monetary Policy Rate (MPR).

CONCLUSION AND RECOMMENDATIONS

The study found that 57.7% and 41.5% variation or changes in liquidity of Nigeria stock market can be traced to monetary policy transmission channels as modeled in the regression model while the remaining 42.3% and 58.5% can be explained by variables not captured in the regression model. The F-statistics which measures the model significant proved that the model is statistically significant and good to predict variation on the dependent variable. The Durbin Watson statistics of 1.543 is less than 2.00 but greater than 1.5. It proved that there is presence of negative serial autocorrelation among the variables. The beta coefficient shows that the variables have positive effect except credit channel.

Conclusions

From the findings, the study concludes that interest rate channel have positive but no significant effect on performance of Nigeria stock market. The study concludes that credit rate channel have negative but no significant effect on performance of Nigeria stock market, the study concludes that assets pricing channel have positive but no significant effect on performance of Nigeria stock market while the study concludes that exchange rate channel have positive and significant effect on performance of Nigeria stock market.

Recommendations

- i. Monetary policies should be aimed at enhancing the liquidity of Nigerian capital market in view of its impact on the capital market and that the channels of monetary policy transmission should achieved liquidity of the objective of the capital market

- ii. The negative effect of interest rate is contrary to expectation of the result, the study therefore recommend the needs to harmonize the growing rate of money supply with the operation of the capital market.
- iii. Nigeria asset prices such as a Treasury bill rate should be properly factored into the monetary policy objective to encourage cross boarder flow of financial asset and investment into the Nigeria financial market.
- iv. Nigeria exchange rate per US dollar should be well structured and defined. Policies to leverage the depreciation naira exchange rate should be formulated and there is need to strengthen Nigeria bilateral, unilateral and multilateral trade and investment relationship for better naira exchange rate that will enhance Nigeria stock market performance.

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