IOSR Journal of Economics and Finance (IOSR-JEF)
e-ISSN: 2321-5933, p-ISSN: 2321-5925.Volume 8, Issue 5 Ver. IV (Sep.- Oct .2017), PP 01-24
www.iosrjournals.org

Monetary Policy Transmission Mechanism and Liquidity Of Capital Market: A Time Series Study From Nigeria: 1981-2016

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Abstract: *This study 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 achievedliquidity of the objective of the capital market.*

Keyword: *monetary policy transmission mechanism, liquidity of capital market, co-integrationand credit to private sector to Gross Domestic Product.*

Date of Submission: 16-10-2017 Date of acceptance: 02-11-2017

I. Introduction

The opinion that the financial market plays a major role in the achievement of economic growth and development, especially in the developing countries has long been emphasized by scholars (McKinnnon and Shaw 1973, King and Levine, 1993, Beek, Levine and Logyza, 2000, Akani and Lucky, 2016). Apart from the macroeconomic objective of full employment, price stability, external balance and Economic growth, monetary policy ensures that the financial market is stable and liquid as contain in CBN ACT 1968 as amended. In Nigeria the central Bank of Nigeria (CBN) amendment Act of 1962, empowered CBN to formulate liquidity policies that will facilitate the realization of both monetary policy and macroeconomic goals. The Nigeria capital market was established in 1960 to meet the long term financing development needs of government and corporate firms with aim to bridge long term financial disequilibrium that exist among corporate organizations and government. The market constitutes the foundation and accelerator of a rapidly industrialized economy. It affords an enterprise the opportunity to broaden the ownership of the enterprise within and across the borders ofa country (Onoh, 2002).

Monetary policy refers to the policy of the monetary authority with regard to monetary (money) matters. It deals with the controls of financial institutions, active purchases and sales of paper assets to affect changes in money supply and maintenance of interest rate (Jhingan, 2005). The classical theory of monetary policy postulate that changes in money supply or other aggregates will work through some intermediate variables through which some effects are transmitted to the ultimate goals of price stability, output, employment and external balance (CBN, 2011). Monetary policy transmission mechanism refers to the various intermediate channels through which changes in the nominal money stock or short term interest rates affects the macroeconomic aggregates (Akani, 2017). The transmission mechanisms includes the interest rate channel which explain the relationship expansionary monetary policy such as reduction in long-term interest rates which in turn affects business investment, investment in residential housing and consumers expenditure on durable goods, the asset price channel opine that expansionary monetary policy leads to higher equity price which makes investment more attractive and raises aggregate demand, the exchange rate channel proved that an expansionary monetary policy lowers the domestic real interest rate and through the foreign interest parity condition brings about a real depreciation of the domestic currency, this results to higher net exports and stronger aggregate demand on the supply side, real depreciation that results from expansionary monetary policy raises the domestic prices of imported goods and contracts aggregate supply reducing output and increasing inflation.

Liquidity measuresof the ability and ease with which assets can be converted to cash on short notice without loss of value. The Central Bank liquidity constitutes deposits of financial institutions held at central bank, market liquidity which involves the buying and selling of assets without unduly affecting the assets price, funding liquidity refers to ability to raise cash in the market, through collateralization loans, assets sales or by borrowing. Investors should have a basic concept and understanding of the monetary policy as it can have a direct and significant effect on the capital market liquidity.

Liquidity of the capital market remains one of the policy thrust of the regulatory authorities in the market, this is because a liquid capital market offers potential investors to quickly and cheaply alter their portfolios, thereby reducing the riskiness of their investment, this facilitate investment in projects that are more profitable (Ezebisili & Alajekwe, 2012). Illiquid stock market discourages investment as investors will be reluctant to tie up their investment for long period of time (Okonkwo, Ozrouru & Ajudua, 2004). In a liquid capital market, investors are able to sell large blocks of assets without substantially changing the value or price of the assets.

The effects of monetary policy on the liquidity of the capital market can be direct and as well indirect. 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 monitory 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 liquidity 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.

Despite many debates on the effect of monetary policy transmission mechanism and liquidity ofcapital market, extant studies show however, that there is still no consensus as to the exact effects of monetary policy on capital market liquidity, (Akani Okonkwo and Ibenta, 2016) found that the monetary policy influencedcapital market activities positively while other researchers such as Lucky and Kingsley (2016), Akani (2017), Nnanna (2006) found a controversial results,with diverging methodologies and period of study. However, there seems to be no conclusion on the types and direction of the relationship between monetary policy transmission mechanism and liquidity of capital market.Therefore this study intends to examine the relationship between monetary policy transmission mechanisms on the liquidity of the Nigeria capital market.

II. Conceptual Reflections

Liquidity of capital market

Liquidity of a stock market relate to the ease with which shares are traded in themarket (Ifeoluwaand Motilewa, 2015). Liquidity is measured by the ratio of the securities traded to the total national output,which is 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 abilityefficiently to allocate capital as well as allowing investors to divest their assets easily. Totalvalue 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. In this way, shares become easily acceptable as collateral for bank lending, thereby boosting credit and investment.

Interest Rate Transmission Mechanisms

Interest rate transmission channel is the most conventional mechanism and at the same time, the one used in empirical studies to embody the joint effect of all the channels. It is the mechanism that underlies public intuition and media debates on the role played by monetary policy in modern economies. It combines the central bank's ability to affect a real variable (the interest rate) and the existence of inter-temporal substitution elasticity on the components of aggregate demand. In Nigeria financial market, the monetary authorities' control (direct or indirect) the interest rates of other instruments can be large, thereby aiding the transmission of their policy decisions. The market can also interpret current interest rate movements as a signal of future monetary policy actions, making longer term rates react consistently.

Investment-based Channels: Direct Interest-Rate Channels

According the classical economists, the traditional channel of monetary transmission that have been embedded in macroeconomic models involve the impact of interest rates on the cost of capital and hence on business and household investment spending (residential and consumer durables investment). Standard neoclassical models of investment demonstrate that the user cost of capital is a key determinant of the demand for capital, whether it is investment goods, residential housing or consumer durables. The user cost of capital (*uc*) can be written as:

$$u_c = p_c \left[(1-\tau)i - \pi_c^e + \delta\right] \quad (1)$$

Where, p_c is the relative price of new capital, i is the nominal interest rate, π_c^e is the expected rate of price appreciation of the capital asset, and δis the depreciation rate. The user cost formula also allows for the deductibility of the interest rate by adjusting the nominal interest rate by the marginal tax rate τ . Regrouping terms, the user cost of capital can be rewritten in terms of after-tax real interest rate, $(1-\tau)i-\pi^e$, and the expected real rate of appreciation of the capital asset, $\pi_c^e - \pi^e$, where π^e is the expected inflation rate such that;

$$u_c = p_c \left[\left\{(1-\tau)i - \pi^e\right\} - \left\{\pi_c^e - \pi^e\right\} + \delta\right] \quad (2)$$

The Monetarist and Transmission of Monetary Policy

- The traditional textbook (Keynesian) channel is known as the interest rate or the intertemporal substitution channel:

$$(M \uparrow \Rightarrow)\ i \downarrow \Rightarrow C \uparrow (1\uparrow) \Rightarrow Y^d \uparrow \Rightarrow y \uparrow \Rightarrow \Pi \uparrow \quad (3)$$

Expanding 'money' (M) reduces interest rates (i), reduces the cost of borrowing for firms (and consumers), leads to increased consumption (C) as well as investment (I) and therefore higher demand (Y^d), a bigger output gap (y) and finally higher prices and inflation (π)

The interest rate channel and policy responses

Bernanke and Gertler (1989) stated that the macroeconomic response to policy-induced interest rate changes was considerably larger than implied by conventional estimates of interest elasticity's of consumption and investment. This suggests that mechanisms other than the interest rate channel may also be at work in the transmission of monetary policy.

Credit Transmission Mechanisms

The traditional transmission model rules out the existence of the financial sector and every profitable project at the prevailing interest rate as stated by Modigliani & Miller (1958), the source of financing does not matter for the firm to make its (investment) decisions. Resources are always allocated efficiently. In a context of symmetrical information and no transaction costs, financial intermediation serves no purpose and thus no resources are devoted to it. Nonetheless, financial intermediaries particularly banks exist as the economy's efficient response to information asymmetries between lenders and borrowers, its associated transaction and monitoring costs, and the presence of liquidity risks. The financial intermediaries exist in a world with multiple financial instruments; at least two sources of financing must be recognized for firms. First, external or intermediated funds, where the firm accesses the financial market, but does not trade directly with individual investors, receiving their funds through an intermediary (bank loans). The second source are internal/direct funds, in which the firm either finances itself, without accessing the financial market, or is able to raise fund directly from individual investors (through the issue of bonds or stocks).

The problem is that the second source, assumed implicitly in the traditional mechanism, can be restricted (totally or partially) for a significant number of firms. If so, the fall in investment may not depend, as in the traditional channel, on the project's profitability relative to its alternative costs but rather on the firm's access to bank credit. Two mechanisms have been proposed to explain the link between monetary policy actions and this cost, namely the balance sheet channel and the bank lending channel. This tries to separate the effects on the firms' borrowing capacity from the amount of credit offered by the banks. Both rely on a market imperfection, which conditions access to the financial market on the firm's characteristics, rather than on the profitability of its investment projects (Gerlach & Peng, 2005).

Monetary policy models describe an economy in which there is an excess supply; hence, aggregate output is demand-determined in the short to medium run. The agents in this macro model include the (a) households, (b) domestic firms, (c) the government; (d) the rest of the world provides capital, goods and services demanded by the domestic economy and a market for domestic production and (e) the central bank. In the model, the central bank has the task of anchoring the nominal side of the economy. The central bank adopts an inflation targeting framework (IT) and is a flexible inflation targeted and sets a short-term interest rate to achieve an inflation target, and, consequently provides nominal stability. There are lags and delays between a change in interest rate and inflation. Given these lags and price and wage rigidities, the use of a simple interest rate rule is required to anchor inflation in the long run. The nominal exchange rate is allowed to transitorily deviate from purchasing power parity (PPP) so that movements occur in the real exchange rate. In addition, the nominal short-term interest rates play the leading role as the instrument of monetary policy. The transmission mechanism starts with the domestic interest rate policy. The overnight reverse repurchase rate (RRP) is prescribed as the nominal interest rate which follows a behavioral equation required to anchor inflation in the long run (Clarida, Gali & Gertler 2000).

In summary, changes in interest rates and bank credits lead to changes in the real sector through consumption and investment. All the changes in spending behavior, when added up across the whole economy, generate changes in aggregate spending. Total domestic expenditure plus the balance of trade in goods and services reflects the aggregate demand in the economy, and is equal to gross domestic product (GDP).However, the Gross Domestic Product (demand) feeds into the GDP (production) side which consists of two sectors: the primary sector (agriculture) and the advanced sector (industry and services). The output of the agriculture sector is exogenous in the model. This leaves us with the industry and services sectors which are assumed to have excess capacity. Hence, supply responds to the level of aggregate demand (Igazio, 2002).

The bank lending channel represents the credit view of this mechanism. According to this view, monetary policy works by affecting bank assets (loans) as well as banks' liabilities (deposits). The key point is that monetary policy besides shifting the supply of deposits also shifts the supply of bank loans. For instance, an expansionary monetary policy that increases bank reserves and bank deposits increase the quantity of bank loans available. Where many borrowers are dependent on bank loans to finance their activities, this increase in bank loans will cause a rise in investment (and also consumer) spending, leading ultimately to an increase in aggregate output, (Y). The schematic presentation of the resulting monetary policy effects is given by the following:

$$M \uparrow \rightarrow \text{Bank deposits} \uparrow \rightarrow \text{Bank loans} \uparrow \rightarrow I \uparrow \rightarrow Y \uparrow \qquad (4)$$

(Note: M= indicates an expansionary monetary policy leading to an increase in bank deposits and bank loans, thereby raising the level of aggregate investment spending, I, and aggregate demand and output, Y,). In this context, the crucial response of banks to monetary policy is their lending response and not their role as deposit creators. The two key conditions necessary for a lending channel to operate are: (a) banks cannot shield their loan portfolios from changes in monetary policy; and (b) borrowers cannot fully insulate their real spending from changes in the availability of bank credit. The importance of the credit channel depends on the extent to which banks rely on deposit financing and adjust their loan supply schedules following changes in bank reserves; and also the relative importance of bank loans to borrowers. Consequently, monetary policy will have a greater effect on expenditure by smaller firms that are more dependent on bank loans, than on large firms that can access the credit market directly through stock and bond markets (and not necessarily through the banks) (King, 1991).

Exchange Rate Transmission Mechanisms Channel

This channel is a particular case of the assets channel, since it is the price of a particular financial asset, namely another country's currency. However, because of its widespread impact as one of the economy's most important relative prices, and its direct effect on inflation through the prices of tradable goods, it is worth treating it as a separate channel. If the exchange rate is not fixed, its behavior should depend on the behavior of

the domestic interest relative to the foreign rate. The exact impact of a change in the policy rate is uncertain, because it depends again on the expectations on the interest rates and on domestic and foreign inflation.

The exchange rate channel: net exports

- The exchange-rate channel:

$$i \uparrow \Rightarrow e \downarrow \Rightarrow NX \uparrow \Rightarrow y \uparrow \Rightarrow \Pi \uparrow \quad (5)$$

- Lower interest rates (i) lead to a depreciation of the exchange rate (e), an increase in competitiveness, an improved trade balance (due to higher net exports, NX) and increased demand, a larger output gap and finally higher inflation.

The exchange rate channel: import prices

- The exchange-rate channel:

$$i \downarrow \Rightarrow e \downarrow \Rightarrow P_m \uparrow \Rightarrow \Pi \uparrow \quad (6)$$

Exchange rate (e) depreciation also raises import prices (P_m), which are important determinants of firms' costs and the retail price of many goods and services: this directly affects the price level and (temporarily) inflation

- An appreciation should reduce inflation (with a longer lag if prices are sticky on the downside)

The monetary transmission mechanism

The exchange rate channel: net wealth

- The exchange-rate channel:

$$i \downarrow \Rightarrow e \downarrow \Rightarrow NW \updownarrow \Rightarrow y \updownarrow \Rightarrow \Pi \updownarrow \quad (7)$$

Exchange rate depreciation increases the relative value of foreign-denominated assets and liabilities and therefore net wealth (NW), affecting demand. The sign of the effect depends on the make-up of balance sheets (Eze, 2011).

Asset Prices Channels

The macroeconomic implications of asset prices have received a lot of attention from academia, central banks and governments. For example, significant research efforts have been made to understand the roles of equity prices, house prices and other real estate prices in the transmission mechanism of monetary policy and macroeconomic stabilization at large. The concerns about these prices are both about whether monetary policy reinforces asset price inflation or asset prices development encourages less active monetary policy stabilization. As a result macroeconomists have suggested that monetary policy should respond systematically to asset prices and exchange rate developments. It means that changes in asset prices and exchange rates should be considered as part of the reaction function for central banks. Monetary policy expansion (decrease in the repo rate) affects the short-term money market rates and subsequently long term rates. These money market rate adjustments lower investment returns on domestic investment thus causing an outflow of financial capital and exchange rate depreciation. This expansions change banks and building society lending house prices and equity withdrawal. Asset prices such as stock prices and real estate prices lose their value affecting the economic activity as a whole (Fetai & Izet, 2012).

The monetary transmission mechanism

Other asset price effects: investment (Tobin's q)

- The investment channel (Tobin's q):

$$i \downarrow \Rightarrow Pe \uparrow \Rightarrow q \uparrow \Rightarrow 1 \uparrow \Rightarrow y \uparrow \Rightarrow \Pi \uparrow \quad (8)$$

Consider two ways of increasing the size of a firm:

- ✓ buy another firm (and acquire 'old' capital); or
- ✓ invest in new capital
- The ratio of the market value of a firm to the replacement cost of its assets is known as Tobin's q
- Tobin (1969) argued that a firm should invest in new buildings and equipment if the stock market will value the project at more than its cost (that is, if the project's q is greater than 1)
- Increased equity prices (P_e) mean that new investment projects have become relatively cheaper to finance and therefore more attractive

Other asset price effects: consumption

Other asset price effects: consumption

$$i \downarrow \Rightarrow Pe \uparrow \Rightarrow TW \uparrow \Rightarrow C \uparrow \Rightarrow y \uparrow \Rightarrow \Pi \uparrow \quad (9)$$

- The permanent income hypothesis postulates that consumers' spending is related to (total) wealth
- Increased wealth (as a result of higher equity prices, P_e, say) — if it is perceived to be permanent — leads to a (much smaller) increase in (desired) consumption

The monetary transmission mechanism

Other asset price effects: housing wealth

- Other asset price effects: housing wealth

$$i \downarrow \Rightarrow P_h \uparrow \Rightarrow TW \uparrow ? \Rightarrow C \uparrow \Rightarrow y \uparrow \Rightarrow \Pi \uparrow \quad (10)$$

- Increased house prices (rh) are often associated with increased private consumption.

Housing wealth represents greater wealth for some (but for the economy as a whole);
Housing wealth increases available collateral and therefore reduces credit constraints; and
People may be more likely to change house or spend on improvements/consumer durables (in a process called mortgage equity withdrawal) the monetary transmission mechanism (Lacoviello, 2005).

III. Theoretical Framework

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 argued 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.

(i) Transaction demand for money

The first motive for demand for money is the transactions. This demand refers to nominal balances that individuals hold in their pockets or wallets. Transaction balances depend on the amount of nominal income, the length of interval between receipts and disbursement, and the mechanism of obtaining and delivering cash to individuals (Dennis, 1981). Blinder (2013) stressed that the transaction motive for holding money is unconnected with the level of interest rate. It is also positively related to individual income; meaning that as income increases, the total number of transactions an individual makes increases. This relationship is represented as follows:

$$L(t) = L(Y) = kY \quad (11)$$

Where; L (t) is demand for transaction balances, $k =$ income balance coefficient, $Y =$ and nominal income.

(ii) Precautionary demand for money

Precautionary demand for money is one of the major innovations by Keynes in the money demand theory. Keynes argues that people hold money to meet unforeseen (unexpected) expenses such as medical bills, car accidents and any other expenses that require immediate payment (Dennis, 1981). Keynes believes that these balances are held over and above what he terms the 'normal' requirements of planned expenditure. Therefore, he lumped together the transaction demand and precautionary demand for money. So the demand for transaction balances includes the demand for precaution balances.

(iii) Speculative demand for money

The third purpose for holding money is the speculative purpose. Keynes regards money as an asset like other assets that earns return and has an opportunity cost. Although money has a zero rate of return, the opportunity cost of holding money is the interest rate. Therefore lending or investing the money in other assets such as bonds can earn the holder interest. However, there is a risk associated with any asset, hence the return earning on the asset depends on the future interest and the inflation rate. Inflation reduces the purchasing power of money; this reduces the speculative demand for money. Therefore in Keynesian economics the demand to hold speculative balance is a decision to liquidate cash or interest bearing bonds (Belke & Polleit, 2009). The speculative demand for balances is as follows:

$L(s) = L(r) = R - dr \quad (12)$

Where

R=autonomous speculative component, *d*=interest elasticity, *r*=representative interest rate.
The total demand for money (Md.) therefore combines the demand for transaction balances and speculative balances, which varies positively with income and negatively with interest rate.

$$Md = L\,(Y, r) \tag{13}$$

Where, *Y* is the income and *r* is the interest rate. A rise in income leads to more transactions thereby requires increase in money supply. While a rise in the interest rate increases the opportunity cost of holding money thereby reducing the real demand for money balances at the existing level of money supply. Interest rate in the liquidity preference theory is different from the natural interest rate determined in the general equilibrium under neoclassical theory. Natural rate of interest is the interest rate that makes savings equal to investment demand in neoclassical economics. Belke & Polleit (2009) and Sorenson & Whitta-Jacobsen (2005) reveal that this natural real interest rate is determined by real factors productivity and real saving rate. Hence, in the neoclassical monetary theory, real interest rate is real factor phenomenon. The money market equilibrium condition for real balances is now defined as follows:

$$\frac{M}{P} = L\left(r + \pi^{e}, Y\right), \tag{14}$$

Whereby M is the money supply, P is the price level, *r* is the real interest rate, π and π^{e} is the rate of inflation and expected inflation. The interest rate rule is implicitly given as follows:

$$r = r\,(Y, \pi), \tag{15}$$

$$M = L\left(r\,(Y, \pi) + \pi^{e}, Y\right), \tag{16}$$

While the nominal money supply endogenously is determined by interest rate rule, expected inflation and output. In this arrangement, money supply is less relevant and thus dumped to the background as information variable.

Monetarist 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.

Gurley and Shaw Hypothesis

According to Gurley and Shaw (1955), it is the non-bank financial institutions that provide liquidity and safety to financial assets and help in transferring funds from ultimate lenders to ultimate borrowers for productive purposes. Thus, the quantity and composition of financial variables induce economic growth through increase purchase of financial assets. The buying of primary securities from ultimate borrowers and selling indirect securities to the ultimate lenders influence the availability of credit and of course, the structure and level of interest rate in the economy.

Rational Expectations Theory

Rational expectations theory formulated by John F. Muth in 1960 state that the players in an economy will act in a way that conforms to what can logically be expected in the future. That is, a person will invest; spend according to what he or she rationally believes will happen in the future. Although this theory has become quite important to economics and financial analysts, its utility is doubtful. For example, an investor thinks a stock is going to go up, and by buying it, this act actually causes the stock to go up. This same transaction can be framed outside of rational expectations theory. An investor notices that a stock is undervalued, buys it, and watches as other investors notice the same thing, thus pushing the price up to its proper market value. This is the problem with Nigerian stock market trying to restore market confidence since after the global financial crunch. The general expectation of Nigerian investors is pessimistic and hence the market is dragging irrespective of the innovations introduced by the regulatory agency and the Nigerian stock exchange.

Empirical Review

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.

Akani (2013) studied the relationship between inflation rate, interest rate, money supply on aggregates stock prices in Nigeria from 1985-2011 using Granger causality, Johansen co-integration and Vector Error Correction Model. Findings revealed that changes in the variables exists significant impact on aggregate stock price.

Arturo (2001) used the income-saving equation for indentifying the effects of securitization on the monetary policy transmission mechanism. The author concluded that the housing investment and real output both have less sensitivity to the real interest rate because there is increase of asset securitization in 1980s and 1990s. This implies that interest rates are not directly related to the securitization largely affected channels.

Noyer (2007) points out that there is increase in the effectiveness of monetary policy due to the financial innovation through the interest rate channel. According to the author financial innovation leads to decrease the transaction cost with the result of increase in holding of financial asset and facilitate the funding and investment strategies. Firms have large access to securities markets due to the financial innovations which leads to decrease the information asymmetries.

Ho (2006) noted that transmission mechanism can be affected by those financial developments which have the impact on the financial market conditions. The author found the three main channels that can affect the monetary policy which are the interest rate channel, asset channel and the channel of exchange rate. He further argues that the financial innovation leads to improve the economic agent's ability to lock in current interest rate for future funding needs.

Ignazio (2007) observed that due to the financial innovation economic agents have a large range of financing and investment opportunities. The strength and speed of monetary policy transmission mechanism is affected with the developments in the financial sector in the economy. These developments lead to more liquid and complete financial markets and the cost of investment financing and return on saving affects the whole economy.

Boivin and Giannoni (2002 and 2006) estimate a VAR over two samples corresponding to the pre- and post-Volcker periods (pre- and post-1979) and identify the monetary policy shock using a recursive identification scheme. They find that exogenous changes in monetary policy have had a smaller effect in the post Volcker period: for instance, they report that the through response of output in the post-1979:4 period is about a quarter of that in the previous period.

Canova and Gambetti (2009) find out strategy that monetary policy shocks are identified through sign restrictions and real economic activity has become more responsive to monetary policy shocks on impact. A careful look at the relationship between the strategy adopted and the results obtained provides some clues that are useful to sort out this conflicting evidence.

Mojon and Peersman (2003) examine the monetary transmission process in 10 countries in the Euro area. Using the method of structural VAR, they evaluate cross-country differences in the transmission mechanism. Mojon and Peersman included variables such as world commodity price index, US GDP and short term interest rates.

Al-Raisi, Pattanaik and Al-Raisi (2007) investigate the transmission mechanism in Oman, using two econometric methods which include the structural New Keynesian model with three equations (Output gap, New Keynesian Phillips curve and monetary policy reaction function), and the SVAR approach. The structural

equation model and SVAR both produce evidence that suggests that changes in interest rates do not influence aggregate demand and aggregate supply in Oman. They noted that these results are ascribed to the lack of responses by market-determined interest rate to interest rate policy in Oman.

Kapur & Patra (2010) applied the Generalized Method of Moments (GMM) to estimate the structural New Keynesian model in order to examine monetary policy effects without any reference to money supply in India. They modeled monetary policy within the so-called 'live policy-making environment' as referred to by Westerway (2002). The sample period is from 1997 to 2009 and the variables in the model are: GDP, GDP deflator, repo rate by the Reserve Bank of India, US Federal Fund rate and the World index on non-fuel commodity prices. Evidence from their model suggests that aggregate demand as measured by output gap reacts to monetary policy through the interest rate channel.

Kapur & Patra (2010) also found that aggregate demand reacts with at least three quarters delay; while inflation takes seven quarters to react to a change in the interest rate in India. They conclude that monetary policy has an impact on real activity and inflation with waning effects in the long run. Kapur and Patra's study resonates well with our thesis that embraces the consensus view which does not emphasize the role of money.

Antigi-Ego (2000) examines how interest rate compares with monetary base targeting as a monetary policy instrument in the Ugandan economy. He constructed a small structural VAR model that captures the structural dynamic features representing Uganda's economy. Antigi-Ego used the model to compare the monetary base and interest rate operating procedures for monetary policy with a sample from 1981 to 1997. The SVAR results indicate that the transmission effects from interest rate is rapid compared to the effects from base money. He claimed that it takes less than six months for a 1% rise in the interest rate to cause an approximately equal fall in inflation. Antigi-Ego reveals that base money is slower in Uganda and that transmission effects take a year for a change in base money to impact on the interest rate through the money market. Therefore, he argues that there is favorable evidence to support a move to an interest rate setting strategy in Uganda.

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.

Sengonul and Thorbecke (2005) examined the effects of monetary policy contraction on banks with weak balance sheets in Turkey. Using the Kashyap and Stein methodology, the results indicate that banks with weak balance sheets curtail their lending in the wake of new increases in the interest rate. Thus, Sengonul and Thorbecke (2005) argue that banks apply this strategy in order to rebuild their liquidity positions.

Suzuki (2004) investigates the evidences on both views of the credit channel in the Japanese economy. Suzuki's structural VAR model includes the following variables: output, consumer price index, monetary aggregates and overnight call rate for interest rate (proxy for a Japanese central bank instrument), base money, and quantity of loan outstanding, loan price, exchange rate, and US federal interest rate. Suzuki finds evidence that monetary policy tightening in Japan affects the real economy by shifting the supply schedule of bank loans. However, he also indicates that it is difficult to tell whether this contraction in bank loans is a result of the leftward shift in supply of loans or the leftward shift in the demand schedule of loans.

Gordon (2008) found out that bank business lending in each window period rises and there is no evidence of decline until the Federal Reserve begins to reverse the policy. Furthermore, results show that bank business lending lags behind economic activity. All in all, during the policy windows, there was no evidence that monetary policy tightening constrained bank business lending; however, they pointed out that this result does not indicate that credit channel is unimportant or that none existed.

Benarnke and Kiyotaki (1999) showed that there is a strong link between asset prices and monetary policy with empirical evidence supporting the assumption that a strong sustained growth in asset prices may lead to more borrowing by households and firms. This evidence shows that asset price provides valuable information to determine monetary policy.

Goodhart and Hofmann (2007) examined the predictive power of asset prices on output gap and CPI inflation in the G7 countries. From the identified VAR they find that asset prices significantly affect output gap but the response of inflation was generally insignificant. They argued that this might be explained by the forward-looking nature in stock price movements. Monetary policy affects the financial health of firms through debts repayment, firms' investments and their ability to borrow from the financial markets. This relationship is suggested by the Tobin-q theory of investment, which says that investment activity is determined by the ratio of market value to cost of acquiring it.

Bofinger (2001) argued that monetary policy rates have a strong direct and important effect on firms' balance sheets by reducing or increasing firms' profits and this has final implications for overall investments and firms' demand for labour. Finally, the asset price channel also works through balance sheets as property prices affect financial institutions' willingness to lend. This channel is similar to the credit channel discussed in the last section.

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.

Abradu-Otoo, Amoah, and Bawumia (2003) used a structural vector error correction model to examine monetary policy effect through the exchange rate channel. Using a system of seven variables they found strong evidence that the exchange rate channel is the main medium through which monetary policy effects are transmitted to output and inflation. However, in a fixed exchange rate economy monetary policy effects are transmitted through import prices of goods and services from the anchor country. The effects of domestic monetary policy on exchange rates are curtailed by the exchange rate peg. Another route through which exchange rate effects are transmitted is the future expectation of future exchange rate changes in the anchor country. This happens when nominal interest rate affects the long-term rate thereby changing expectations regarding the future exchange rates.

Bernanke (2003) studied the relationship between US price index and macroeconomic variables using quarterly data from 1975-1999 using Johansen co-integration and Vector Error Correction Model (VECM). Findings revealed that stock price has positive relationship between industry output, inflation, money supply, short term interest rate and exchange rate. The causality relationship revealed that the macroeconomic variables in the study cause the stock price in the long run but not in the short-run.

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.

Ferrero and Secchi (2010) studied the relationship between macroeconomic variables and stock market index of New Zealand from January 1990 to January 2003 by employing cointegration and Granger causality test. Findings revealed long-run relationship between the macroeconomic variables and stock price. The Granger causality test revealed that stock index was not a leading indicator for changes in macroeconomic variables. The general finding showed that the stock market index was consistently determined by interest rate, money supply and real GDP. Abugri (2008) examined the relationship between money supply and stock return in Brazil and Argentina; finding indicates that responses of return to money supply are negative and significant in the countries but insignificant in determining the stock prices of Mexico and Chile.

Nishat and Shaleen (2004) indicates that Kenachi stock exchange index and money supply (M1) are co-integrated and two-term equilibrium relationship exist between the variables, that money supply does Granger cause stock price movement. Karamustafa and Kucukkale (2003) found that stock price is neither the result variable nor the cause variable of money supply while Oztuk (2008) found that money supply does Granger cause the Stock return but stock return does not Granger cause Central Bank money. Eze (2011) examined the relationship between monetary policy and the stock market performance in Nigeria. The study employed Ordinary Least Square, co-integration and Error Correction Model; Findings revealed that stock market performance is strongly determined by broad money supply, exchange rate and consumers' price index in the short and the long run.

Maku and Atannda (2010) examined the determinants of stock market performance in Nigeria. The study used Augmented Dickey Fuller Unit Root Test, Augmented Eigen Granger Co-integration test and Error Correction Model. The result revealed that Nigerian stock price All Share Index is more significant to variation in Exchange rate, Inflation rate, and Money supply and real output.

Boivin and Marc (2002) suggest that there was evidence of important changes in the transmission of monetary policy since the start of European Monetary Union. They also found that the exchange rate channel had become more powerful in the monetary union period than in the previous decade. They used a Factor Augmented Vector Auto regression model proposed by Barnanke. The author limited the sample data to six largest European economies Germany, France, Italy, Spain, Netherlands and Belgium.

Karagiannis (2010) suggest that Money Market (MM) rate compared to the Central Bank (CB) rate is more effective as a policy vehicle variable in the Euro-Zone. They used monthly data from the USA and Euro-zone. More so and found that not all of the change in the policy rate is transmitted to the loan rates. His findings in the USA analysis were that CB rate increases and decreases are both transmitted to the deposit and loan rates and that MM rate is not transmitted to the retail rates which probably show that the MM does not work effectively as a policy vehicle variable in the USA.

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'sstudy 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 CP1 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 effe3ct 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.

Maturu, Kethi and Maana (2006) found that contrary to other researcher's evidence that inflation is one of the most dominant determinants of money; the researcher's results suggest it not. Moreover, results suggest that interest rate shock temporarily reduced real output for the first 4 months and permanently reduces money demand/supply and inflation. That interest rate interpreted as monetary tightening significantly and permanently reduces headline inflation and therefore interest rate channel is operational in Kenya. The author noted that repo rate is potentially more useful as a policy instrument compared to reserve money. This is because it predominantly self driven and hence more of an exogenous variable than reserve money. He used a SVAR considering eight endogenous variables assuming a small open economy.

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.

Ludi and Ground (2006) used the VAR approach to investigate the Bank lending channel in South Africa, citing its ability to incorporate endogenity and the fact that it is pervasive in nature, because everything affects everything else. Results suggest that loans in South Africa are governed by consumer demand and not by bank supply which tends to disapprove the fact that bank lending channel has effectively worked as a tool of monetary policy in South Africa. They suggest further research since with presence of demand driven loans in essence nullifies the bank lending channel.

Kendall Patrick (2001) examined determinants of interest rates in the Caribbean he used the VAR estimation model and impulse response function (IRF) in his analysis. The author emphasized on the timing and effects of monetary policies on the economy. The researcher used five variable VAR i.e. the lending rate, deposit rate, discount rate Tb rate and found that the *R* was greater than 0.7 after running the regression. In addition he found that it was difficult to discern response pattern of Tb rates in Barbados, Belize, Guyana and Jamaica but response was strongest and most consistent in Bahamas and Trinidad.

Cheng (2006) discovered that Kenya's nominal exchange rate is highly susceptible to monetary policy with appreciation following an increase in the short term interest rates and that monetary policy seemed to have little impact on real output. The author used the vector autoregressive model, using data between 1997 and

2005. His findings suggest that the possible explanation for the sluggish response of output to monetary policy shock is the weak financial system, plagued with structural weaknesses.

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.

Nyamongo and Ndirangu (2010) examined financial innovation and monetary policy in Kenya, noted that financial innovation has dad positive outcomes and seem to improve the interest rate channel of monetary policy transmission. The study was conducted using data from period 1998-2012. Tests were carried out on stability of velocity of circulation, money multiplier and money demand with use of impulse response function with results showing that innovation has improved the monetary policy environment in Kenya.

Misati, Njoroge, Kamau and Ouma (2010) differ from those of Nyamongo and Ndirangu (2013) examined financial innovation and Monetary policy transmission, applied use of two stage least square (2SLS) and monthly data covering period 1996-2007. Based on their findings, they concluded that financial innovation poses complex challenges to the conduct of monetary policy and thus financial innovation dampens the interest rate channel of monetary transmission mechanism.

IV. Methodology

In carrying out country-specific and time-series analysis of data in financial econometrics, it is important to examine the stationarity properties of the time series. A time series is stationary if its mean, variance and auto-covariance are not time-dependent. Hence any series that is not stationary is called non-stationary. Two basic types of time series models exist and these are autogressive (AR) models and the moving average process (MA).

An AR model is one where the current value of a variable Y depends upon only the values that the variable took in previous periods plus an error term. Thus, an AR model of order P, denoted as AR (Ip) can be expressed as:

$Y_t = \square + \phi Y_{t-1} + \phi_2 Y_{t-2} + \ldots \phi Y_{t-p} + \square_4$ (17)

Where $\square_4$ is a white noise disturbance term. Alternatively, eq (12) can be written as:

$Y_t = \square + \sum \phi_1 Y_{t-1} + \square_4$ (18)

Where $\square$ is a constant and $\phi_1 \ldots . \phi_p$ are parameters of the model or using the lag operator, it becomes:

$$\sum_{i=1}^{\rho}$$

$Y_1 = \square + \phi_1 L^1 Y_1 \square_4$ (19)

Or $\phi(L) Y_t = \square + \square_t$ (20)

Where;

$\phi(L) = (1 - \phi_1 L - \phi_2 L^2 \ldots \phi_\rho L^\rho)$ (21)

On the other hand, if $U_t$is a white noise process with E (U_t) = 0 and Var (Ut) = a^2, then

$Yt = \square + U_t + \phi_1 U1\ U_{t-1} + \phi_2 U_{t-2} + \ldots\ldots\ldots + \phi_q Ut\text{-}q$ (22)

is a q^{th} moving average model denoted MA (q). eq. (5) can be restated as:

$$Y_t = \alpha + \sum_{i=1}^{q} \phi_1 U_{t-1} + U_t \quad (23)$$

Thus, a moving average (MA) model is linear combinations of white noise process such that Y_t is a function of current and lagged values of a white noise disturbance process. (Brooks, 2008). Using the lag operator notation, equation (17) becomes:

$$Y_t = \alpha + \sum_{i=1}^{q} \phi_i L^i U_t + U_t \quad (24)$$

Or as $Y_t = \alpha + \phi(L)\, U_t$ where

$$\phi L = 1 + \phi_1 L + \phi_2 L^2 + \ldots\ldots\ldots + \phi_q L^q \quad (25)$$

However, by combining this AR (p) and MA (q) models an ARMA (p,q) model is obtained. Thus, in an ARMA model, the current value of some series Y_t depends linearly on its own previous values plus a combination of current and lagged values of a white noise error term. This can be stated as:

$$Y_t = \square + \phi_1 Y_{t-1} + \phi_2 Y_{t-2 + \ldots + \phi_p} Y_{t-p +} \phi_1 U_{t-1} + \phi_2 U_{t-2} + \ldots \phi_q U_{t-q} \quad (26)$$

Where

$$E(U_t = 0);\ E(U_t^2) = \square^2;\ E(U_t\, U_3) = 0,\ t \neq s \quad (27)$$

It is evident from the foregoing that stationarity in a time series is a desirable property for an estimated AR model. The reason being that a model whose co-efficients are non-stationary will have a non-declining effect on the current values of Y_t as time progresses which is counter productive, empirically defective and could lead to spurious regressions.

The literature of financial econometrics is replete now with ample tests for stationarity in time series data as well as different treatments to induce stationarity. Hence, in this paper, the Augmented Dickey – Fuller (ADF) (1981), unit tests are employed to check whether the series data are stationary or not. That is, consider an AR (1) process:

$$Y_t = \square + \phi\, Y_{t-1} + \square_4 \quad (28)$$

Where $\square$ and ϕ are parameters of the model and $\square_4$ is a white noise disturbance term. Y_t is stationary, if and only if, $-1 < 1\phi 1 < 1$. However, if $\phi = 1$, then Y_t is a non-stationary series. That is, if the time series is started at some point (t), the variance of X_t increases steadily with time and goes to infinity. On the other hand, if the absolute value of $1\phi 1$ is more than t, then the series Y_t is explosive. Hence, the hypothesis of a stationary series is usually tested whether the absolute value $1\phi 1$ is strictly less than unity. Thus, for testing unit root, Y_{t4} is subtracted from both sides of eq.(10), then we have:

$$\Delta Y_t = \square + \Psi Y_{t-1} + \square_4 \quad (29)$$

Where $\Psi = (\phi - 1)$ and the null hypothesis can be tested as Ho: $\Psi = 0$. This unit root test is however only applicable where the series is an AR (1) process. For higher order serial correlation in the series, the assumption of white noise disturbance term is violated. However, the ADF test corrects for high order correlation by making the assumption of an AR(p) process as:

$$\Delta Y_t = \square + Y_{t-1} + \sum_{j=1}^{p} \Delta Y_{t-j +} \square_4 \quad (30)$$

That is, the additional lagged terms are included to ensure that the errors are uncorrelated. Hence, if the calculated i=1ADF statistic is less than their critical values from the fuller's table, then the null hypothesis Ho: $\Psi = 0$ is accepted and the series are non-stationary or not integrated of order zero. Thus, to induce stationarity, many time series need to be appropriately differenced. Hence, a time series is said to be integrated of order d, if it has become stationary after differencing it d times. (Brooks, 2008).

In this paper, we examine whether the time series are co-integrated by adopting the method of Granger (1969). That is, two or more variables are said to be co-integrated if each variable individually is integrated of order one, but a linear combination of the variables is integrated of lower order say zero.

Thus, a long-run relationship between the variables is present when there exists at least one co-integrating vector. That is, if Y_{1t} and Y_{2t} are co-integrated 1 (1) so that $\square$ t, 1(0), then this implies that there exists a long-run equilibrium between Y_{1t} and Y2t to which the system converges overtime and the disturbance term can be construed as the disequilibrium error. The first step in the Engle and Granger (1987) co-integration method is to estimate the co-integrating equation.

$$Y_t = \square_0 + \square_1 X_t + U_t \quad (31)$$

and then to calculate the residual

$$U_t = Y_t - \square_0 - \square_1 X_t \quad (32)$$

Then we check the stationarity of the residuals. Hence, if Y and X are co-integrated the error term will be stationary and this is accomplished by testing the residuals of co-integrating regression for stationarity by performing ADF unit root tests.

Granger Causality Test

Thus, Granger causality test helps in adequate specification of model. In Granger causality, test, the null hypothesis is that no causality between two variables. The null hypotheses is rejected if the probability of F* statistics given in the Granger causality result is less than 0.05. Therefore, in this study, we will carry out a granger causality between an independent variables monetary policy transmission mechanism and the dependent variable Liquidity of the Capital Market in Nigeria.

The pair-wise granger causality test is mathematically expressed as :

$$Y_t \pi_o + \sum_{i=1}^{n} x_1^{\ y}\ Y_{t-1} \sum_{i=1}^{n} \pi_1^{\ x}\ x_{t-1} + u_1 \qquad (33)$$

and

$$x_t dp_o + \sum_{i=1}^{n} dp_1^y\ Yt-1 \sum_{i=1}^{n} dp1^x x_{y-1} + V_1 27 \qquad (34)$$

Where x_t and y_t are the variables to be tested white u_t and v_t are the white noise disturbance terms. The null hypothesis $\pi_1^y = dp_1^y = 0$, for all I's is tested against the alternative hypothesis $\pi_1^x \neq 0$ and $dp_1^y \neq 0.$ if the co-efficient of π_1^x are statistically significant but that of $dp1y$ are not, then x causes y. If the reverse is true then y causes x. however, where both co-efficient of π_1^x and dp_1^y are significant then causality is bi –

$$LIQCM_t = \alpha_{2t} + \sum_{j=1}^{n} \phi_{2j} TBR_{t-j} + \sum_{j=1}^{n} \beta_{2j} SR_{t-j} + \sum_{j=1}^{n} \lambda_{2j} PLR_{t-j} + \sum_{j=1}^{n} \theta_{2j} NDC_{t-j} + \sum_{j=1}^{n} \delta_{2j} MPR_{t-j} + \sum_{j=1}^{n} \gamma_{2j} MLR_{t-j} + \sum_{j=1}^{n} \varsigma_{2j} EXR_{t-j} + \sum_{j=1}^{n} \vartheta_{2j} CPS_{t-j}/GDP_{t-j} + \mu_t \qquad 35$$

$$TBR_t = \alpha_{2t} + \sum_{j=1}^{n} \phi_{2j} LIQCM_{t-j} + \sum_{j=1}^{n} \beta_{2j} SR_{t-j} + \sum_{j=1}^{n} \lambda_{2j} PLR_{t-j} + \sum_{j=1}^{n} \theta_{2j} NDC_{t-j} + \sum_{j=1}^{n} \delta_{2j} MPR_{t-j} + \sum_{j=1}^{n} \gamma_{2j} MLR_{t-j} + \sum_{j=1}^{n} \varsigma_{2j} EXR_{t-j} + \sum_{j=1}^{n} \vartheta_{2j} CPS_{t-j}/GDP_{t-j} + \mu_t \qquad 36$$

$$SR_t = \alpha_{2t} + \sum_{j=1}^{n} \phi_{2j} LIQCM_{t-j} + \sum_{j=1}^{n} \beta_{2j} TBR_{t-j} + \sum_{j=1}^{n} \lambda_{2j} PLR_{t-j} + \sum_{j=1}^{n} \theta_{2j} NDC_{t-j} + \sum_{j=1}^{n} \delta_{2j} MPR_{t-j} + \sum_{j=1}^{n} \gamma_{2j} MLR_{t-j} + \sum_{j=1}^{n} \varsigma_{2j} EXR_{t-j} + \sum_{j=1}^{n} \vartheta_{2j} CPS_{t-j}/GDP_{t-j} + \mu_t \qquad 37$$

$$PLR_t = \alpha_{2t} + \sum_{j=1}^{n} \phi_{2j} LIQCM_{t-j} + \sum_{j=1}^{n} \beta_{2j} TBR_{t-j} + \sum_{j=1}^{n} \lambda_{2j} SR_{t-j} + \sum_{j=1}^{n} \theta_{2j} NDC_{t-j} + \sum_{j=1}^{n} \delta_{2j} MPR_{t-j} + \sum_{j=1}^{n} \gamma_{2j} SR_{t-j} + \sum_{j=1}^{n} \varsigma_{2j} EXR_{t-j} + \sum_{j=1}^{n} \vartheta_{2j} CPS_{t-j}/GDP_{t-j} + \mu_t \qquad 38$$

$$NDC_t = \alpha_{2t} + \sum_{j=1}^{n} \phi_{2j} MLR_{t-j} + \sum_{j=1}^{n} \beta_{2j} CPS/GDP_{t-j} + \sum_{j=1}^{n} \lambda_{2j} NDC_{t-j} + \sum_{j=1}^{n} \theta_{2j} LIQCM_{t-j} + \sum_{j=1}^{n} \delta_{2j} MPR_{t-j} + \sum_{j=1}^{n} \gamma_{2j} SR_{t-j} + \sum_{j=1}^{n} \varsigma_{2j} EXR_{t-j} + \sum_{j=1}^{n} \vartheta_{2j} CPS_{t-j}/GDP_{t-j} + \mu_t \qquad 39$$

$$MPR_t = \alpha_{2t} + \sum_{j=1}^{n} \phi_{2j} PLR_{t-j} + \sum_{j=1}^{n} \beta_{2j} MLR_{t-j} + \sum_{j=1}^{n} \lambda_{2j} CPS/GDP_{t-j} + \sum_{j=1}^{n} \theta_{2j} NDC_{t-j} + \sum_{j=1}^{n} \delta_{2j} LIQCM_{t-j} + \sum_{j=1}^{n} \gamma_{2j} SR_{t-j} + \sum_{j=1}^{n} \varsigma_{2j} EXR_{t-j} + \sum_{j=1}^{n} \vartheta_{2j} CPS_{t-j}/GDP_{t-j} + \mu_t \qquad 40$$

$$MLR_t = \alpha_{2t} + \sum_{j=1}^{n} \phi_{2j} MPR_{t-j} + \sum_{j=1}^{n} \beta_{2j} PLR_{t-j} + \sum_{j=1}^{n} \lambda_{2j} MLR_{t-j} + \sum_{j=1}^{n} \theta_{2j} CPS/GDP_{t-j} + \sum_{j=1}^{n} \delta_{2j} NDC_{t-j} + \sum_{j=1}^{n} \gamma_{2j} LIQCM_{t-j} + \sum_{j=1}^{n} \varsigma_{2j} EXR_{t-j} + \sum_{j=1}^{n} \vartheta_{2j} CPS_{t-j}/GDP_{t-j} + \mu_t \qquad 41$$

$$EXR_t = \alpha_{2t} + \sum_{j=1}^{n} \phi_{2j} SR_{t-j} + \sum_{j=1}^{n} \beta_{2j} MPR_{t-j} + \sum_{j=1}^{n} \lambda_{2j} PLR_{t-j} + \sum_{j=1}^{n} \theta_{2j} MLR_{t-j} + \sum_{j=1}^{n} \delta_{2j} CPS/GDP_{t-j} + \sum_{j=1}^{n} \gamma_{2j} NDC_{t-j} + \sum_{j=1}^{n} \varsigma_{2j} LIQCM_{t-j} + \sum_{j=1}^{n} \vartheta_{2j} CPS_{t-j}/GDP_{t-j} + \mu_t \qquad 42$$

$$CPS/GDP_t = \alpha_{2t} + \sum_{j=1}^{n} \phi_{2j} EXR_{t-j} + \sum_{j=1}^{n} \beta_{2j} SR_{t-j} + \sum_{j=1}^{n} \lambda_{2j} MPR_{t-j} + \sum_{j=1}^{n} \theta_{2j} PLR_{t-j} + \sum_{j=1}^{n} \delta_{2j} MLR_{t-j} + \sum_{j=1}^{n} \gamma_{2j} CPS/GDP_{t-j} + \sum_{j=1}^{n} \varsigma_{2j} NDC_{t-j} + \sum_{j=1}^{n} \vartheta_{2j} LIQCM_{t-j} + \mu_t \qquad 43$$

Vector Error Correction (VEC) Technique

The study investigates the error correction mechanism for the hypotheses using Vector Error Correction (VEC) model. The presence of co-integrating relationship forms the basis of the use of Vector Error Correction Model. E-views econometric software used for data analysis, implement vector Auto-regression (VAR)- based co-integration tests using the methodology developed by Johansen (1991,1995). The non-standard critical values are taken from Osterward Lenun (1992).

MODEL SPECIFICATION

The multiple regression model is specified as follows:

LIQCM = f(TBR, SR, PLR, NDC, MPR, MLR, EXR, CPS/GDP) 44

Transforming equ (44) into a testable form, we obtain the following regression equation;

LIQCM = $\beta_0 + \beta_1 TBR + \beta_2 SR + \beta_3 PLR + \beta_4 NDC + \beta_5 MPR + \beta_6 MLR + \beta_7 EXR + \beta_8 CPS/GDP + \mu$ 45

Where;

LIQCM = Liquidity of Capital Market measure as Total Market Capitalization to Turn over

TBR = Treasury Bill Rate proxy for Asset pricing channel
SR = Savings Rate proxy for Interest rate channel
PLR = Prime Lending Rate proxy for Interest rate channel
NDC = Net Domestic Credit proxy for credit channel
MPR = Monetary Policy Rate proxy for Interest Rate channel
MLR = Maximum Lending Rate proxy for Interest Rate channel
EXR = Naira Exchange Rate per US Dollar proxy for Exchange Rate channel

CPS/GDP = Credit to Private Sector to Gross Domestic Product
μ = Error Term
β_0 = Regression Intercept
β_1- β_8 = Coefficient of the Independent Variables to the dependent variable
apriori expectation = $\beta_1>\beta_0$, $\beta_2>\beta_0$, $\beta_3>\beta_0$, $\beta_4>\beta_0$, $\beta_5>\beta_0$, $\beta_6>\beta_0$, $\beta_7>\beta_0$, $\beta_8>\beta_0$

ECOMETRIC ANALYSIS AND PRESENTATION OF RESULTS

Table 1: Level Series OLS multiple Regression Summary Results

VARIABLE	COEFFICIENT	STD ERRS.	T-STATISTICS	PROB.
TBR	-0.433691	0.202964	-2.136790	0.0466*
SR	0.183633	0.268193	0.684703	0.5023
PLR	0.175868	0.155255	1.132768	0.2722
NDC	-0.000123	0.007084	-0.017358	0.9863
MPR	0.621664	0.224378	2.770612	0.0126*
MLR	-0.273887	0.213293	-1.284089	0.2154
EXR	0.049098	0.024778	1.981509	0.0630
CPS_GDP	0.282637	0.110714	2.552844	0.0200*
β_0	-0.409237	4.588718	-0.089183	0.9299
R2	0.818240			
ADJ. R2	0.717262			
F-STATISTICS	8.103151			
F-PROB	0.000076			
Durbin-Watson stat	1.601006			

Source: Extracts from E-view print out and author's computation.
*** is significant at 5% confidence level.**

Co-efficient of Determination (R2) explains the proportion of the total variations in the dependent variablethat is attributable to the variations in the independent variable. From table 1, it was revealed that about 81.8%(0.818) of the variations in the dependent variable are attributable to variations in the independent variables.

The ***Adjusted Co-efficient of Determination (R2 Adjusted)*** which shows the actual variations inthe dependentvariable attributable to the independent variable, table 1 above reveals that the adjusted co-efficient ofdetermination is 0.717 which implies that the actual variation is 71.7% as against the 81.8% suggested bynormal R^2.

The ***Student t-test (t-test)*** shows the significance of individual parameters used in the model reveal a significant estimate or as all variables under consideration at 5% level of significant. From the table, (TBR), (MPR) and (EXR) are statistically significant, while other variables are statistically not significant.

The ***F-Statistic (F-ratio)*** shows the overall significance of the model and evaluates the goodness of fit to predict the explanatory power of the model. The mean dependent variation and the standard variationshow that the variables vary within the time send. The model is significant because the calculated F-ratio of 8.103 isgreater than the table values of 3.92 at both 5% levels of significance and the probability value of 0.000076 less than the critical value of 0.05; we accept the alternate hypotheses that the model is significant.
The Durbin-Watson statistics which measures the serial auto regression and co linearity of the variables is 1.601006which is less than 2.00 and less than 3.00 which indicates the presence of positive serial autocorrelation between the variables and suggesting test inconclusive in the level series results also see OSL result in table 1.
This further indicates that there may be some degree of time dependence in the level series result which could lead to spurious regression results, suggesting the need for more rigorous analysis of the stationarity properties of the level series results. In view of the above analysis of the level series results, we proceed to the stationarity test.

TESTING FOR UNIT ROOT TEST (STATIONARITY TEST)

Therefore in view of the time-independent feature of our data, the variables were tested for unit root using the Augmented Dickey Fuller (ADF) test.

Table 2: Unit Root Test Summary Results at Level

VARIABLE	ADF STATISTICS	MACKINNON 1%	MACKINNON 5%	MACKINNON 10%	PROB.	ORDER OF INTR.	REMARK	DECISION
LIQCM	-2.555656	-3.646342	-2.954021	-2.615817	0.1122	1(0)	Not Stationary	Accept H_0
TBR	-2.826312	-3.646342	-2.954021	-2.615817	0.0655	1(0)	Not Stationary	Accept H_0
SR	-1.827750	-3.670170	-2.963972	-2.621007	0.3604	1(0)	Not Stationary	Accept H_0
PLR	-2.210633	-3.661661	-2.960411	-2.619160	0.2067	1(0)	Not Stationary	Accept H_0

NDC	-1.534823	-3.670170	-2.963972	-2.621007	0.0001	1(0)	Not Stationary	Accept H_0
MPR	-2.975529	-3.646342	-2.954021	-2.615817	0.0477	1(0)	Not Stationary	Accept H_0
MLR	-2.951262	-3.646342	-2.954021	-2.615817	0.0503	1(0)	Not Stationary	Accept H_0
EXR	-0.190415	-3.646342	-2.954021	-2.615817	0.9302	1(0)	Not Stationary	Accept H_0
CPS_GDP	-1.920270	-3.646342	-2.95401	-2.615817	0.3193		Not Stationary	Accept H_0

Source: Extracts form E-view pointout and author's computation.

Unit Root Test Summary Results at First Difference

LIQCM	-8.128077	-3.653730	-2.957110	-2.617434	0.0000	1(1)	Stationary	Reject H_0
TBR	-6.403094	-3.653730	-2.957110	-2.617434	0.0000	1(1)	Stationary	Reject H_0
SR	-5.809179	3.653730	-2.957110	-2.617434	0.0000	1(1)	Stationary	Reject H_0
PLR	-5.677449	-3.661661	-2.960411	-2.619160	0.0001	1(1)	Stationary	Reject H_0
NDC	-9.276781	-3.679322	-2.967767	-2.622989	0.0000	1(1)	Stationary	Reject H_0
MPR	-5.962927	-3.661661	-2.960411	-2.619160	0.0000	1(1)	Stationary	Reject H_0
MLR	-6.388511	-3.661661	-2.960411	-2.619160	0.0000	1(1)	Stationary	Reject H_0
EXR	-6.006947	3.653730	-2.957110	-2.617434	0.0000	1(1)	Stationary	Reject H_0
CPS_GDP	-5.726112	-3.661661	-2.960411	-2.619160	0.0000	1(1)	Stationary	Reject H_0

Source: Extracts from E-view print out and author's computation.

Table 2 above present the summary results of the ADF unit root tests. The results show that the null hypotheses of a unit root test for first difference series for all the variables can be rejected at all the critical values indicating that the level series which is largely time-dependent and non-stationary can be made stationary at the first difference and maximum lag of one. Thus, the reduced form model follows an integrating order of 1(1) process and is therefore a stationary process. It also reveals that the test of stationarity in the residuals from the level series regression is significant at all lags. Furthermore, this indicates that the regression is no more spurious but real. That is to say, all the variables are individually stationary and stable. At this level, all the t-statistic became significant at 5 percent. It is also important to establish the stationarity of the linear combination of the variables as to whether there could be a long-run or equilibrium relationship between the dependent variables and the independent variables (that is if they are co-integrated). We, therefore, tested for co-integration to establish long-run stationary or stable relationship using the Johansen Co-integration test.

Johansen co-integration test results sample test assumption: Linear deterministic trend in the data series TBR, MPR, MLR, SR, EXR and CPS – GDP

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

Hypothesized No. of CE(s)	**Eigen value**	**TRACE STATISTICS**	**0.05 Critical Value**	**Prob.****	**Decision**
None *	0.932248	202.6112	125.6154	0.0000	Reject H_0
At most 1 *	0.853717	129.9300	95.75366	0.0000	Reject H_0
At most 2 *	0.788020	78.03022	69.81889	0.0095	Reject H_0
At most 3	0.519048	36.14606	47.85613	0.3890	Accept H_0
At most 4	0.330257	16.38241	29.79707	0.6851	Accept H_0
At most 5	0.168979	5.559173	15.49471	0.7469	Accept H_0
At most 6	0.020581	0.561483	3.841466	0.4537	Accept H_0
Johansen Co-Integration Test Results: Maximum Eigen					
None *	0.932248	72.68126	46.23142	0.0000	Reject H_0
At most 1 *	0.853717	51.89976	40.07757	0.0015	Reject H_0
At most 2 *	0.788020	41.88416	33.87687	0.0045	Reject H_0
At most 3	0.519048	19.76365	27.58434	0.3577	Accept H_0
At most 4	0.330257	10.82324	21.13162	0.6649	Accept H_0
At most 5	0.168979	4.997691	14.26460	0.7421	Accept H_0
At most 6	0.020581	0.561483	3.841466	0.4537	Accept H_0

Source: Extracts from E-view print out and author's computation.

The above table shows the summary of results of Johansen Co-integration test, to test for the long run co-integration relationship between monetary policy transmission mechanism and liquidity of Nigerian Capital Market. From thetable, the model proved two co-integrating equations each for both trace tests and max-eigenvalue test with one to two lag intervals taken at 5 percent significant level.

Table 4: Normalized Cointegrating Equation

LIQCM	TBR	MPR	MLR	SR	EXR	CPS_GDP
1.000000	-3.659891	-3.157043	8.669997	-1.814158	0.282341	-2.403864
	(1.00904)	(1.16371)	(1.27818)	(0.15070)	(0.10207)	(0.53899)

Source: Extracts from E-view print out and author's computation.

The inability of the cointegration test to give the nature of relationship between the dependent and the independent variables gives us the opportunity to test for normalized cointergration. From the table, TBR, MPR, SR and CPS/GDP have negative long run relationship while MLR and EXR have positive long run relationship. The negative long run relationship is contrary to the expectation of the results and could be traced to monetary policy shocks within the period covered in this study.

Table 5: Parsimonious Error Correction Results

VARIABLE	COEFFICIENT	STD ERRS.	T-STATISTICS	PROB.
C	-0.086903	0.670548	-0.129600	0.8987
D(LIQCM(-1))	0.251487	0.437564	0.574743	0.5746
D(TBR(-1))	0.212965	0.374880	0.568089	0.5790
D(TBR(-2))	0.041916	0.163384	0.256551	0.8013
D(CPS_GDP(-1))	0.016251	0.158491	0.102533	0.9198
D(CPS_GDP(-2))	-0.130864	0.147043	-0.889975	0.3885
D(PLR(-1))	-0.231883	0.192997	-1.201487	0.2495
D(PLR(-2))	0.103413	0.264628	0.390786	0.7018
D(PLR(-3))	0.133018	0.247355	0.537763	0.5992
D(SR(-1))	-0.065632	0.430383	-0.152496	0.8810
D(SR(-2))	-0.124369	0.463820	-0.268141	0.7925
D(NDC(-1))	-0.006375	0.007775	-0.819984	0.4260
D(MPR(-1))	-0.343377	0.420413	-0.816761	0.4277
ECM(-1)	-1.381013	0.732201	-1.886112	0.0802
R2	0.511461			
ADJ. R2	0.057818			
F-STATISTICS	1.127453			
F-PROB	0.411737			
Durbin-Watson	2.113284			

Source: Extracts from E-view printout and authors computation
Sign at 5%

Analysis of parsimonious error correction model

From the parsimonious term regression results, the coefficient of determination adjusted for degree of freedom (adjusted R^2) reveal that the model can account for 55% systemize variation,on the dependent variable policy by capital market liquidity while the remaining 45% are explained by stochastic error term. An examination of the following which explain the overall significance of the model proves that the model is significant with the coefficient of 4.46 and the probability of 0.000000. This also implies that at this level the model is significant in explaining actual behavior of the dependent variable in the large run. The Durbin Watson statistics has a coefficient of 2.11.

Independent variables reveal that Treasury bill rate is due and one lag period is positive but insignificant relationship with the capital market liquidity.The coefficient of CPS/GSP at a period lag is positive but negative in this periods lags. The variable is statistically not significant as the P- value is greater than 0.05 at 5% level of significant prime lending rate have negative relationship with capital market liquidity at one period lag positively relate to the liquidity variable at two and three period lags, the coefficient of p-value accept the wall hypothesis. Savings rate, not domestic credit and monetary policy rate have negative effect on the dependent variable at the respective lags of one and two and prove statistically not significant.

Finally evidence from the table reveal that the ECM(-1) have a negative coefficient of 1.381013 at one lag period. Though the coefficient of ECM exceeds the normal value of the higher value however, prove the ability of the model to adjust to equilibrium at a greater speed of a given time lag. The coefficient of the ECM of 1.34 implies that the model can adjust at the speed of 134%l quantity. Some of the variables were found insignificant from the previous result and were omitted from the model.

Table 6: PAIR WISE CAUSALITY TEST

Null Hypothesis:	Obs	F-Statistic	Prob.	DECISION	Prob.	REMARK
TBR does not Granger Cause LIQCM	32	0.32046	0.7285	Reject H_0	No Sig.	No ca
LIQCM does not Granger Cause TBR		0.22729	0.7982	Accept H_0	No Sig.	No causality
SR does not Granger Cause LIQCM	32	4.98918	0.0143	Reject H_0	Sig.	causality
LIQCM does not Granger Cause SR		0.42375	0.6589	Accept H_0	No Sig.	No causality
PLR does not Granger Cause LIQCM	32	1.39682	0.2647	Accept H_0	No Sig.	No causality
LIQCM does not Granger Cause PLR		0.07974	0.9236	Accept H_0	No Sig.	No causality
NDC does not Granger Cause LIQCM	29	1.95295	0.1638	Reject H_0	No Sig.	No causality
LIQCM does not Granger Cause NDC		0.68893	0.5118	Accept H_0	No Sig.	No causality
MPR does not Granger Cause LIQCM	32	0.30714	0.7381	Reject H_0	No Sig.	No causality
LIQCM does not Granger Cause MPR		1.47673	0.2462	Accept H_0	No Sig.	No causality

MLR does not Granger Cause LIQCM	32	0.16843	0.8459	Reject H_0	No Sig.	No Causality
LIQCM does not Granger Cause MLR		0.74122	0.4860	Accept H_0	No Sig.	No causality
EXR does not Granger Cause LIQCM	32	3.00018	0.0666	Reject H_0	No Sig.	No causality
LIQCM does not Granger Cause EXR		1.03305	0.3696	Reject H_0	No Sig.	No causality
CPS_GDP does not Granger Cause LIQCM	32	0.55959	0.5779	Reject H_0	No Sig.	No causality
LIQCM does not Granger Cause CPS_GDP		5.54584	0.0096	Accept H_0	Sig.	causality

Sign at 5%

Source: Extracts from E-view print out and Author's computation

The pair-wise granger causality test is to ascertain the direction of casualty cause between each of the independent variables and the dependent variable. This is also to determine whether a specific variable or group of variables play any significant role in the determination of other variables in the Vector Error Correction (VEC). It tests whether an endogenous variable can be treated as exogenous and was done by examining the statistical significance of the lagged error correction terms by applying separate t-tests on the adjustment coefficients. A shock to any variable in the VEC model not only directly affects the variable, but is also transmitted to all of the other endogenous variables through the dynamic (lag) structure of the VEC. Apriori expectation is that the independent variables should granger cause changes in the dependent variable both on the short-run and on the long-run. But in reality, the relationship could be the other way round.

Table shows that there is causal relationship between the independent and dependent variable except a unidirectional causality from savings rate to capital market liquidity and capital market liquidity to credit to private sector.

V. Conclusion And Recommendations

From the findings, treasury bills have positive but insignificant impact on capital market liquidity at lag one and lag two; this is in line with a positive impact of prime lending rate at lag two and three.Credit to private sector has positive impact at lag one but negative impact at lag two. Net domestic credit and monetary policy rate have negative relationship with capital market liquidity at lag one and lag two. From the model summary, there is significant relationship between monetary policy transmission mechanisms and liquidity of Nigerian capital market.

From the above conclusion, we recommend that:

1. The monetary authorities should strengthen its supervisory and regulatory capacity in monetary issues such as compliance to monetary policy rules and regulations to achieve sound capital market that will enhance source and investment of long term fund.
2. There is need to redefine and restructure the Nigerian Interest Rate to attract foreign and domestic investors into the capital market.
3. Policies that will enhance the effectiveness of monetary policy and its effect on the capital market liquidity should be taken as priority to enhance the operational efficiency of the capital market.
4. The Nigerian External sector that determines the exchange rate should be well managed and policies formulated should aimed at attracting foreign investors.
5. Policies to enhance credit to the real sector of the economy should be formulated and expansionary monetary policy should be adopted to attract foreign and domestic investors.

References

[1] Abradu-Otoo, P., Amoah, B., & Bawumia, M. (2003). Investigation of the transmission mechanisms of monetary policy in Ghana: A Structural vector Error Correction Analysis. Working Paper Series. Ghana, Bank of Ghana.

[2] Abugri, B. A. (2008). Empirical relationship between macroeconomic volatility and stock returns: Evidence from Latin American markets, International Review of Financial Analysis, 17,(2), 396–410

[3] Adeyemi, J. (2008). Financial Development and Economic growth. Australian journal of management,15(8),11-28.

[4] Adigiwe, P. K., Nwanna, I. O & Amala, A. (2015). Stock market development and economic growth in Nigeria: An empirical examination. Journal of policy and development studies,9(5),134-154.

[5] Afolabi, A. A. (2015). Impact of the Nigerian Capital Market on the Economy, EuropeanJournal of Accounting Auditing and Finance Research,3(2), 88-96.

[6] Agha, A. I., Ahmed, N., Mubarik, Y. A., & Shah, H. (2005). Transmission mechanism of monetary policy in Pakistan. SBP-Research Bulletin, 1(1), 1-23

[7] Agundu, P.U.C, Akani W.H and Agbahive, A.C. (2013). Intervention strategy, Banking Reenmgineering and Capital Formation in Nigeria. Research Journal of Finance and Accounting, 4, (19),108-115.

[8] Akani, H. W., &Lucky, A. L., (2016). Capital Structure and Shareholders Value of Commercial Banks in Nigeria: A Multi-Variate Study Analysis. IIARD International Journal of Economics and Business Management, 2 (5), 1 – 24.

[9] Akani H. W. (2013). Analysis of Macroeconomic Aggregates on Stock Price in Nigeria: An Application of co-integration and causality Test. International Journal of Academic Research. 1 (3),56-79.

[10] Akani, H. W., & Lucky, A. L. (2014). Money Supply and Aggregate Stock Prices in Nigeria: An Analysis of Co-Integration and Causality Test. Research Journali's Journal of Finance, 2 (10), 1 – 24.

[11] Akani, H. W., Okonkwo V. I., & Ibenta, S. N. (2016). Empirical Analysis of Monetary Policy on Capital Market Activities: Evidence from Nigerian Economy, Journal of Accounting and Financial Management 2 (3), 82 – 111.
[12] Allen, F., Otchere, I., & Senbet, W. L. (2011). African Financial Systems: A review. Review of Development Finance 1 (11), 79-113.
[13] Al-Mashat, R., & Billmeier, A. (2008). The monetary transmission mechanism in Egypt. Review of Middle East Economics and Finance, 4(3), 32-82.
[14] Al-Raisi, A. H., Pattanaik, S., & Al Raisi, A. Y. (2006). MSM and the Efficient Market Hypothesis: An Empirical Assessment, Central Bank of Oman, Economic Research and Statistics Department.
[15] Al-Raisi, A. H., Pattanaik, S., & Al Raisi, A. Y. (2007). Transmission Mechanism of Monetary Policy Under the Fixed Exchange Rate Regime of Oman. Central Bank of Oman Occasional Paper, 2007-1.
[16] Al-Sharkas, A. (2004). The Dynamic Relationship Between Macroeconomic Factors and the Jordanian stock market, International Journal of Applied Econometrics and Quantitative Studies, 1 (1), 97-114
[17] Alvarez, F., Lucas, E. R., & Weber, E. W. (2001). Interest Rates and Inflation. American Economic Review 92 (1): 219-225.
[18] Anderson, R., & Gascon, C. (2009). The Commercial Paper Market, the Fed, and the 2007-2009 Financial Crisis. Federal Reserve Bank of St. Louis, Review.
[19] Ando, A.,& Modigliani, F. (1963). The "Life Cycle" Hypothesis of Saving: Aggregate Implications and Tests. The American Economic Review, 53(1): 55-84.
[20] Andrew, D. & Zivot, E. (1992). Further evidence on the Great Crash, the oil price shock, and the unit root hypothesis. Journal of Business and Economic Statistics 10, 251-270.
[21] Andrle, M., Berg, A., & Morales, R. A. (2013). Forecasting and Monetary Policy analysis in Low Income countries. Food and non-Food Inflation in Kenya. IM F Working Paper 13-28.
[22] Antigi-Ego, M. (2000). Setting monetary policy instruments in Uganda. In L.Mahadeva & G. Sterne (Eds.), Monetary Policy Frameworks in a Global Context. 301-329
[23] Aoki, K., Proudman, J., & Vlieghe, G. (2002). Houses as Collateral: Has the Link between House Prices and Consumption in the U.K. Changed? Federal Reserve Bank of New York Economic Policy Review. 8(1),163-177.
[24] Arratibel, O., & Michaelis, H. (2014). The impact of monetary policy and exchange rates in Poland: Evidence from time-varying VAR. No. 1636[ECB Working Paper], European Central Bank.
[25] Arturo, G. & Margaret, M. (2001). Can Credit Registries Reduce Credit Constrants? Empirical Evidence on the Role of Credit Registries in Firm Investment Decisions. Miler – American Development Bank.
[26] Babatunde, O. A. (2014). Stock Market Volatility and Economic Growth in Nigeria (1980-2010). International Review of Management and Business Research, 2 (1), 201-209
[27] Baridam, D. M. (2001). Research Methods in Administrative Sciences Port Harcourt Sherbrooke Associates.
[28] Beck, T. and Levine, R. (2004). Stock Markets, Banks and Growth: Panel Evidence. Journal of Banking and Finance, 28(1), 432-442.
[29] Belke, A., & Polleit, T. (2009). Monetary Economics in a Globalized Financial Markets. London: Springer Dordrecht Heidelberg.
[30] Benassy, J. (2007). Money, Interest, and Policy: Dynamic General Equilibrium in a Non-Ricardia World. In Cambridge: The MIT Press.
[31] Benassy, J. (2011). Macroeconomic Theory. Oxford: Oxford University Press, Inc..
[32] Bencivenga, V. R., Smith, B. D., & Starr, R. M. (1996). Equity Markets, Transactions Costs and Capital Accumulation: An Illustration.The World Bank Economic Review, 10 (2), 241-65
[33] Bergholt, D. (2012). The Basic New Keynesian Model. [Lectures Notes]. Oslo, Norwrgian Business School.
[34] Bernanke, B. S. (2003). Friedman's Monetary Framework: Some Lessons. Paper presented at
[35] Bernanke, B. S., & Gertler, M. (1989). Agency Costs, Net Worth, and Business Fluctuations," American Economic Review, American Economic Association, 79(1),14-31.
[36] Bernanke, B. S., & Gertler, M. (1995). Inside the Black Box: The credit channel of monetary policy transmission mechanism. The Journal of Economic Perspectives 9(4),27-48.
[37] Bernanke, B. S., & Mihove, I. (1995). Measuring Monetary Policy. The Quarterly Journal of Economics 11(3), 869-902.
[38] Blinder, A. S. (1997). The fall and rise of Keynesian Economics. In B.Snowdon & H. R. Vane (Eds.), A Macroeconomic Reader, 96-105
[39] Blinder, A. S. (2013). After The Music Stopped: The financial crisis, the response, and the work ahead. Penguin group Inc., New York: The Penguin Press.
[40] Bofinger, P. (2001). Monetary Policy: Goals, Institutions, Strategies, and Instruments. (1 Ed.) Oxford: Oxford University Press.
[41] Boivin, J. Killey, M. T., & Miahkin, F. S. (2010). How Has the Monetary Transmission Channels Evolved Overtime? NBER Working Paper.
[42] Boivin, J., & Marc, G., (2002). Assessing Changes in the Monetary Transmission Mechanism: A VAR Approach," Federal Reserve Bank of New York Economic Policy Review,8(1), 97-11.
[43] Boivin, J., & Marc, P. G. (2006). Has Monetary Policy Become More Effective? Review of Economics and Statistics88(3),445-462.
[44] Boivin, J., Kiley, M. T., & Mishkin, F. S. (2010). How Has the Monetary Transmission Mechanism Evolved Overtime?Finance and Economics Discussion Series Divisions of Research & Statistics and Monetary Affairs Federal Reserve Board.
[45] Brischetto, A., & Voss, G. (1999). A structural vector autoregression model of monetary policy in Australia. Research Discussion Paper Reserve Bank of Australia
[46] Brook, C. (2008). Intrioductory Econometrics for Finance 2nd ed. Cambridge, Cambridge University Press.
[47] Brumberg, R. E.& Modigliani, F. (1954). Utility Analysis and the Consumption Function: An Interpretation of Cross-section Data," Post-Keynesian Economics, ed. by K. Kurihara New Brunswick, New Jersey: Rutgers University Press.
[48] Butler, K. C., & Malaikah, S. J. (2002). Efficiency and Inefficiency in Thinly Traded Stock Markets: Kuwait and Saudi Arabia.Journal of Banking and Finance, 16(2), 197-210.
[49] Cagan, P. (1989). Monetarism. In J.Eatwell, M. Milgate, & P. Newman (Eds.), THE PALGRAVE: MONEY London and Basingstoke: The Macmillan Press Limited, 195-205.
[50] Canova, F., & Gambetti, L. (2009) Structural Changes in the US Economy: Is there a Role for Monetary Policy? Journal of Economic, Dynamics & Control, 33, 477–490.
[51] Cassola, N. & Morana, C. (2004). Monetary Policy and the Stock Market in the Euro Area. Journal of Policy Modeling, 26 (3), 387-399
[52] Cecchetti, S. (1999). Legal Structure, Financial Structure and the Monetary Transmission Mechanism. NBER Working Paper 7151.
[53] Central Bank of Nigeria (2015); Annual Report and Statement of Account. Abuja: CBN

[54] Central Bank of Nigeria (2015); Contemporary Economy Policy ISSUES in Nigeria. Abuja: CBN
[55] Central Bank of Nigeria (CBN) (2016);Policy Measures. Abuja: CBN
[56] Cevik, S. & Teksoz, K. (2012). Lost in Transmission? The Effectiveness of Monetary Policy Transmission Channels in the GCC Countries. Working Paper No. WP/12/191.
[57] Cheng, K. C. (2006). A VAR analysis of Kenya's Monetary Policy Transmission Mechanism: How does the Central Bank Repo rate affect the economy?" IMF Working Paper. 12-24
[58] Cheong, D. & Boodoo, E., (2008). The Monetary Transmission Mechanism: A Closer Look at the Interest Rate Channel in Trinidad and Tobago. Presented at the 29th Annual Review Seminar, Central Bank of Barbados, July 28-31, 2008
[59] Cheung, Y. W., Chinn, M. D., & Garcia, P. A. (2003). Empirical exchange rate models of the nineties: are any fit to survive? Working Paper No. 551, University of California, Santa Cruz
[60] Choi W.G & Cook D. (2005). Stock market liquidity and the macro coming: Evidence from Japan. IMF Working paper 05/6.
[61] Clarida, R., Galí, J.,& Gertler, M. (2000). Monetary policy rules and macroeconomic stability: Evidence and some theory. Quarterly Journal of Economics 115, 147—180.
[62] Courtois-Haltom, R., & Hatchondo, J. C. (2011). How might the Fed's large-scale asset purchases lower long-term interest rates? Federal Reserve Bank of Richmond, Economic Brief.
[63] Davoodi, H. R., Dixit, S., & Pinter, G. (2013). Monetary Transmission Mechanism in East African Community: An Empirical Investigation. IMF Working Paper. 13 - 39 .
[64] De Long, B. J. (2000). The Triumphant of Monetarism? Journal of Economic Perspectives, 14(1),83-94.
[65] Dennis, E. G. J., (1981). Monetary Economics. (1ed.) Essex: Longman Group Limited.
[66] Devereux, M. B., & Smith, G. W. (1994). International Risk Sharing and Economic Growth, International Economic Review, 35(4), 535-50
[67] Dickey, D., & Fuller,W. (1981). Likelihood ratio statistics for autoregressive time series with a unit root. Econometrica, 17(49), 1057 – 1072.
[68] Dicky, D., & Fuller, W. A. (1979). Distribution of the estimates for autoregressive time series with a unit root. Journal of the American Association of Statistics 74, 427-431.
[69] Donwa, P., & Odia, J. (2010). An empirical analysis of the impact of the Nigerian Capital Maket on her socio-economic development. Journal of Social Science, 24(2), 135-142.
[70] Echekoba, F. N., Ezu, G. K. and Egbunike, C. F. (2013). The Impact of Capital Market on the Growth of the Nigerian Economy under Democratic Rule, Arabian Journal of Business and Management Review, 32, 53-62.
[71] Egbe, I. E., Jonah, J. N., Richard, E. B., & Uzie, O. H.(2015). Capital market and industrial sector development in Nigeria: An empirical investigation. European journal of accounting auditing and finance research,3(6),63-79.
[72] Engel, R. F., & Granger, W. J.(1987). Cointegration and Error correction models in Econometrica 17, 1062 – 1356.
[73] Errunza, V.,& Hogan, K. (1998). Macroeconomic determinants of European stock market volatility, European Financial Management, 4(3),361–377.
[74] Ewah, S.O.E. Esang, A.E. and Bassey, J.U. (2009).Appraisal of Capital Market Efficiency on Economic Growth in Nigeria. Journal of Money, Credit, and Banking, 33, 16-41.
[75] Eze, S. O. (2011). The effect of monetary policy on stock market performance in Nigeria. Publish online www.google.
[76] Ezirim, B. C., & Emenyonu, E. N. (1998). Bank Lending and Credit Adminstration. A Lenders Perspective with Cases and Suggested Solutions. Markonwatz Centre for Research and Development, Port Harcourt.
[77] Favero, A. C. (2001). Applied Macroeconometrics. Oxford: Oxford University Press.
[78] Fender, J. (2012). Monetary Policy. The Artium Gate Chichester, West Sussex, John Wiley & Sons Ltd.
[79] Ferrero, G., & Secchi, A. (2010). Central Banks' Macroeconomic Projections and Learning. Banca d'Italia, Temi di discussione (Economic Working Papers) 782.
[80] Fetai, B., & Izet, Z. (2010). The impact of monetary policy and exchange rate regime on the real GDP and prices in the Republic of Macedonia. Economics and Business Review, 12(4),263-284.
[81] Fisher, D.E., & Jordan, R.J. (2005). Security Analysis and Portfolio Management, Partparganji, Delhi: Pearson Education.
[82] Fisher, G.(1961). Some Factors Influencing Share Prices.The Economic Journal. 71(2),118 - 121
[83] Flannery, M. J., & Protopapadakis, A. A. (2001). Macroeconomic Factors Do Influence Aggregate Stock Returns.
[84] Flood, R., & Rose, A. K. (1999). Understanding Exchange Rate Volatility without the Contrivance of Macroeconomics. Economic-Journal 109(459), 660-72.
[85] Friedman, M. (1968). The Role of Monetary Policy. The American Economic Review 58(1), 1-17.
[86] Friedman, M., Goodhart, A. E. C., & Wood, E. G., (2003). Money, Inflation and the Constitutional Position of the Central Bank. London, Institute of Economic Affairs, Serial (Book,Monograph).
[87] Friedman, M., Schwartz, A. J. (1982). Monetary trends in the United States and the United Kingdom, Chicago: University of Chicago Press
[88] Fynn, K. D. (2012). Does the Equity Market affect Economic Growth? Macalester Review Journal, 2(2),1-12.
[89] Gali, J. & Gambette, L. (2005). The Effect of Monetary Policy on Stock Market Bubbles. Some Evidence. American Economic Journal Macroeconomics 7(1), 233 – 257.
[90] Garcia,L., (2011). Macroeconomic Determinants of Stock Market Development: Journal of Applied Economics, 2(1), 9 – 21.
[91] Gerdesmeier, D. (2013). Fundamentals of Monetary Policy in Euro Area: Concepts Markets and Institutions. European Central Bank, WP/22/19.
[92] Gerlach, S., & Peng, W. (2005). Bank lending and property prices in Hong Kong. Journal for Banking and Finance 29, 461-481.
[93] Goodhart, A. E. C. (2013). Monetary policy operations and financial stability: where to draw the line? [Lessons from the Crisis]. 2-8-2013.
[94] Goodhart, A. E. C., & Hofmann, B., (2007). House Prices and the Macro economy; Implication for banking and price stability. Oxford: Oxford University Press.
[95] Gordon, M. (1962). The savings, investment and valuation of a corporation. Review of Economics and Statistics, 37-51.
[96] Gottschalk, J. (2005). Monetary Policy and German Unemployment Problem in Macroeconomic Models: Theory and Evidence. Berlin German,
[97] Gracia, E. N. (2011). DSGE Macro econometric Models: A critique. Economie Appliquee, 1, 17.
[98] Granger, C. N. J. (1969). Investigating casual relationship by Econometrics models and cross-spectral methods. Econometrica, 37, 424 – 438.
[99] Granger, C.M.J. (1969), Investigating Causal Relations by Econometric Models and Gross- Spectral methods, Econometrica, 37, 424 - 438

[100] Greenwald, B., & Joseph, E., Stiglitz, H. (2006). Helping infant economies grow: Foundations of trade policies for developing countries. The American Economic Review,141- 146.

[101] Greenwood, J., & Jovanovic, B. (1990). Financial Development, Growth, and the Distribution of Income. Journal of Political Economy 98(5), 1076-107

[102] Gujurati, D.N.(2003). Basic Economics 4th ed. New Delhi: Tata Inc Graw-Hill Publishing Company Ltd.

[103] Hayashi, F. (1982). Tobin's Marginal and Average q: A Neoclassical Interpretation, Econometrica, 50(1), 213-224.

[104] Ho, C. (2010). Implementing Monetary Policy in the 2000s:Operating Procedures in Asia and Beyond. In M.T.Bohl, L. P. Siklos, & E. M. Wohar (Eds.), Challenges in Central Banking: The Current Institutional Environment and Forces Affecting Monetary Policy, 84-115.

[105] Holmstrom, B., &Tirole, J. (1993). Market Liquidity and Performance Monitoring.Journal of Political Economy,7 (101), 678-709.

[106] Humpe, A. & Macmillan, P.(2007). Can macroeconomic variables explain long term stock market movements? A comparison of the US and Japan. Centre for Dynamic Macroeconomic Analysis Working Paper Series,

[107] Ifeoluwa, I. O & Motilewa, B. D. (2015). Stock market liquidity and economic growth in Nigeria. Journal of economics and international business management 3(6),30-45.

[108] Ignazio, V. (2007). Financial Deepening and the Monetary Policy Transmission Mechanism. Joint High Level Eurosystem – Bank of Russia.

[109] Ikikii, S. M. and Nzomoi, J. N. (2013). An Analysis of the Effects of Stock Market Development on Journal of Policy and Development Studies 9 (5), 24-47.

[110] Inegbedion, H. E. (2009). Efficient Market Hypothesis and the Nigerian Capital Market, (Unpublished M Sc. Thesis),Department of Business Administration, University of Benin, Nigeria.

[111] Ishioro, B. O. (2013). Monetary Transmission Mechanism in Nigeria: A Causality Test: Mediterranean Journal of Social Science; 4(13), 377-388.

[112] James, M., & Tamim, B. (2001). A Peek Inside the Black Box: The Monetary Transmission Mechanism in Japan. International Monetary Fund, 48(1), 40-49

[113] Jibril, S. R., Salihi, A. A., Wambai, U. S., Ibrahim, F. B., Muhammad, S. and Ahmad, T. H.(2015). An Assessment of Nigerian Stock Exchange Market Development to Economic Growth, American International Journal of Social Science, 4(2), 51-58.

[114] Jimenez, G., Ongena, S., Peydro, J., & Saurina, J.(2011). Credit Supply and Monetary Policy. Unpublished Work

[115] Johansen, S. (1991). Estimination and Hypothesis Testing of Co-integression model, Econometrica, 59, 1551 – 1580

[116] Kapur, M., & Patra, D. M., (2010). A Monetary Policy Model Without Money for India. IMF Working Paper, 183.

[117] Karagiannis, S., (2010). Interest Rate Pass-Through in European and the US: Monetary Policy after the Financial Crises, retrieved from http/www.sciencedirect.com/science/article/pii/

[118] Karamustafa, O., & Kucukkale, Y. (2003). Long Run Relationships between Stock Market Returns and Macroeconomic Performance: Evidence from Turkey.

[119] Kashyap, K. A., & Stein, C. J. (2000). What do a million observations on banks say about the transmission of monetary policy? American Economic Review, 90(3),407-428.

[120] Kashyap, K. A., Stein, C. J., & Wilcox, D. W. (1996). Monetary Policy and Credit Conditions: Evidence from Composition of External Finance, American Economic Review 86(1), 310-313.

[121] Kevin, A.U. (2009). Is Monetary Policy Effective during Financial Crises?, American Economic Review Papers & Proceedings, 99(2), 573–577

[122] Kiley, M. T. (2010) Output Gaps. Federal Reserve Board Finance and Economics Discussion Series.

[123] Kim, S., & Roubini, N.(2000). Exchange Rate Anomalies in Industrial Countries: A Solution with a Structural VAR Approach. Journal of Monetary Economics 45, 561-586.

[124] King, M.(1994). The transmission mechanism of monetary policy (Rep. No. August 1994). London: Bank of England.

[125] Kiyotaki, N., & John, M., (1997). Credit Cycles.Journal of Political Economy,7 (105), 211–248.

[126] Kiyotaki, N., & Moore, J. (1997). Credit Cycles. Journal of Political Economy, 105(2), 211-48.

[127] Knoop, T. (2008). Modern Financial Macroeconomics: Panics, Crashes and Crises, Blackwell Publishing. Part I

[128] Koirala, J. (2011). The Effect of Stock Market Development on Economic Growth: An Empirical Analysis of UK.

[129] Kyle, A.S. (1984). Market Structure, Information, Futures Markets, and Price Formation. In Gary G. Storey, Andrew Schmitz, and Alexander H. Sarris, eds., International Agricultural Trade:

[130] Laffont, J. J., & Tirole, J. (1988b). Repeated auctions of incentive contracts, investment, and bidding parity with an application to takeovers. RAND Journal of Economics 19 (8), 516-537

[131] Laidler, D. (1982). Monetarist Perspectives. Deddington: Phillip Allan Publishers Limited.

[132] Leeson, R., (1997). The Trade-Off Interpretation of Philips' Dynamic Stabilization Exercise. Econometrica 64, 155-171.

[133] Lewis, K. M., & Mizen, D. P., (2000). Monetary Economics. New York: Oxford Press.

[134] Lintner, J. (1965a). Security Prices, Risk, and Maximal Gains from Diversification. Journal of Finance, 20 (8), 587-616

[135] Lucky, A. L., Akani, H. W., and Anyamaobi, C. (2015). Prudential Determinants of Stock Prices of Commercial Banks in Nigeria: An Application of Fundamentalists and Macroeconomic View. 1980 – 2014. IIARD International Journal of Banking and Finance Research 1 (7), 1 – 27.

[136] Lucky, A. L., & Uzah, C. K., (2017). Monetary Policy Transmission Mechanisms and Domestic Real Investment in Nigeria: A Time Series Study 1981 – 2015. IIARD International Journal of Economics and Financial Management, 2 (2), 29 – 59.

[137] Ludi, K.L. & Ground, M. (2006). Investigating the bank-lending channel in South Africa: A VAR approach, University of Pretoria, working paper.

[138] Maghayereh, A. (2002). Causal relations among stock prices and macroeconomic variables in the small open economy of Jordan. Economics and Administration, 17(2), 3-12. King Abdulaziz University.

[139] Maku, O. E. & Atanda, A. A. (2009). Does Macroeconomic Indicators Exert shock on the Nigerian Capital Market?

[140] Markowitz, H. (1959). Portfolio Selection: Efficient Diversification of Investments. Cowles Foundation Monograph. New York: Wiley & Sons, Inc

[141] Maturu, B.O., Kethi, K. & Maana, I. (2006). A New Keynesian Phillips Curve for Kenya, Central Bank of Kenya Working Paper Series, Working Paper

[142] Mburu, D. K. (2012). Analyzing the Buyer Supplier Relationship Engagement on the Performance Benefits and Its Impact on Business Performance,Journal of Management and Investment,3(2),77-84

[143] McCarthy, J. (2000). Pass-Through of Exchange Rates and Import Prices to Domestic Inflation in Some Industrialized Economies. Manuscript. Research Department, Federal Reserve Bank of New York.

[144] Miron, J. A., Christina, D., Romer, & David, N. W. (1994). Historical Perspectives on the Monetary Transmission Mechanism," in N.G. Mankiw, ed. Monetary Policy, National Bureau of Economic Research, Inc,263-306
[145] Misati, N. R., Njoroge, L., Kamau, A., & Ouma, S. (2010). Financial Innovation and Monetary Policy Transmission in Kenya. International Research Journal of Finance and Economics .
[146] Misati, R. (2010). The role of the informal sector in investment in Sub-Saharan Africa. International entrepreneurship and management journal, 6(2),201- 221
[147] Mishkin, F. S. (1996). The Channels of Monetary Transmission: Lessons for monetary policy. National Bureau of Economic Research, Working Paper 5464, 1-27.
[148] Mishkin, F. S. (2007b). The Transmission Mechanism and the Role of Asset Prices in Monetary Policy. In F. S. Mishkin (Ed.), Monetary Policy Strategy Cambridge: The MIT Press, 59-74.
[149] Mishkin, F.S. (1995). Symposium on the Monetary Transmission Mechanism. Journal of Economic Perspectives.9 (4), 3-10.
[150] Mishra, P., & Montiel, P. (2012). How Effective is Monetary Transmission in Income Countries? A survey of Empirical Evidence. IMF Working paper WP ,5-25.
[151] Modigliani, F. & Miller, M. H. (1958). The Cost of Capital, Corporation Finance and the Theory Of Investments, American Economic Review 48: 261-297.
[152] Modigliani, F., & Miller, M. H. (1963). Corporate Income Taxes and The Cost of Capital: A Correction. International Journal of Economics and Finance, 7(4), 20 – 39.
[153] Mojo, B., & Peersman, G. (2003). A VAR description of the effects of monetary policy in individual countries of the EURO area. In I.Angeloni, A. Kayshap, & B. Mojon (Eds.), Monetary policy transition in the EURO area (Cambridge: Cambridge University Press.
[154] Morales, A. R., & Raei, F. (2013). Evolving Role of Interest Rate and Exchange Rate Channel in Monetary Transmission in EAC Countries. IMF Working Paper13 .
[155] Morris, C. and Sellon, G. (1995). Bank lending and monetary policy: evidence on a credit channel. Federal Reserve Bank of Kansas City Economic Review, 59-75.
[156] Mossin, J. (1966). Equilibrium in a Capital Asset Market.Econometrica, 34 (2), 768-83.
[157] Munyanwe, C. (2011). Analysis of Interest Rate Channel of Monetary Transmission Mechansim. Economic Journal and Business 6 (14), 168 – 214.
[158] Muradoglu, G., Metin, K., & Argac, R. (2001). Is there a long run relationship between stock returns and monetary variables: evidence from an emerging market. Applied Financial Economics, 11, 641-649
[159] Nastansky, A., & Strohe, H. G. (2010). The impact of changes in asset prices on economic activity: a cointegration analysis for German. STATISTISCHE DISKUSSIONSBEITRÄGE, 38.
[160] Ndukwe O.C (2013). Understanding monetary policy series w034: Banking System Liquidity
[161] Ndung'u, S. N., & Durevall, D. (1999). A Dynamic Model of Inflation in Kenya, 1974-1996.
[162] Ndung'u, S. N., & Durevall, D. (1999). A Dynamic Model of Inflation in Kenya, 1974-1996. International Monetary Fund," IMF Working paper. 26
[163] Neills, G. J., & Parker, D. (2004). Principles of Macroeconomics. Essex: Pearson Education Limited.
[164] Niburu, A. W. (2012). Analysis of Interest Rate Channel of Monetary Transmission Mechanisms in Kenya. International Journal of Business and Commerce 4 (4), 38 – 67.
[165] Nishat, M., & Shaheen, R. (2004). Macroeconomic Factors and Pakistani Equity Market. The Pakistan Development Review, 43, (4),619-637
[166] Noyer, C. (2007). Financial Innovation, Monetary Policy and Financial Stability. Spring Conference, Banque de France
[167] Nyamongo, E., & Ndirangu, L. (2013). Financial Innovation and monetary Policy in Kenya. Central Bank of Kenya .
[168] Nyanmo, E. M. & Masti, R. N. (2011). Remittances and Banking Sector Development in Sub-Saharan Africa. Paper Presented at the Global Development Forum, Dubai, United Arab Emirate.
[169] Obafemi, F. N., & Ifere, E. O. (2015). Monetary Policy Transmission mechanism in Nigeria: A FAVAR Approach: International Journal of Economics and Finance; 7(8), 229-239.
[170] Obstfeld, M. (1994). Risk-Taking, Global Diversification, and Growth. American Economic Review, 84 (13), 10-29
[171] Odit, P. M. (2009). Stock Market Development and Economic Growth: The Case of Mauritius, International Business and Economics Research Journal, 8(2), 77-88.
[172] Ogbulu, M. O. & Torbira, L. L. (2012). Monetary Policy and the Transmission Mechanism: Evidence from Nigeria. International Journal of Economics and Finance; 4, (11), 122-133.
[173] Ogbulu, O. M. (2010). The Interaction between Inflation, Interest Rates and Stock Returns in Nigeria: test of Fisher's Hypothesis. Journal of Banking and Finance, 5 (9), 108 – 213.
[174] Ogbulu, O. M., & Uruakpa, C. P. (2011). Monetary Policy and Stock Prices in Nigeria: A Co-integration and Error Correction Approach. Journal of Arts, Management, Education, Law and Social Science 1 (1), 60 – 85.
[175] Ohale, L. & Onyema, J. I. (2002). Foundations of Economic, Owerri, Springfield Publisher
[176] Ohiomu, S. and Enabulu, G. O. (2011). The Effect of Stock Market on Economic Growth inNigeria. Journal of Research in National Development, 9(1), 287-295.
[177] Ojo W. (2012).Stock Market Development and Economic Growth": Evidence from Nigeria European Journal of Economics, Finance and Administrative Sciences, 25 (1), 45-69.
[178] Oke, B and Mokuolu, J. (2004). Stock Market Development and Economic Growth in Nigeria:An Empirical Analysis, Nigeria Journals of Banking and Financial, 6,55-67.
[179] Okodua, H. and Ewetan, O. (2013). Stock Market Performance and Sustainable Economic Growth in Nigeria: ABounds Testing Co-integration Approach. Canadian Center of Science and Education.Journal of Sustainable Development.6,(8), 16-47.
[180] Okonkwo, O. N., Ogwuru, H. O. and Ajudua, E. I. (2014). Stock Market Performance and Economic Growth in Nigeria: An Empirical Appraisal, European Journal of Business and Management, 6(24), 33-63.
[181] Okoye, V. O. and Nwisienyi, K. J. (2013). The Capital Market Contributions towards Economic Growth and Development; The Nigerian Experience, Global Advanced Research Journal of Management and Business Studies,2(2), 120-125.
[182] Onoh, J. K. (2002). Dynamics of Money Banking and Finance in Nigeria: An Emergency Market. Astra Meridian Publisher, Aba, Enugu, Lagos
[183] Onoh, J.K. (2007), Dimensions of Nigeria's Monetary and Fiscal Policies – Domestic and external. Aba: Astra Meridian Publisher Nigeria
[184] Osiegbu P.I. (2005). Money Banking and Economy in Nigeria Port Harcourt, Harey Publication.

[185] Osinubi, T. S. (2009). Stock Market Development and Long-run Growth in Nigeria". Unpublished M.Sc. Economics Dissertation, University of Ibadan Nigeria.
[186] Osmond N. Okonkwo1Hycenth O. Ogwuru Emmanuel I. Ajudua (2014).Stock Market Performance and Economic Growth in Nigeria: AnEmpirical Appraisal. European Journal of Business and Management, 6 (26), 33-42.
[187] Ovat, O. O. (2012). Stock Market Development and Economic Growth in Nigeria: Market SizeVersus Liquidity. Journal of Canadian Social Science, 8(5),71-76.
[188] Ozturk, B. (2008). The Effects of Macroeconomic Factors on Istanbul Stock Exchange National 100 Index and Its Volatility. Thesis, Istanbul Technical University (in Turkish)
[189] Patrick, K. (November 2001). A VAR approach to determination of interest rates in the Caribbean. Karagiannis, S., Panagopoulos, Y. & Vlamis, P. (2010). Interest rate pass-through in Europe and the US: Monetary policy after the financial crisis, Journal of Policy Modeling 32, 323 – 338
[190] Patrick, K., (November 2001). "A VAR approach to determination of interest rates in the Caribbean."
[191] Primiceri, G. (2005). Time Varying Structural Vector Autoregressions and Monetary Policy. Review of Economic Studies, 72(3),821–852
[192] Primiceri, G.(2005) Why Inflation Rose and Fell: Policymakers' Beliefs and US Postwar Stabilization Policy, National Bureau of Economic Research, Inc, NBER Working Papers 11147,
[193] Proudman, J., Kosuke, A., & Vheghe, A. (2004). House Prices, Consumption and Monetary Policy. A Financial Accelerator Approach. Journal of Financial Intermediation 13 (4), 414 – 435.
[194] Romer, D. (2006). Advanced Macroeconomics (3rded). New York: McGraw-Hill.
[195] Romer, D. (2006). Advanced Macroeconomics. (3rd Ed. ed.) New York: McGraw-Hill/Irwin.
[196] Ross, S. A. (1993). Economic variables and stock market returns: evidence from the Athens stock exchange, Applied financial economics, 8 (16), 993-1005
[197] Saborowski, C., & Weber, S. (2013), Assessing the determinants of Interest Rate Transmission Through Conditional Impulse Response Function." IMF Working Paper,13-23.
[198] Saint-Paul, G. (1992). Technological Choice, Financial Markets and Economic Development, Europeani Economnic Review, 36(4), 763-81
[199] Scharfstein, D. (1988). The Disciplinary Role of Takeovers, Review of Economic Studies 8 (55), 185-199
[200] Sellon, G. H., & Morris, C. S. (1995). Bank Lending and Monetary Policy Evidence on a Credit Channel. Economic Review, Second Quarter, 75.
[201] Sengonul, A., & Thorbecke, W.(2005). The effect of monetary policy on bank lending in Turkey. Applied Financial Economics 15, 931-934.
[202] Shabbir, M. (2008). The Black Market Exchange Rate and Demand for Money in Iran. Journal of Macroeconomics,7 (18),171-17.
[203] Shao, E. (2010). Credit rationing and endogenous monetary policy. Applied Economic Letters, 17, 437-443.
[204] Sharpe, W. F. (1964). Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk.Journal of Finance, 7 (19), 425-442
[205] Smal, M. M., & De Jager, S. (2001). The monetary transmission mechanism in South Africa. Occasional Papers, 16.
[206] Sorensen, B. P., & Whitta-Jacobsen, H. J. (2005). Introducing Advance Macroeconomics: Growth and Business Cycles. Berkshire: McGRAW- HILL Education.
[207] Stein, Jeremy C., & Wilcox, T. Y. (1995). An adverse selection model of bank asset and liability management with implications for the transmission of monetary policy. Working Paper. Cambridge, MA: National Bureau of Economic Research (August).
[208] Suzuki, T. (2004). Credit channel of monetary policy in Japan: Resolving the supply versus demand puzzle. Applied Economics 21, 2385-2396.
[209] the Conference, The Legacy of Milton and Rose Friedman's Free To Choose, organized by the Federal Reserve Bank of Dallas, October 23-24.
[210] Tobias A & Shim H.S (2008). Liquidity, monetary policy and financial cycles. Federal Reserve Bank of New York, 14(1), 1-7.
[211] Tobin, J. (1969). A General Equilibrium Approach to Monetary Theory", Journal of Money, Credit and Banking, 1 (1), 15--29.
[212] Toby, A. J. (2006). Banking System Soundness: Theory and Policy. Pearl Publishers, P-H
[213] Westerway, P. (2002). Modeling the transmission mechanism of monetary policy. In L. Mahadeva & P. Sinclair (Eds.), Monetary policy Transmission Mechanism in Diverse Economies Cambridge: Cambridge University Press, 156-166.
[214] Yildirtan, D. C. (2007). Effects of Macroeconomic Variables on Istanbul Stock Exchange Indexes, the case of Turkish Stock Exchange Market.

Henry Waleru Akani Monetary Policy Transmission Mechanism and Liquidity Of Capital Market: A Time Series Study From Nigeria: 1981-2016." IOSR Journal of Economics and Finance (IOSR-JEF) , vol. 8, no. 5, 2017, pp. 01-24.