CANKAYA UNIVERSITY
GRADUATE SCHOOL OF SOCIAL SCIENCES
DEPARTMENT OF ECONOMICS

MASTERS THESIS

AN EMPIRICAL INVESTIGATION OF THE
EFFECTIVENESS OF MONETARY POLICY ON THE
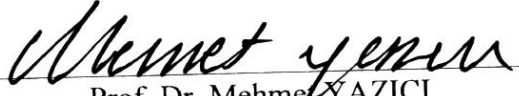**NIGERIAN STOCK EXCHANGE MARKET**

ABDULNASIR T. YOLA

JANUARY 2014

Title of the Thesis: **An Empirical Investigation Of The Effectiveness Of Monetary Policy On The Nigerian Stock Exchange Market**
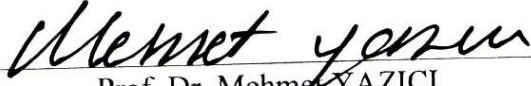
Submitted by: **ABDULNASIR T YOLA**

Approval of the Graduate School of Social Sciences,Çankaya University

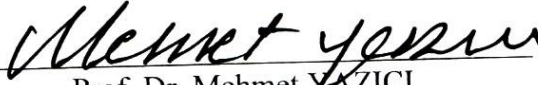_____
Prof. Dr. Mehmet YAZICI
Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Science.

_____
Prof. Dr. Mehmet YAZICI
Head of Department

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Science.

_____
Prof. Dr. Mehmet YAZICI
Supervisor

_____
Prof. Dr. M. Qamarul ISLAM
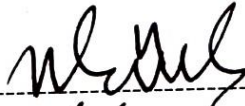Co-supervisor

Examination Date: 17 January 2014

Examining Committee Members:

Prof. Dr. Nahit TORE	(ÇankayaUniv.)	
Prof. Dr. Mehmet YAZICI	(ÇankayaUniv.)	
Prof. Dr. Ergun DOGAN	(ÇankayaUniv.)	

STATEMENT OF NON PLAGIARISM

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that as required by thesis rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name, Last Name: Abdulnasir T.YOLA

Signature: ~~~

Date: 7 | 02 | 2014.

ABSTRACT

AN EMPIRICAL INVESTIGATION OF THE EFFECTIVENESS OF
MONETARY POLICY ON THE NIGERIAN STOCK EXCHANGE
MARKET

Abdulnasir T. YOLA

M.Sc., Financial Economics

Supervisor: Prof. Mehmet YAZICI Ph.D.

January 2014, 112 pages

This thesis analysed the empirical relationship between monetary policy and the Nigerian stock exchange market for two sample periods. The first study period is from 1980-2012. The variables for the first study are monetary policy Rate (MPR), Market Capitalisation (MC), Gross Domestic Product and Investment proxy by Gross Capital Formation (GCF). The second study period is from 1985:1-2012:4 and the variables for the study are Broad Money Supply (M2), All Share Index (ASI) and Gross Domestic Product (GDP). The study employed the VAR methodology and analysed both the long run and causal relationship between the variables. Generalized Impulse Response and Variance Decomposition were also used. Evidence from the first study show presence of a long run equilibrium associationship between the variables and also there is a unidirectional VECM Granger causality from MC to MPR.

Result from the second study shows no cointegrating relationship among the variables and also there is absence of causality. The impulse response of the second study also shows zero effect of a one standard deviation shock impulse response of M2 to ASI. The study concludes that despite the long run relationship monetary policy   prove ineffective in the short run in Nigeria. The study recommends for economic reform and new policy innovations in both the Central Bank and Stock Market and also the Central Bank shall detect the standing block that prevent monetary policy transmission.

Keywords; Monetary policy, Stock Exchange Market, VAR

ÖZET

PARA POLİTİKASININ NİJERYA BORSASI ÜZERİNE ETKİNLİĞİNİN AMPİRİK İNCELENMESİ

Abdulnasir T. YOLA

Yüksek Lisans, İktisat Bölümü (Finansal Ekonomi)

Danışman: Prof. Dr.MehmetYAZICI

Ocak 2014,112 sayfa

Bu tez, Para politikası ile Nijerya Borsası arasındaki ilişkiyi iki dönem için ampirik olarak incelemektedir. İlk dönem 1980-2012 periyodunu kapsamaktadır. Bu dönenmin incelenmesinde Para politikası oranı, Borsa piyasa değeri, Gayrisafi yurtiçi hasıla ve yatırımı temsilen Gayrisafi sermaye oluşumu değişkenleri kullanılmıştır. İncelenen ikinci dönem 1985:1-2012:4 aralığını kapsamaktadır. Bu dönem için çalışmada M2 para arzı , Borsa genel indeksi ve Gayri Safi Yurtiçi Hasıla kullanılmıştır. Çalışmada Vektör otoregresyon, Varyans ayrıştırması ve Genelleştirilmiş etki tepki fonksiyonu methodlarından faydalanılmış ve değişkenler arasındaki uzun dönem ve nedensellik ilişkileri incelenmiştir. İlk dönem incelendiğinde değişkenler arasında uzun dönem ilişki ve Borsa piyasa değerinden Para politikası oranına tek yönlü Granger nedensellik saptanmıştır. İkinci dönem incelendiğinde ise değişkenler arasında ne uzun dönem ilişkisi ne de nedensellik ilişkisi saptanmıştır. Ayrıca Para arzından Borsa genel indeksine bir tepki saptanmamıştır. Çalışma uzun dönem ilişkiye rağmen Nijerya'da para politikasının kısa dönemde etkili olmadığını göstermiştir. Bulgular ışığında

çalışma, para politikasının etkili olması için Nijerya Merkez Bankası ve Borsası'nda ekonomik reform ve para politikasının etkili olmasını engelleyen nedenlerin saptanması ve bertaraf edilmesini önermektedir

Anahtar Kelimeler : Para politikası , Menkul Kıymetler Borsası , VAR

ACKNOWLEDGMENT

TABLE OF CONTENTS

x

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

1.1 Background to the Study

The desired result of any monetary policy is evaluated based on its ability to transform the behavior of the major economic units of the economy. Such policy is importantly designed to facilitate growth and stability of some vital aggregate economic variables like price level, employment, real gross domestic product (GDP), real investment, real consumption, etc. But studies have acknowledged that the mechanics available to the monetary authority have direct impact on interest rates and volume of money in circulation in the economy and will only effect the fundamental policy goal if and only if changes in interest rates and amount of money in circulation changes the economic agent behavior. The economic component that the policy is believed to be able to influence most is the financial component and the stock market in particular. Either by manipulating interest rates or by influencing market participant's speculation of future market behavior, monetary policy is most likely to play a vital role in determining stock market returns, turnover ratio and market capitalisation.

From another side there is convincing evidence that stock market activities are the reason for monetary policy or more precisely monetary policy decisions are taken as a result of the market activities. Moreover, researches argue that most of the reduction in the amount of money in circulation by central banks is a direct result of the irrational exuberance (over

valuation of assets) of stock markets. Be it right or wrong there is consensus among researches that the central banks absolutely aimed the stock market in making its monetary policy decisions. Convincing statistical facts of the influence that stock markets have in policy design of the central bank's monetary policy has been shown in the study of Rigobon and Sack (2003)

The negative impact of a change in money supply on the stock markets is anticipated due to the substitutability effect of assets traded in the market. This is due to market participants belief that the Central Bank will react to unanticipated and persistent money growth by quickly employing restrictive monetary policy, to reduce higher inflation rates[1]. The expectation of higher interest rates in future period causes market speculators to sell their assets immediately in the market, and this forces interest rates rise to higher level. As a result of high rates of interest the stock prices will become low, and then lead to lower stock prices, assuming the asset holders perceive these assets as substitutes. In addition, investors may have higher and upward expectations of inflation when positive money stock changes occurred (see Fama, 1981). Studies have shown that positive effect of a change to M3(money supply) on the stock market can be explained by the higher influence of M3 on corporate

---

[1] See Gan, Lee, Yong, and Zhang (2006). They found a negative impact of a shock to money supply on the stock index. This was justified by the fact that in New Zealand the amount of money in circulation supply in is strongly determined by foreign investment. They explain that if the interest rate is very high compared to other economies, the market participant are more of saving their money in the bank rather than to invest in securities that are often risky. On the other hand if the interest rate is relatively low then the investors may want to invest in other markets. In addition, Geske and Roley (1983) stated that the consensus finding among studies such as Grossman (1981), Urich and Wachtel (1981) and Pearce and Roley (1983) is that surprisingly high money growth is related with higher rate of interest and low security prices.

sector growth and profitability in real terms.[2] This growth in profitability may induce stronger investor interest in the stock market, as investors attempt to maintain purchasing power by investing in stocks. Moreover, an increase in the money supply results in greater liquidity in the economy which can be used to purchase stocks, causing stock prices to rise[3].

Monetary policy and its influence on essential economic activities is conventionally recognized and is given special consideration by economist in many economic researches. It is well accepted that, in the long run, variation in monetary policy will affect price aspects, i.e. the rate of inflation. Accordingly, most economists stress that the main aim of long-run monetary policy is to attain optimal and stable price levels (Bernanke [4], Smith and Abel, 2003). In whatever way, this can be accomplished through several channels i.e. credit channel.

Monetary policy is the regulation of the interest rate and money supply of a country by its Central Bank in order to achieve the major economic goals which include optimal price stability, full employment, economic growth and development.

---

[2] Mukherjee and Naka (1995), stress that the influence of money supply on stock return is an empirical question and the results may differ for each researcher based on the particular economy, the quality of the data set and the measure of monetary variables used. This was found to be true in the literatures that were examined as some authors found positive relationship while others found negative for the different monetary indicator employed while some results are neutral.

[3] On the contrary, Friedman and Schwartz (1963) explained that an increase in M2 growth would lead to surplus liquidity eligible for buying securities, and such resulted in higher assets prices. Maysami and Koh (2000), found a direct relationship between amount of money in circulation and share returns in Singapore. According Bailey (2000), also states that innovation to the monetary variable had a large positive impact on the index. She explained this as the rise in nominal money balances without an instantaneous adjustment in prices results in an increase in real money balances. This increase in real money balances with a rise in inflationary expectations initially deduces real interest rate, hence increasing the real value of the asset. This argument was supported by Muradoglu and Metin (1996) who found that monetary variables shows possible monetary growth and are anticipated to be directly related to stock market returns.

[4] Bernenke is an American economist and currently chairman of the Federal Reserve

The stock market on the other hand is often considered a primary indicator of a country's economic strength and development. Literatures have shown that the economy of any nation reacts strongly to movements in stock market (Bernanke and Kuttner, 2005), (Ioannidis and Kontonikos, 2006). Recent happenings even confirm this as the latest economic recession was preceded by a crash in the stock markets (Finance essay 2013)

As a result of the relationship between the stock market and the economy in general, it is very vital to the Central bank that the stock market performs well as poor performance signals disrupt in the economy. This is because the stock market is seen as a primary source of income and retirement savings to many, and development in the stock market can have a major effect on the whole economy as it influences real activities such as savings, employment, consumption, investments, etc. This is the reason why monetary authority closely monitor the stock market when making monetary policy decisions. It is generally assumed that monetary policy makers look at stock prices when making decisions concerning the monetary policy but some economists argue that stock prices also react to monetary policy decisions. It is the other way round i.e. the stock markets reacts to monetary policy decisions.

The main target of monetary policy is the maintenance of stable price in the economy. Central banks functions authoritatively are attainment of objectives such as full employment, efficient and sustainable growth, stable interest rates and stable exchange rates. To meet these objectives, central banks must intervene in stock markets activities. This is because it is through the stock markets that monetary policy influences the essential economic activities. Stock markets serve as the connecting link in the monetary policy transmission to the real economy. Interest rate manipulation at monetary policy committee meetings is however only one and single way of monetary policy management. Other ways include making available vital information's

that influence the market behavior. Monetary policy is in fact effective no matter when monetary authorities make available important information that influence markets' behavior about the happenings of interest rates and about the anticipated influence of that happening on the stock market and the economy at large. Monetary policy can however seen as actions of monetary authority in managing economy anticipation about the future happenings of the monetary policy instrument and the complimenting effects of that happenings on the economy. (Philipp, 2006)

Unconventional monetary policies have become an important part of the policy toolkit in the aftermath of the 2008–2009 global financial and economic crises. But there is much uncertainty about the effects of these policies, including on stock market. Their use has also been controversial, raising suspicions that they contribute to spillovers that may be damaging for other countries, notably by distorting exchange rates and other asset prices. In one high profile example, newspaper headlines have warned that such policies are contributing to inflationary food prices, with adverse effects on food importing economies and the poor[5].One of the key channels for such distortions, some argue, is through high incentives to engage in massive information speculation and sensitivity of any information to prices. This is defined in different ways; including an amount of speculation supersede that which is required or normal relative to hedging needs, as expressed in the Works of (Irwin and Sanders, 2010) or sudden or unrealistic fluctuations of assets or unwarranted changes in the price of commodities. Whatever the definition, such activity is often linked to speculative bubbles (further crisis),

---

5An example is the article "US Accused of Forcing Up World Food Prices," Guardian, November 5, 2010.

in which asset prices rise above the asset's fundamental value as defined by future pay offs under rational expectation. The recent crisis has shown that the possibility of policy interest rates hitting the zero lower bound in as much as higher what we thought which means that furthering our understanding of the effects of unconventional monetary policies, including possibly harmful side-effects on the system, remains an important task.

Many studies have been conducted explaining this relationship between monetary policies and stock market and majority of the studies have found out that relationship exist but the nature of the relationship differs from one study to another, for instance Patelis (1997) evaluate carefully some important monetary policy variables following Fama and French (1988) method of testing the monetary policy effects and found a significant result in the study. He stresses that monetary policy actions have an important and significant function in predicting security return in the U.S stock exchange markets. Furthermore the study reveals that shares return is a direct consequence of expected economic growth and output. Therefore, the effectiveness of monetary policy on the economy shall be seen in the stock market.

In a later study using Fama and French (1989) Jensen, Mercer and Johnson (1996) elaborate the analysis by referring that the monetary policy activities affects investment returns. Monetary policy attitude represented by a binary (two or more) dummy variable showing interest rate variation (see also Booth and Booth, 1997). Jensen et al. (1996) find that possible innovations in stock returns are contingent to monetary policy as well as business conditions, with anticipated investment returns being great and lucrative in periods of tight monetary policy. Evidence also reveal an un reciprocal in the connection among business conditions and investment returns, in the period of expansive monetary policy however business conditions explain anticipated investment return.

1.2 Monetary Policy

A.G. Hart define monetary policy as "A policy which influences the public stock of money substitute of public demand for such assets of both that is policy which influences public liquidity position is known as a monetary policy''. Monetary policy can also be viewed as expansionary policy or contractionary policy. Usually contractionary monetary policies and expansionary monetary policies imply changing the amount of money in circulation in the economy. Expansionary monetary policy increases the volume of money supply, while contractionary monetary policy reduces the volume of money supply. Expansionary monetary policy measures can include buying government securities, and reducing the reserve requirement rate and the federal funds interest rate(monetary policy rate in Nigeria). An example of contractionary policy is the selling of government securities.

When the monetary authority desires to increase the money in circulation, it employs the following methods:

1. Buy out he treasury bills and government bonds available in the market. (Open Market Operations)

2. Reduce the interest rate.

3. Reduce Reserve Requirements Rate

All the above mentioned strategies directly affect the rate of interest. When the monetary authority are moping out the T bills and government bonds in the market the price of such securities increases. Also reducing the interest rate affects other economic activities. If the monetary authority reduce the commercial bank reserve requirements, this will cause commercial banks to have surplus amount of money they can invest hence give out more loans.

The resulting effect is that price of securities such as bond and equities will substantially go up and the interest rate comes down. Any of the above ways the central bank follows to expand the money supply the resulting effect is security price will go up and interest rate falls.

As can be easily analysed the effect of contractionary monetary policy is directly opposite to that of expansionary .When the monetary authorities intend to reduce the money supply in the economy, it employs the following methods:

1. Sell out treasury bills and government bonds on the market, known as (Open Market Operations)

2. Raise the Interest rate

3. Raise Reserve Requirements Percent Rate

Employing the above mention strategies will definitely result in rise of the interest rate. These cause interest rates to rise up. This can happen either directly or through the simultaneous increase in the supply (sales) of bonds and treasury bills on the open market by the central banks. This increase in supply of government securities reduces the price of the existing securities in the market. These securities will be bought up by international investors, so the demand for local currency will rise and the demand for international currency will fall. Thus the local currency value will appreciate compared to the international currency. This causes change in exchange rate and locally manufactured goods will be more expensive in international markets and imported goods cheaper in the local market. Since this causes more international goods to be sold locally and less locally manufactured goods sold abroad, the balance of International trade will eventually fall. As well, higher interest rates increase the cost of financing developmental projects, so capital investment will be reduced as well.

Furthermore, monetary policies are described as follows: Accommodative, if the central bank set interest rate in such a way that it fastens economic growth. Neutral, if the intention is set neither to create growth nor to manage inflation rate or tight if design to manage inflation rate. Loose when the money supply is increase to be easily accessible to citizens to encourage economic growth and fasten development.

1.2.1 Monetary Policy in Nigeria

Rapid and sustainable economic growth and development is the quest of every country and Nigeria is not exceptional. Nigeria experienced severe economic problems during the period 1970-1980s. The country's balance of payment come under serious challenges and was in persistent deficit within this period. The government current expenditure was widening without complimentary increase in revenue leading to increase fiscal deficit which were financed with credit that have adverse effect on the general price level.

Therefore, the economy is sick and need some urgent treatment, Central Bank Monetary Policy committee (MPC) is held responsible for the monetary policy and implementation. Monetary policy in Nigeria has been conducted under wide range of economic environment. The monetary and financial policies carried out in recent years have been design to gear up the attainment of basic objectives of the economic reform agenda of 1986 which aim is to restore macroeconomic stability in the short run and induce the resumption of sustainable growth and development in the long run. The economic reform of 1986 represent a strategic platform in the history of economic regulations in Nigeria and opened up a new way that reflect government effort of privatizing and deregulating the economy with special consideration and emphasis given to market forces.(chidi, 2013)

As earlier mentioned the main objective of monetary policy in Nigeria is to ensure optimal price and monetary stability. This is mainly possible by the promotion of savers to avail investors of surplus funds for investment through appropriate interest rate structures, manageable variation in exchange rate, proper regulations of banks and related financial institutions to ensure financial sector soundness and effectiveness, maintenance of efficient payment system so that informal sector of the economy which are largely excluded become financially inclusive. Financial inclusion is very much important because the more effective it is, the interest rate sensitivity to production and aggregate demand and so the more effective and efficient monetary policy is.(Newsdesk,2013)

Having understood monetary policy, it becomes expedient to give an explanation of stock markets so that we can better understand stock markets' behavior and their reaction to monetary policy.

1.3 Stock Exchange Market

Stock market or stock exchange is an institution through which financial transactions of shares, corporate bonds, government bonds, treasury bills, debentures, and other securities can be carried out. It is a capital market institution and is essentially a secondary market in that only existing assets, as opposed to new (stock or bond) issues, could be traded on.

All over the world, stock markets act as important tool for economic development and growth. Without a fully developed and vibrant stock market, a country will find it difficult to grow its equity funding, transformed it capital formed and move towards more balanced financial structures. The stock exchange is the engine room for investment generation. Also, stock markets

give room for publicly traded companies to generate financial investment through the sale of shares to investors.

Stock markets around the world have been extremely strong and active during the past 20 years. Several benefits can be attributed to the development of the stock markets, such as economic development and allocation of resources for productive opportunities (Camargos& Barbosa, 2006). In general, there is a strong relationship between economic development and stock market activity, because stock markets allow individuals, corporations and institutions to invest their savings in productive activities.

The stock market has been seen as an institution that contributes to the socio-economic growth and development of emerging and developed economies. This is made possible through some of the important roles played such as channeling resources, promoting reforms to modernize the financial sectors, financial intermediation capacity to link deficit to the surplus sector of the economy, and many tool in the mobilization and allocation of savings among competitive uses which are critical to the growth and efficiency of the economy (Alile 1984)

Most researches that explain development of stock markets (Dyck and Zingales, 2004; La Porta et al., 2000; Shleifer and Vishny, 1997) cover a wide range of aspects, namely: (a) origin of legal system and enforcement levels; (b) level of protection for minority shareholders and creditors; (c) ownership structure and corporate control; (d) transparency and accounting standards; and (e) volume of IPOs (Initial Public Offerings) and incentives for IPOs.

At the same time, Zingales (1995), Pagano, Panetta and Zingales (1998), and Brau and Fawcett (2006) listed out other factors that influence the level of stock market development. These factors include: (a) concentration of corporate ownership, private benefits of control and expropriation of minority shareholders, (b) resistance of firms to an IPO, (c) informational asymmetries and errors in share pricing, (d) conflicts and agency costs, and (e) unfavorable

11

economic conditions. All these factors are interrelated and characterize the legal and institutional environment of each country under analysis.

1.3.1 Nigerian Stock Exchange Market

Nigerian stock exchange market was establish in 1960 and was initially named Lagos stock exchange market. It began operation with only 19 listed companies on its trading roll, but it currently has about 283 listed companies with a total market capitalisation of about 125b UD as at the end 2007.

The types of securities traded include industrial stocks, corporate bonds, government bonds and equity or ordinary shares. (Focus Nigeria.com (2013)) The question of the operations of stock exchange come into existence to enable investment, which were inherently illiquid to became liquid through the re-conversion into cash at the decision of the investor without any difficulty. The ownership of a country asset and means of production can no longer be ignored. The implementation of the Automated Trading System has significantly increased the trading process and made it easier for ordinary people who found it difficult with trading technicalities.

Presently, in many countries Nigeria inclusive, the presence and significance of the capital markets have much implication and this is due because of the fast growing influence, ideas, formalities and structures associated with the economy. This was very easy to identify during the implementation of Nigerian enterprise promotion council decree in 1988 and the exchange control act of 1962(to protect investors). Today, words like globalization and economic marginalization have become more often in economic and finance and fast growing inter-relation and connectivity of economies and financial markets is much more witnessed.

The Nigerian Stock Exchange has since inception been the fulcrum around which the Financial Market evolves. It becomes the center of long-term capital formation in the economy. It has been providing the efficient and effective machinery and platform for organized and formal trading in debt and equity securities. The Exchange has been growing substantially since inauguration.

Movement in shares as represented by All Share Index, which shows the health of share market started on a good note in 2005. The increase continued in 2006 and reached its peak in 2007 with a sharp decrease in 2008, 2009 and 2010. The increase was attributable to bullish attitude of the share holders in the market. The decline was due to the bearish attitude of shareholders which was informed by the global economic and financial crises in 2008 and reached its peak in 2009. Foreign investors divested in the stock market because of high demand for capital by their countries of origin because the crisis is more severe there.

Market capitalization which is the extend of investment capital sourcing from the economy by Limited Liability Companies witnessed positive growth between 2006 and 2007 and dropped in 2008 and 2009. There was a slight increase in 2010, The increase can be explained by the public confidence in the market while the reduction was attributable to the drop in the value of shares because of the global economic and financial crises. Value of new issues continued to rise till 2008 when it fell to 50 % in 2009 and rose again in 2010. The decline in 2009 again was as a result of the global economic crises.

According to David Adonri[6], the development of the Exchange these 50 years has been measurably impressive.

---

[6] Is a Financial analyst Chief Executive Officer Lambeth Securities

"The All Share Index (ASI) currently at about 25,471 points was formulated on January 3, 1984 with Index at 100 points on that day. The ASI attained its highest value of 66,371 points on March 5, 2008 when market capitalization hit N15.67 trillion".

"from a modest beginning, the NSE experienced tremendous growth when the number of quoted companies soared due to Federal Government's indigenization programmers of 1972 and 1976. Further growth was achieved in 1980s during Federal Government's privatization exercise and in 2005 when Nigerian Banks were compelled to recapitalised."

"In terms of concrete achievement, the NSE has provided long-term investment outlet for domestic investors since inception and also foreign investors' from 1995 when the Exchange Control Act of 1962 and the Nigerian Enterprise Promotion Decree of 1989 were repealed. This enabled foreign investors' unlimited access to the Nigerian Capital Market."

"Till date, the Nigerian capital market has successfully aided capital formation for the Nigerian economy although mainly in the services and light industrial sectors. Also, as a pioneer Exchange in the West African sub region, the NSE has assisted in the establishment of Exchanges in Ghana, Sierra Leone and the Gambia, Adonri added however, he noted that the NSE needs to address the following challenges: deepening of the market, reactivation of the bond and primary markets, as well as establishment of the framework for market-making."

In whatever way, the 2008 global economic and financial crisis which happened at the later part of the existence of the NSE led to the stock market crash. It is worth to mention that the market crash cannot throughout ascribe to the NSE alone because it was a spill-over effect from the mortgage market crisis in United States of America and Europe. Nevertheless, among the success of the Nigerian stock Exchange market within this period of time, was

its ability to secure huge amount of investment from all over the world USA, Europe, Asia, Latin America and most especially from other neighboring African countries Niger, Ghana, South Arica etc. This foreign direct investment was to tune of billions of dollars. Consequently, in period of subprime mortgage crisis in Europe America and Asia, the foreign investors withdrew their large amount of investment or rather sold their financial assets to indigenous corporations. This primarily led to complete devastation of stocks at the NSE which ultimately add in the collapse/crash of the market.

Apart from the international financial crisis, the collapse of the Nigerian stock market is a consequence of some internally generated factors that affected investors' trust. Some of the main factors included ineffective market regulation and supervision, weak institution, corruption and corporate governance scandal, lack of regulatory proactively and cohesion, inefficiency and cumbersome processes.

Since the inception of the international financial meltdown, the management of the Nigeria stock exchange has employed various strategies to curtail the devastating spillover effect. The major strategy employed at time was, the federal government strong committee of experts which came up with some good suggestions such as the establishment of market makers and share buy-back method. While these are yet to become effectively operational, the main regulatory body of the market Securities and Exchange Commission (SEC) steps in and set up a 15-man National Committee to suggest new market outlook and operational strategies. The committee recommends 32 ways aimed at transforming the Nigerian stock market to a world-class standard and compete with other developed markets. (The economy 2009)

Implementation of some of the recommendations of the committee has been started as approved by the board of directors of SEC. However, the intervention of SEC in NSE's affairs at the time when it sacked its erstwhile Director General, Professor NdiOkereke-Onyiuke and constituted an interim

Administration on the basis of protecting investors in the market, revamp the market. Despite SEC's intervention which impacted negatively on the stock market, some financial market analysts believe that the market would be better for it at the long run. The interim administration constituted provided the Exchange with a substantive Chief Executive Officer, Mr. Oscar Onyema who recently unveiled his plans of making the Nigerian stock market a gateway for African frontline market. (ibid)

1.4 Statement of the Problem and Significance of the Study

By the year 2009, an economist Paul A. Samuelson[7] pointed out that it is entirely mistaken and unrealistic to argue that a market system can regulate itself without government intervention. Government intervention has been drastically reduced in years especially in emerging economics in their quest to follow the developed economies by the belief in the self regulatory aspect of the market economy.

Analytically based, lessons from the past and present crisis shall focus on revision of the macroeconomic theory and regulatory frame works to reduce the risk of dangerous uncertainties, bubbles, booms and resulting bust. Thus, Economist had shifted their focus back to the pioneering idea of Adam Smith recognized 250 years ago-limitations of the market. Despite Smith detailed analysis of the working of the market economy it will be hard to point out from his writings any theory of the sufficiency of the market economy. Keynesian economics again become the centre of discussion when the conventional approach can no longer play much of a supporting role. Ever since the break out of the credit crunch in USA financial system in 2008 many

---

[7] See the interview of P. Samuelson :Don't expect recovery before 2012 by NPQ in Jan 2009.

economies and financial analyst have opted on monetary measures in the beginning by continuously lowering the interest rate aiming to stop the worsening financial turmoil . Official interest rate in many countries that are seriously affected including USA, Canada, Japan, UK, Switzerland, Hong Kong are close to zero. Notably the interest rate of Bank of England has not reached this level in 315 years history. Moreover, the outcome of the Federal Reserve policy meeting is that the ideal interest rate for the USA economy in that situation is minus 5 % but can a bank cut interest to minus 5 %?

There is chaos and confusion everywhere and with this problem in hand I come to ask whether monetary policy has any effect on the financial system especially the stock market since the monetary measures taken during the crisis did not reflect in the stock market and if there exist a long run relationship between monetary policy and stock market.

Most of the literature evaluates the influence of monetary policy on expected stock returns, while several studies attempt to address the effect of monetary policy surprises on daily or intraday stock returns, for example. But very few studies consider the longer-run effects on equity prices and Treasury yields. Furthermore none of the literature try to explain the relationship between monetary policy and stock market development rather studies emphasize on price volatility as their main concern of the studies.

This study will be helpful to both stock market and central banks. With respect to the stock market, the study is up to the broader issue of market development via investment and GDP contribution which practitioners spend considerable resources following (prospective) monetary policy developments. With regard to the central banks, the study will study the effect of monetary policy on interest rate and stock market and is relevant to several possible transmission mechanisms from central bank to the real economy. Also most research lay more emphasis on interest rate and ignore that Central Banks controls the monetary policy rate, which claims to affect market-

determined interest rates and asset prices and, in turn, real variables through various possible investment and consumption channels.

In addition, there has been little focus by researchers on the exact relationship between monetary policy and stock markets, Economists views and opinions on this issue are divergent whether the effects of monetary policy on stock markets or the effects of stock markets on monetary policy.

The response of Stock Market to Central Bank policy is a key component for analyzing the impact of monetary policy on the economy and because of their potential impact on the macro economy; stock market movements are likely to be an important determinant of monetary policy decisions. The American stock market crash of October 19, 1987 has made economists examine empirically if monetary policy has been influenced by high unrealistic valuations of the stock market. This study will also examine the direction of the relationship between monetary policy and stock market.

Many studies also performed on the relationship between monetary policy and stock exchange using VAR model capitalize on certain variables as proxy for monetary policy and stock market. For instance most of the studies use markets determined interest rate, M2, M3 as well as exchange rate as proxy of monetary policy in the model while all share index and turnover ratio are used as proxy for stock market. This study fills this gap by using Monetary Policy Rate (MPR) as proxy for monetary policy and market capitalization[8] for stock exchange market. Moreover GDP and investment are included to make the model more comprehensive and well designed for the purpose of the study.

This thesis also follows much of the empirical studies on the relationship

.

---

[8]However, Arestis et al. (2001) have shown that in the context of time-series data, market capitalisation tends to perform better than other measures of stock market development.

between monetary policy and stock prices by using Vector auto regressions methodology (VAR). One important characteristic of the VAR approach is that statistical, rather than economic criteria are taken as the starting point for econometric modeling, imposing as little economic structure on the estimations as possible. Therefore, the approach has the advantage of avoiding the contentious issues about the underlying structure of the economy, which is appealing when working with developing economies that are often featured by uncertainties and abnormalities regarding their structure. Another advantage of the VAR approach is it's in build and inherent ability to incorporate the endogeneity - the interdependence among the system's variables, which is a feature of the monetary transmission mechanism. In addition, a VAR approach allows researchers to separate the endogenous reaction of the monetary authorities to developments in the economy from exogenous monetary policy shocks.

The significance of this study is to determine how changes in monetary policy affect stock market performance an advice policy makers and investors on how to improve the performance of stock markets taking note of the similarities and differences in the level of economic development and stock market activity. This research is important in order to present a more objective analysis of how a monetary policy in developing country like Nigeria affects stock market performance.

There are lot of studies and empirical evidence that show the effect of monetary policies on the Nigerian stock exchange market. This research therefore intends to fill the gaps and also extend previous literatures by empirically analyzing the relationship between both monetary policy and stock market including other key macroeconomic variable i.e. GDP and investment thereby improving upon the existing knowledge on this topic.

1.5 Objectives of the Thesis

The main objective of the thesis is to empirically investigate, analyse, identify and establish the relationship between monetary policy and Nigerian stock market.

The specific objectives of the study are

1. To determine if there is a long run relationship between the selected variables.
2. To determine the direction of the relationship between monetary policy and stock market in Nigeria.
3. To determine how variation on monetary policy affect the activities of the Nigerian stock exchange market
4. To investigate the role of capital formation in the development of Nigerian stock exchange market
5. To investigate the role of monetary policy and stock market development on the GDP.

1.6 Scope of the Thesis

The economy is a large component with a lot of diversity and complexity. This thesis will look at a particular part of the economy i.e. financial sector; also this thesis will only cover the effectiveness of monetary policy on the Nigerian stock exchange market. Two empirical studies are carried out, the first model from 1980- 2012 and the second model 1985-2012

1.7 Structure of the Thesis

The thesis comprise of five chapters which covers Introduction, Literature review, Research methodology, Empirical studies and the Conclusion.

Chapter one is the introduction and it include the background of the study, monetary policy, monetary policies in Nigeria, stock exchange market, development of the Nigerian stock exchange market, statement of the problem and significance of the study, the objectives of the study, scope and the structure of the study.

Chapter two is the literature review and it include introduction, the theoretical perspective, empirical evidence from other countries, empirical evidence from Nigeria, VAR studies and the Non VAR studies

Chapter three is the research methodology chapter and it includes explanation of the vector auto regression model, the model specification, VAR identification, data and choice of variables, specification diagnostics test, stationary and unit root test, cointegration, causality, impulse response, variance decomposition and a brief explanation on eveiws.

Chapter four is the empirical chapter and it present the result and its analysis

Chapter five is the conclusion and it involves the summary, conclusion, policy recommendations and suggestion for further research.

CHAPTER 2

LITERATURE REVIEW

The connection between stock market and monetary policy has attracted the attention of academics and researchers because of the historical and important happenings in the financial world. These changes are acknowledged because of development of the financial sector, globalization of economies, flexible exchange rate regimes among economies etc. While these facilitate free movements of capital from one economy to another, there also significantly contribute to frequent changes in monetary policies which contribute to stock market volatility and frequent changes in the investment decisions. These factors make the relationship between monetary policy and stock market very complicated and hence economist and stake holders give it more priority. But there is no universal agreement among economist and observers about the existence of a relationship between monetary policy and stock market and also the uniqueness of the relationship is also a question yet unanswered.

As mention earlier the type of the relationship between stock market and monetary policy is currently a hotly debated topic among economists and financial experts (Bernanke, 1999).Therefore it is pertinent to know exactly the nature of interactions between monetary policy and the stock markets. Monetary policy decisions have their most direct and immediate influence on the broader financial markets, including the stock exchange market, mortgage markets, government securities and corporate bond markets, foreign exchange

market, markets for consumer credit, and many others. It has been stressed by Bernanke (1999) that if monetary policy is successful , volatility in security prices and expected returns as a direct consequence of the maneuver of monetary policy lead to the changes in economic behavior that the policy was aimed to achieve. Accordingly, having a vast knowledge of the relationship and connection between changes in monetary policy and its direct effect on the economy will ultimately explain how monetary policy actions affect key financial institutions, as well as how variation in security prices and required returns in these markets changes the behavior of firms, households investment, government and other decision makers.

Economists such as Ioannidis and Kontonikas (2006) and Jensen et al (1996) believe that monetary policy affects stock market performance and they especially lead to volatility in stock prices, whereas others such as Bordo and Jeanne (2000) and Fair (2001) are of the opinion that monetary policy has little or no effect on stock market performance. Among those who believe monetary policy affects stock market performance, there are divergences as to which tool of monetary policy is more important i.e. exchange rate, interest rate, rediscount rate, money supply etc. While some like Rigobon and Sack (2001), Hayford and Maliaris (2002) believe that interest rates are more important, others like Wing et al (2005) and Mehar (2000) believe that changes in the supply of money is the dominant factor in monetary policy transmission mechanism. Finally, authors are divided as to whether expansionary or contractionary, inflationary or dis-inflationary monetary policies have negative, positive or non-statistically significant relationship with stock market performance.

2.1 Theoretical Perspective

The basic structure about any explanation of equity market proclamation is to be traced to Fisher (1930). Fisher argued that financial assets such as equity stocks, bonds etc are replica or caricature of real assets of an economy such that financial assets mirror the real sector of the economy. He further explains that financial assets do not directly contribute to the production capacity of the economy but instead represent investment in a well-developed economy, and they are the claims on the real sector of the economy. He also explains that in a well-developed economy financial assets can be used to hedge against unforeseen price fluctuations as such the relationship between investment, price fluctuations and economic fluctuations is traced from this hypothesis. If this argument called Fishers generalized hypothesis hold, then investors have an option to transfer their financial assets into real assets when prices are expected to rise. In this scenario financial assets price in normal terms invariably reflected expected price movement and the economic relationship between these two variables should be positively correlated (Iannides et al 2005). This argument that financial assets can be used to hedge price movement can also mean that investment is invariable compensated for the rise in price level by corresponding in the returns of the financial assets. Hence, the real rates of return remain equal.

In relation to the Fishers generalized hypothesis is the Friedman (1956) money demand function. Friedman tries to bring an insight into the relationship between money supply, interest rate and stock prices. He first tries to merge different decisions made by economic agents. The decision of the agents savings that are to be invested appropriately called investment savings (IS) and the decision of allocating different assets in the portfolio known as liquidity money (LM), in such doing he transformed the liquidity preference theory of money. He further explain that individual investors

decision depend upon consumption –saving decision (which are determined by interest rate forecast) of course individual decisions not to consume now is investment. For an agent to decide whether to consume now or to consume in the future depends on two things. (1) His own subjective decision of whether to consume now or in the future, this depend on the nature of the agents utility and indifference curve (2) the gains he calculated by tradeoff between consumption now and in the future that are technologically feasible which are observed by the investment and production opportunity set. From this analysis we can deduce that the consumption-saving decision represent the supply of money for investment which is a part of the fundamental determinants of interest rate. Moreover, it can be further argued that interest rate is the price of deferred consumption or the rate of return on investment/savings. Logically it can be said that interest rate is the determinant of consumption –saving decision. Although this theory isseverely challenged by Keynesian school of thought, but is later remodeled and re explained by a group of economist called monetarist economists. With the conventional economists agreeing that the quantity theory truly make a valid explanation in the long run, there is still conflict about its acceptability in the short run. The main criticism of the theory is that the speed of money circulation is not stable and, in the short-run, prices are adhesive, so the positive connection between money supply and price level does not exist.

The Keynesian model assumes a close economy and a perfectly competitive market with fairly price- interest aggregate supply function. The economy also assumes absence of equilibrium level of employment and also that works in the short run. Keynes believes that in the long run we are all dead. In this analysis money supply is said to be exogenously determined if the wealth owner has only one choice between holding bonds. The Keynesian theory is rooted on one notion of price rigidity and possibly of an economic

setting at less than full employment. The Keynesian macro economy brought into focus the issue of output rather than price as being responsible for changing economic positions. Keynesians were not interested in the quantity theory per say. Keynesians believe that monetary policy works by influencing interest rate which influence investment decisions and consequently output and income via the multiplier process

The Arbitrage Pricing Theory introduced by Chen, Roll & Ross (1986) involves recognizing the macro economic and financial variables which influence security returns, Chen, Roll & Ross (1986) hypothesized and analysed a group of macroeconomic and financial data series to explain US security returns. They investigated the response of these macro-economic variables to security returns. In the study they use seven macroeconomic data series; term structure, inflation, industrial production, oil prices, risk premium, market return and consumption. They assume that the underlying variables are serially uncorrelated and all innovations are unexpected. Evidence from the study shows a very strong relationship between the macroeconomic variables and the expected asset returns. Arbitrage Pricing Theory (APT) shows that asset's return can be explained as a linear function of many macro-economic factors. APT theory is able to recognize multiple risk factors, such as inflation rate, price level, interest rate, investment etc (Vickers, 1999).

$$r = E(r) + \beta_1 F_1 + \beta_2 F_2 + \ldots + \beta_n F_n \qquad (1)$$

Where r is the actual return of security, E(r) indicates expected return of security, F_1 is the first risk factor, and β_1 represents the sensitivity of security to the first risk factor. Asset prices are determined in markets with future

looking of participants. Asset prices effect the spending decision of public, for instance, higher stock prices reduce the cost of equity financing, which stimulates investment growth (Issing, 2009)

Most of the literature that analysed the dynamic inter-relationship between stock markets and monetary policies is guided primarily by three areas of finance theories, namely the arbitrage pricing theory (APT), the efficient capital market (ECM) theory and general equilibrium (GE) models of the financial sector. The ECM theory states that the stock returns should reflect all available information in the market, while the APT assume a relationship between the assets returns of a selected group of assets and the returns of a single asset through a linear combination of many independent macro-economic variables (see Stephen Ross, 1976). Therefore, the APT theorem shows an equilibrium pricing connection between each asset's expected return and remaining others.[9] Alternatively, GE models emphasize stock returns as an important link between the mainstream and financial sectors of the economy (see Tobin, 1969). Using a General Equilibrium model, Tobin analysed how stock returns may provide explanation to changes in the monetary and fiscal policy of the variables of the model. Tobin's thorough analysis suggests that both money growth and budget deficits have a very significant impact on stock returns.

Aliyu (2011) in his study observed that Chami, Casimono and fullerkamp (1999) explain the existence of stock market channel of monetary policy. They argue that changes in monetary policy have an impact on the real economic activities because inflation levies a property tax on assets in addition to income tax on returns payments. They argue that inflation course

---

[9] Precisely the theorem shows that a stock asset expected return beyond T bills rate will simple be the total exposure to some shared source of risk weighted by the price the competitive market assign to these risks(risk premium).

by monetary policy negatively affect the real value of firm stocks which act as tax on capital stock. This can be seen from two angles. First, the actual value of the flow of return is reduced with higher inflation and second returns are reduced because higher inflation induce fall in production. This is because labor suppliers prepare not too work much in period of high inflation. The traditional interest rate channel was also equally analyzed by Bernenke and Blinder (1992) Thorbecke (1997) and Rigobon and Sack (2003).

2.2 Empirical Evidence from other Economies

Hassan and Javad (2009) explore the relationship between equity price and monetary variables for the period June 1998 to June 2008 in Pakistan stock exchange market, they find out a short run relationship between equity return and monetary variables. In their study, they also mentioned the study and observation made by Bahmami and sohrabian (1992). They analyzed the economic relationship between exchange rate and equity market return for the period 1963-1988. They use cointergration analysis and Granger causality analysis to examine the relationship. Evidence found in this study shows bidirectional causality in the short run. In a similar study in Japan by Yu (1997) bidirectional relationship is also found between exchange rate and stock market return and unidirectional causality flowing from exchange rate to changes in stock prices in Hong kong. Moreover similar study carried out in Singapore using daily data for the period 1983-1994 show no causality. Using cointergration analysis also, Abdullah and Murinde (1997) examine the relationship between exchange rate and equity prices in Pakistan, Korea, Philippines and India for the period 1985 -1994. The study shows no evidence of causal relationship in Pakistan and Korea but show unidirectional Granger causality between exchange rate and equity prices in Philippines and India.

The Granger causality in India is flown from exchange rate to asset prices while in Philippines unidirectional Granger causality runs from equity market to exchange rate.

Tobak (2006) conducted this type of study in Brazil. He tries to find out the relationship between exchange rate and stock prices. He firstly conducted the unit root test for the stationary of the data. He employed the cointegration to test the presence of long run relationship between the variables. The result shows that there is no long run relationship between exchange rate and stock market prices. He also conducted linear and non-linear causality test with full consideration of the linear dependence and volatility. The result of the Granger test shows causality from stock prices to exchange rate which is the case for the portfolio approach stock price lead exchange rate and non-linear causality from exchange rate to stock market which is also in line with the traditional approach of exchange rate to stock prices.

Establishing the relationship between stock prices and macroeconomic variables is very important for formulating current economic stabilization policies. Nasrin and shahadat (2011) investigate the relationship between four macro economic variables and Dhaka stock exchange (DSE) stock prices using cointegration and Granger causality tests. They found out that cointergration exist between stock prices with each of the variable M1, M2 and inflation rate indicating a long run relationship. Evidence found in this study shows unidirectional casualty exists from stock market to exchange rate and M1 in the short run. The result of the bivariate Error correction model shows that long run casualty exists from M1, M2 to stock market and from stock market to inflation rate. They further expand the analysis to multivariate setting and found out evidence that M2 Granger cause stock price and the three macroeconomic variables

In the light of concerned theories and studies Cheng (2008) adopt econometric techniques and study the effect of macroeconomic elements as exchange rate, saving reserve, interest rate and money supply on Shanghai securities composite index to measure if monetary policies have any impact on stock prices. He mainly adopt VAR modeling and Granger causality testing and found out that exchange rate changes has a definite effect on stock prices while interest rate and savings have little effect on stock prices but money supply have significant impact on stock prices. Evidence shows long run coordinating relationship between stock prices and M0, M1 and M2 variables respectively.

Berrument and kutan (2007) examine the impact of monetary policy on stock return in the Turkey emerging economy during the post 1980 economic reform. In order to capture the relationship they use the Vector Autoregressive (VAR) model. They result show that monetary activities affect return of the financial and service stocks, but the effect dies out in a short period of 9-24 month depending on the stock index used. In their view monetary policy is neutral. They further explain that monetary policy effect short run economic activities and business cycle. Bernanke and Blander (1992), Christian et al (1994), Thorbacke(1997), Normadin and Phanuef (2004) also employed similar VAR model. The VAR model has been seen as the champion model in carrying out similar analysis. In this analysis a vector of endogenous variable are regressed against the n lag values. Evidence indicates that monetary policy affects returns with strong influence. However the impact is short lived ranging from 9 and 24 months. The end result shows that asset prices may provide an additional channel through which monetary policy affect short run economic activities given the important role stock market plays in emerging economies and the greater globalization of financial markets in general.

Relatively little empirical evidence is available that estimates the relationship between asset price movements and monetary policy measures in Middle East and North African Countries (MENA). Samy Bennaceur et al (2009) analyse the linkage between monetary policy and MENA stock markets. This is the first study that focuses on the linkage between monetary policy and stock market prices and aims at understanding the connection between monetary policy and stock markets in eight MENA economies. The economies analysed in this study are: Saudi Arabia, Bahrain, Egypt, Tunisia, Morocco, Oman, and Turkey. VAR methodology is used. The major findings of this study are the following: (i) In Saudi Arabia, Oman, Jordan and Bahrain monetary policy seems to have a significant effect on stock market returns. (ii) The monetary policies of Morocco and Tunisia have less extent to those of Egypt and do not significantly impact on equity prices. (iii) Better still, monetary policies' effect to stock market price fluctuation are far from being homogenous across these economies. While Saudi Arabian and Jordanian monetary policies respond very much to an increase in stock market returns, the other economies do not seem to exhibit any significant reaction.

Hamrita (2011) investigate the multiple relationships between the exchange rate, interest rate and stock price using a different methodology. He uses wavelet transform to analyze the relationship. In particular, He applies the maximum overlap discrete wavelet transform (MODWT) to the stock prices, interest rate and exchange rate in USA over the period January 1990 to December 2008 and using the wavelet correlation and cross-correlations to analyze the association as well as the lead/lag relationship between the selected series at the different time frame. Result from the study reveals that the relationship between interest rate and exchange rate is not significantly different from zero at all range. Meanwhile, the relationship between interest rate returns and stock index returns is significantly different from zero only at

the highest range. The exchange rate and asset index returns have a nonlinear relationship in the period at wider horizons.

Abdulqayyum and Anwar (2011) address the linkage between monetary policy and Pakistan stock exchange market. They try to differentiate their study by first observing that particularly stock market returns are not normally distributed and they are generally assumed to be highly Kurtic. They conducted test of skewness, Kurtosis' and Jarque –Beratest of normality to analyze the non-normality of the data. The Augmented Dickey Fuller (ADF) test of unit root is used to test stationary of the data. The volatility of the stock return and the repo rate is also seen by plotting the data .The estimation technique employed includes the Engle Granger two step procedures and the bivarate EGARCH method. Evidence indicate that any change in monetary policy stance have a significant effect on the volatility of the stock exchange market. Thus donate to the serious ongoing debate in the monetary policy rule literature regarding the proactive and reactive approach

2.3 Empirical Evidence from Nigeria

The global financial crises of 2008 have coursed severe destruction to majority of the world economies. Nigeria is not exceptional in this case and this doubting challenge coursed central banks of the affected countries to take actions through the implementation of monetary policies to curtail this severe effect. Aliyu (2011) analyse how stock market react to the implementation of monetary policy of the Nigerian central bank during the period of the crisis. He uses monthly data for the period (January 2007- August 2011). Using the GARCH developed by Engle and Boilersler (1986) and EGARCH by Nelson (1991) he regressed stock market return against important monetary policy variables M1, M2 (money stock) and monetary policy rate (MPR). Rationalist Expectation Hypothesis (REH) was used as the theoretical structure of the analysis. Based on this theory Lucas (1972) asserts that only unanticipated

economic decisions have significant impact while anticipated economic decisions did not. The theory further explains that consumers are rational and change their economic behaviors whenever they anticipate changes in economic decisions. Result from this investigation revealed that unexpected part of the monetary policy had an effect on the Nigerian stock exchange market while the expected aspect does not have any effect on the Nigerian stock exchange market. This justifies the argument of the rationalist expectation hypothesis.

In a similar study conducted by Okoli (2012) he observed that there is no effect of international factors and influence on stock market returns. This means that increasing globalization of the world economies and the devastating effect of global financial crisis does not have an effect on the Nigerian stock returns. Although he use a larger sample the result from the study revealed that the only monetary policy variable that have influence to stock market fluctuations is exchange rate and it is with a negative co-efficient but statistically significant. This shows that higher volatility of exchange rate have a negative impact on the stock market returns. Moreover, the result of the Granger test shows that M1 causes very significantly M2 and also M2 causes very significantly M1. In a more common language it means there is bidirectional causality or bidirectional relationship between MI variable and M2. Suggestion in this is that if the monetary authorities will stabilize exchange rate volatility then stock market volatility will be reduced to the dearest minimal.

Using a linear combination of stock market index and monetary policy variable Osuagwu (2010) in his study analyse the relationship between monetary policy variables and the performance of the Nigerian stock exchange market. He uses quarterly data for the period (1984:1-2004:4). He employed ordinary least square, cointergration and error correction

specification for the estimation. The result obtained show that stock market performance is strongly influenced by broad money supply, exchange rate and consumer price index both in the long run and the short run. He further explain that liquidity, exchange rate and price level channel of monetary policy transmission mechanism support and evident as the determinant of stock price movement in Nigerian. Furthermore, minimum rediscount rate and treasury and Treasury bill rate show conflicting results, their coefficients were unable to show significant relationship to changes in stock market index although the coefficients follow expectations. Moreover, on a very frugal inspection of the variables it is notice that a significant relationship exists if used discriminately. Hence, for the interest rate channel of monetary policy transmission to affect stock market index, there is either minimum rediscount rate or Treasury bill rate to be applied at one point in time.

Okpara (2010) analyse the effect of monetary policy on the Nigerian stock market returns, He apply the Two Stage Least Squared Method on a set of simultaneous equations which were found to be over identified. The reduced form of the equation was tested for stationary using the Augmented Dickey Fuller Unit Root Test and Cointegration Test for relationship of the variables. A Vector Error Correction Model and the Forecast Error Decomposition Analysis were also carried out to determine the long and short run dynamic properties of the equations. His major results are that, monetary policy is a significant determinant of long-run stock market returns in Nigeria. Precisely, high Treasury bill rate reduces stock market returns and thus, shows an evidence of monetary policy influence to slow down the economy. While the current and one lag period interest rate exert a positive and significant influence on the stock market returns, the lagged error correction term of the model is negatively signed, showing that about 32 percent of deviation from the long-run equilibrium between stock returns and the Treasury bill rate

together with interest rate is corrected periodically. Moreover, the salient feature of the variance decomposition results is that the predominant sources of returns volatility are due largely to stock returns shocks and interest rate shocks. Thus the innovations of rate of interest can be a better forecast of stock market returns in Nigeria

Charles (2012) examines the impact of monetary policy on the Nigerian economy. He employed the Ordinary Least Squares Method (OLS) to analyze data between 1981 and 2008. The result of the analysis reveal that monetary policy represented by money supply exerts a positive impact on GDP growth and Balance of Payment(BOP) but negative impact on rate of inflation. He suggest that monetary policy should facilitate a favorable investment environment through appropriate exchange rates, interest rate and liquidity management mechanism and the money market should provide more financial instruments that fulfill the need of the ever growing sophistication of operation. He stated three models to represent the impact of monetary policy on Nigerian macroeconomic variables with the independent variables as money supply, liquidity ratio and cash ratio while the dependent variables will be inflation rate gross domestic product and balance of payment

Brawson et al (2011) determined the influence of some macroeconomic variables on the government stock, industrial and total stock transactions in the Nigerian stock exchange market. Time series data from 1970 to 2010 is obtained for the analysis .Unit root test (Augmented Dicker Fuller test) conducted on the data shows that some were stationary at levels and some were not till after difference. Double log (to reduce the volume as well as the heterogeneity of the series) multiple linear models were used and estimated using ordinary least squares technique. The empirical results of the study is that nominal exchange rate of naira to dollar, inflation, domestic savings, value of total import and liberalization period are significant macroeconomic variables that have effect to the value of corporate equities trading in the

Nigerian stock exchange market. Also, external reserves, external debt, nominal exchange rate, and industrial capacity utilization rate are significant macroeconomic variables that influence the value of government bonds and T bills transaction in the Nigeria stock exchange market. Evidence also shows that the values of total stock market transaction have substantially been influenced by inflation rate, domestic savings, oil income, and industrial capacity utilization rate. The result calls for a long term policy package that should emphasize on the adjustment of real and monetary policy variables in the Nigerian economy. Moreover, relevant institutional strength and operational reforms in the Nigeria's capital market are certain in increase the sector's competence.

Ibrahim and Oketoyin (2012) study the effect of aggregate economic policy on the stock returns in the Nigerian Capital Market. The study chose error correction modeling techniques that is based on analyzing both short run and long run system dynamics in the endogenous model. Evidence from the estimated models reveal that aggregate economic policies relating to aggregate economic activity (measured by GDP),broad money supply (M2), interest rate (INT) and consumer price Index (CPI) are the most vital macro factors that account for stock market returns in Nigeria. They conclude that macroeconomic policy variables cannot be ignored in accounting for the system dynamics of stock returns in Nigeria

Osamwonyi and Osagie (2012) attempt to determine the relationships between macroeconomic variables and the Nigerian capital market index. They uses time series data of several macroeconomic variables of exchange rates, inflation rates, interest rates, fiscal deficit, GDP and money supply from 1975 to 2005 and it tries to uncover the relative influence of these variables on the All Share Index(ASI) of the Nigerian stock market. In pursuance of this, the Vector Error Correction Model (VECM) was used to study the short-run dynamics as well as long-run relationship between the stock market index and

the six selected macroeconomic variables from the Nigerian economy. The major result is that macroeconomic variables affect stock market index in Nigeria. It is recommended that the adoption of suitable economic policies will be of great importance to the stock market index (a proxy for stock prices) and this in turn will result in needed growth in the capital market.

Amassoma et al (2011) appraised monetary policy development in Nigeria and also examined the effect of monetary policy on macroeconomic variables in Nigeria for the period 1986 to 2009. They adopted a simplified Ordinary Least Squared technique and also test for the stationary of the data using the unit root test, co-integration tests is carried out. The result of the study showed that monetary policy have gone through the implementation of various policy innovations and this has therefore led to sustained improvement over the years. The result also shows that monetary policy had a significant effect on exchange rate and money supply while monetary policy was observed to have an insignificant effect on price instability in Nigeria. This implicitly point that monetary policy had a significant influence in maintaining price stability within the Nigerian economy. The study concluded that for monetary policy to achieve its other macroeconomic objective such as economy growth there is the need to cut off the excessive expenditure of the government and combine fiscal policy alongside monetary policy measures

Abiodun and Elisha (2012) examined stock prices, stock market operations and economic growth in Nigeria using time series from 1980-2010. They used Granger causality modeling to test the direction of granger relationship among the variables. Augmented Dickey Fuller methodology was also used to test for the stationary of the data, used also is error correction model. The study showed that the present value of stock price adjust swiftly to changes inflation rate, exchange rate, interest rate, broad money supply, gross domestic product, market capitalization and volume of transaction of the Nigeria stock exchange. The lagged value of Error correction model given as

23.9% shows respond of or an adjustment of 23.9% from the previous period disequilibrium of the present level of stock price in the determination of causality between the past level of stock price and the present and past level of the explanatory variables. The study concluded that the activities of the stock market are statistically significant with the stock prices and economic growth and development. This shows that stock prices should be observed as to prevent volatility in the prices which could eventually affects the performance of the stock exchange market and the economy in general

It is generally agreed that the liquidity of market is a vital attribute of efficient stock market. Liquid markets inevitably improve the mobilization and investment of capital and thereby improve the extensive outlook of long-term growth. This argument explains the objective of this study and it quest to analyse and determined the main factors that contribute to stock market returns in Nigeria. Using the OLS method based on the sourced time series data of the variables. The data were source from the Central Bank of Nigeria (CBN), and the study is between 1984 and 2010. The finding shows that interest rate, history asset return, money supply and exchange rate are the main variables and influence asset returns in Nigeria. As such, the study recommended the need to adopt a mixed policy approach between capital and monetary market tools in order to improve the returns in the Nigerian Stock Exchange. Bukola and Atanda(2012).

Osem (2011) used AR (k)-EGARCH (p, q) methodology to examine the volatility in stock market and macroeconomic variables, and also used LA-VAR Granger Causality test to analyze the direction of the relationship as well as linkage between stock market volatility and selected macroeconomic variables volatility in Nigeria for the periods 1986 to 2010. Evidence from the study shows that there exists a non linear causal relationship between stock market volatility and real GDP volatility; and there is no causal relationship between stock market volatility and the volatility in interest rate and inflation

rate. The study further explain that any effort to manage the stock market volatility, government should embark on vibrant policies that building in a stable market through recognizing the growing interest of market participants in the market by increasing supply of shares.

Umar Bida (2013) investigates the vigorous relationship between stock prices and exchange rates for five Sub-Saharan African financial markets: Nigeria Ghana, South Africa, Mauritius and Kenya. He distinguish his study by using weekly data, covering the floating exchange rate period from January 14, 2000, to December 31, 2009, and applies both the Vector Auto regression and the Dynamic Conditional Correlation models. Results from the VAR model reveal no evidence of long run relationship between stock prices and real exchange rates for all the five countries in the sample. While on the other hand results from the dynamic conditional correlation show that the correlation coefficients are not constant for the period of the study, and the estimates largely show a negative time-varying correlation for all the countries with the exception of Ghana that indicates a positive correlation.

The recent global financial and economic crises have necessitated so many macroeconomic adjustments in the Nigerian economy in other to address the global challenge. The devastating effect of the crisis affects the naira exchange rate lost value and become unstable. The stock market indices varied substantially relative to their previous year's position and commercial banks, because of their vulnerability to foreign debt, the stock market by themselves and their loan customers- were on the brink of collapse. Because of this, Central Bank of Nigeria has no other option than to provide money for the banks so as to manage the crisis and the devastating effect of the crisis if it goes long. The important question rises by experts in the area how the crisis that started in the US financial system transmits to other economies and become a global phenomenon. With this general question in hand this study

raise another question which is if there is any connection between the naira depreciation and the Nigerian stock exchange market crisis or it is the stock market crisis that invariably affects the value of naira? Did commercial banks reduce the interest rate because of the worsening situation or the volatility in the stock indices? This study empirically answers these questions. The champion vector auto regression (VAR) methodology is applied, treating the data series with unit roots and co integration test. The impulse response function and the analysis of variance were used to filter the effects of shocks and variations of the included variables on bank loans, while the Engel Granger causality confirmed the direction of causation among stock prices, exchange rate volatility, and bank loans. Evidence from the results is that exchange rate volatility and stock price fluctuations are the reason of bank reduction of lending rate but that the effects were insignificant and that the naira to depreciate is caused by the volatility of stock market index and there was no reverse Granger causality. Variation in bank loans also led to stock price volatility and again, there was no result of feedback Granger causality. Mbutor (2010)

Abraham (2010) examines the relationship between the stock market and selected macroeconomic variables in Nigeria. The all share index was used to capture the stock market while inflation, interest and exchange rates were the macroeconomic (monetary) variables selected. Using the error correction model, it was found out that a significant negative short run relationship exists between the stock market and the minimum rediscounting rate (MRR) implying that, a decrease in the MRR, would improve the performance of the Nigerian stock market by making it more liquid. Evidence also found that exchange rate stability in the long run, improves the performance of the stock market because exchange rate volatility makes it more volatile and risky. Moreover the results for Treasury bill and inflation rates were not significant, the results shows that they were negatively related

to the stock market return in the short run thus, achieving low rate of inflation and keeping the TBR low could improve the performance of the Nigerian stock market. Specifically, the study concludes that, by ensuring stable exchange rates and adjusting the MRR, monetary policy would be effective in improving the overall performance of the Nigerian stock market.

Olubenga (2011) investigate the impact of macroeconomic indicators on stock prices in Nigeria. He used the ordinary least square method. He differentiates his study from others by conducting it at individual firm. None of the study in this area looked at the individual firm's level in Nigeria; the work is therefore unique as it uses a special methodology to suit the firm level analysis. He use data on stock prices of selected corporations and that of six aggregate economic variables between 1985:1 and 2009:4 were used for the investigation. The variables used in the research work are money supply, interest rate , exchange rate , inflation rate , oil price (for it special impact on Nigerian economy) and gross domestic product (GDP).The pooled or panel model was used instead of time series only to examine the impact of macroeconomic variables on stock prices of the selected firms in Nigeria. This model was considered suitable for its ability to mix together both time series and cross-sectional data. The empirical result of the study however shows that macro economic variables have varying significant impact on stock prices of the selected individual firms in Nigeria. With the exception of inflation rate and money supply, all the other macro economic variables have significant influence on stock prices in Nigeria

Ajie and Nenbee (2010) investigate empirically the relationship between monetary policy and stock prices in the Nigerian stock exchange market (NSE). They employed time series data of interest rate, money supply and stock prices for the period (1986-2008). This period was considered due to the liberalization of the financial sector. Using the method of co-integration and Error correction modeling (ECM), the study revealed that both money supply

and interest rate were rightly related with stock price Again, the error correction coefficient was relatively high, rightly signed and significant at 5% level. It is suggested that the Securities and Exchange Commission (SEC) should be more effective to monitor the activities of the market participant to bread efficiency. Moreover, the monetary authorities should formulate policies that will reduce the rising pace of inflation to encourage liquidity of investible funds for investors.

Akingunola et al 2010 investigate the impact of interest rate on capital markets growth and to explain some light on how other monetary policy variables such as inflation rate, exchange rate also influence capital markets growth. Multiple regression analysis of the ordinary least square was used to determine the impact of interest rate as well as other variables such as inflation rate, exchange rate on capital market growth. Pooled data regression method was employed to estimate the model equations. E-view econometrics software package was used to carry the estimation process. Augmented Dickey –Fuller (ADF) Test was used to determine the order of integration that is the number of times a variable has to be differenced before it becomes stationary Findings of the study revealed that interest rates have an adverse effect on stock market growth. The Regression analysis results show that a 1% increase in interest rate will lead to a 44% decrease in all share price index; this implies that as the rate of interest increases, the performance of the capital market reduces (Negative relationship) rate of inflation and exchange rate are not significant, especially at the 5 percent level of significance. The study revealed further that although interest rate is not negatively linked to the All share index, on its own but when examined alongside other control variables such as inflation rate and exchange rate, it behaves true to type. In order to make it possible for the capital market to take full advantage of the various opportunities and attend to the challenges, interest rates must be properly put

at check by the monetary authorities. This must be done in relation to appropriate monetary policies to ensure macroeconomic stability

Olubenga (2012) examines the long-run and short-run association of exchange rate on stock market development in Nigeria. He uses time series data for the period 1985:1–2009:4 using the Johansen test for cointegration. A bivariate model was analyse and empirical evidence from the study show a significant direct stock market performance to exchange rate in the short-run and a significant indirect stock market performance to exchange rate in the long-run. The Granger test for causality revealed strong evidence that the causation runs from exchange rate to stock market performance, suggesting that variation in the Nigerian stock market is explained by exchange rate volatility

Maku and Atanda (2010) examine in depth the long-run variables that explain the growth and development of the Nigeria stock market between 1984 and 2007. The attributes of the time series variables are evaluated using the Augmented Dickey-Fuller (ADF) test for unit root and the stationary and most of the selected variables in the study were found to have a unit root at level but become stationary after taking the first difference. The Augmented Engle-Granger test for Cointegration was estimated and the result revealed that the stock market performance in Nigeria is mainly a function of macroeconomic forces in the long-run. However, the empirical results further revealed that the NSE all share indexes variable is more sensitive to variation in inflation rate, exchange rate, money supply, and real economic output. While, the entire variables under study were found to have the same significant influence on the Nigerian stock market growth in the long-run. They further explain that market participant should always consider rate of inflation, exchange rate, money supply (M2), and economic growth rather than Treasury bill rate in making their investment decision.

2.4 VAR Studies

VAR studies analyzing monetary policy and stock market include, among others studies, Patelis (1997), Thorbecke (1997) and Neri (2004). All the mention studies find that stock returns react negatively to central banks tightening   monetary policy, but monetary policy shocks account for little percentage of the variations in assets returns. Neri (2004) who studies the relation between Federal Reserve policies and US stock markets reveal that in the US stock market falls immediately by around one percent due to a monetary policy shock in conformation to an increase in the interest rate of one percentage point. That is there is one for one relationship between monetary policy and US stock market. The effect is however considerably larger after 4 months, at 3.6 percent. The effects are insignificant after half a year. We can conclude that stock markets are very sensitive to interest rate in US.

All the above papers identify monetary policy and stock market shocks using Cholesky decomposition methodology VAR which impose a restriction in ordering of the identified variables shock. In many of the papers that follow this methodology, the stock market is the last, implying that the stock market can react at same time to all other shocks, but the other variables that come first before the stock market in the ordering (i.e. monetary policy stance) respond with a lag to stock market variable information. Hence, simultaneous association between them is ruled out in some belief. However, as the focus in many VAR studies in this particular area has been to analyse the effect of monetary policy on the stock market, and not the other way round, this restriction has seemed reasonable, at least in the analysis that uses monthly data. However to the point that one want to be able to account for the true taking of some variables response in monetary policy and asset prices, using recursive identification in VAR models may still suggest that the exact effects

are not being precisely estimated. We shall simply envisage that the simple Cholesky identification system constantly underestimates the influence of both stock market shocks and monetary policy surprises on stock returns and interest rate operations. In another study Rapach (2001) examine monetary and stock return variation without recourse to using the traditional short-run Cholesky decomposition, but instead resorts to only using it in the long-run. Addressing the simultaneity problem (that is widely criticised by the non VAR studies) in a similar vein to the approach, Rapach result shows that considerably stronger interaction effects between monetary policy and the stock market.

However, while the sole use of theoretically motivated long run restrictions may be appealing,, Faust and Leeper (1997) have explain that the results based on this type of restrictions may be spurious very unreliable. In particular, there is a strong possibility that influence of the different structural shocks may be confounded. This may clearly be the case in Rapach study also. For example, by the restriction of the monetary shock as the only shock that can have only temporary impact on real stock prices and rate of interest, one effectively gather together the effects of all temporary shocks into the monetary policy shocks. Clearly, as aggregate demand and money demand are examples of other shocks that can have only temporary (permanent) nor effects on these variables, the long run restriction will not be enough to identify the real monetary policy shock.

2.5 Non-VAR Studies

VAR has often been criticized by many writers in this field, the problem of simultaneity and endogenity are the main criticism o VAR mode. The problem has been similarly address in the study Rigobon and Sack (2003).

45

They use an identification method based on the heteroskedasticity of stock market returns to identify the response of monetary policy to the stock market. Evidence found out in there that a five percent rise in asset pricesa day causes the probability of a twenty five basis point interest rate upward to increase by a half (p. 664). In similar vein, Rigobon and Sack (2004) in another study estimate that a twenty five basis point increase in the three-month interest rate results in a 1.9% reduction in the S&P 500 index and a 2.5% reduction in the Nasdaq index (showing a negative relationship) Recently, the relationship between the stock market and monetary policy has also been addressed with other methods. In an event study, Bernanke and Kuttner (2004) estimate the effect of an unanticipated rate reduction of twenty five basis points to be one percent in the level of stock prices. Their contribution is that most of the influence of the monetary policy shock on asset prices due to its effect on forecasted equity risk premiums.

In a similar methodology (event method study) Ehrmann and Fratzcher (2004) find slightly more strong evidence that show the effects, estimating an unexpected tightening of fifty basis points to decrease US equity returns by three percent on the day of the announcement of their result. Fuhrer and Tootell (2004) estimate interest rate response to the functions and argue that the Federal Open Market Committee (FOMC) reacts to equity price movements only to the extent that they effect forecasts of CPI, inflation and real economic outputs, and they express that stock price stabilization is not an independent objective of monetary policy rather monetary policy covers all economic activities. Chadha et al. (2003) analyse augmented Taylor rules uses Generalised Method of Movement (GMM) and find that both asset price and the real exchange rate deviate from their equilibrium values in addition to the objective future inflation and output gaps are significant in the FOMC reaction function. Stock prices and the real exchange rate work significantly and robustly for different choices of lag lengths for both the inflation and

46

output gaps. They stress, however, that the importance may be due to these variables represented the part of expected inflation and output gaps that are not well shown by the instruments.

Summing up, the empirical literature seems to identify important relationships between monetary policy and the stock market. In the case where studies find little relationships, these studies can be criticized for failing to take full account of the possible simultaneity between these sectors.

After a thorough review of the literature, it is obvious that there is no consensus among economist about the effects of monetary policy variables and stock markets. Different authors have use different method in their quest to explore the relationship. One thing which is certain base on the reviewed literatures however is that monetary policy effect stock exchange markets but the nature of effect is multi dimensional. But the observation and conclusion varies from author to author and country to country. This is very much the reason why there is no universal monetary policy guideline for all economies. Beside economist are still questioning the effectiveness of monetary policies on the stock exchange markets in order to resolve the stock market volatility and reducing assets price bubbles. This work will attempt to unveil such issues by carefully selecting some key variables that will unveil the true nature of the relationship.

CHAPTER 3

METHODOLOGY

Identifying the link between monetary policy activities and stock market is highly important in order to gain a better insight and understanding of the relationship, since changes in monetary policy variables play an important role in several channels. Therefore, it would be important to determine how contractionary or expansionary accommodative, neutral or tight monetary policy affects the performance of the stock markets of countries and whether there are any well defined systems for implementing monetary policy that would lead to better stock market performance in a country. This thesis seeks to answer the questions what are the effects of monetary policy on Nigerian stock exchange market? Is there a long run relationship between monetary policy variable and stock market? What is the nature and kind of relation between these variables? In the quest to meet this objectives I use the below econometric technique of analysis to find a dependant and reliable answer to the questions raise.

3.1 Vector Autoregression

Many economists in the earlier time have tested the relationship between stock market and monetary policy. One of the popular and most used methodology is the Vector auto regression. Most of the authoritative studies conducted on monetary policy and stock market data in the literature

reviewed made use of the vector auto regression (VAR) technique see e.g. Thorbecke (1997), , Bernanke (1999), among others. The impressive and pleasure of using VARs to study monetary policy is that they appear to be able to identify the effects of the policy without absolute structural model of the economy of study, hence it solve the problem of understanding the complexity of most economies.

VAR models, , have gained a authoritative place in the set of tools of applied macro economics both to summarize the information contained in the data and to conduct certain types of policy forecast and analysis. In this kind of study VAR is a champion model. VAR methodology in economics was made known by Sims (1980). The most convincing and sophisticated publication for VAR models is Lutkepohl (1991), and subsequent studies of VAR models are given in Watson (1994) and Lutkepohl (1999) and Waggoner and Zha (1999). Applications of VAR models to financial data are authoritative in the study of Hamilton (1994), Cuthbertson (1996)Campbell, Lo, Tsay (2001), MacKinlay (1997)and Mills (1999).

The VAR model is a multi-equation method where all the variables are treated as endogenous. Henceforth, there is one equation for each variable as dependent variable. Each equation in the VAR has lagged values of all the included variables as dependent variables, including the lag value of the dependent variable itself. There are no contemporaneous variables included in the system as explanatory, (right-hand side variables) the VAR model is a reduced form. Therefore, all the equations have the same form since they share the same right-hand side variables, and all variables are included.

A VAR model has the following properties:

(1)A VAR model is a reduced form. No contemporaneous variables are included on the right-hand side.

(2)   All the included variables are treated as endogenous. Each variable depends on all the other variables.

(3) A VAR model is a theoretical model. A reduced form does not show the mutual interactions within the period.

(4) The shocks are composed of unobserved structural shocks, they are shocks from all the structural equations. When the VAR is estimated with real data, we get results of the combined shock, here called *e* to differentiate them from structural shocks denoted (E).Impulse response analysis could be done with the identified shocks, but it has no economic interpretation.

(5) A VAR can be used for forecasting.

3.1.1 VAR Specification

A VAR is a organize system of equations in which each variable in the system become relevant by its own lagged values and the lags of all the other variables in the system, is a kind of comprehensive system that each variable and its lag are important. Specifically, we consider the following reduced-form VAR model (omitting constant and other deterministic terms):

$$X_{t} = \sum_{i=1}^{a} A1 X_{t-1} + U_t \qquad (2)$$

Where x_t is a (n x 1) vector of endogenous variables, including the monetary authority variable and stock market variable in this case A_I is a (n X n) matrix of parameters and is a vector of lagged x variables; and U_t is a (n X 1) vector of serially uncorrelated reduced-form disturbances with $E(\sum t)$ =0 and $(U_{t U_t}) = E_u$

3.1.2 VAR Identification

There are three widely methods used for identification in the monetary VAR literature: *Recursive* VARs, which assumes that contemporaneous interactions between the exogenous shocks and endogenous variables are characterized by a Wald causal chain (or a recursive ordering), Structural VARs with long-run restrictions, which enforce the limits that changes in money supply have no long-run relationship influence on the real variables (Blanchard and Quah, 1989), Structural VARs with short-run restrictions, which enforce restrictions on the contemporaneous effects of the shocks based on economic theory (Bernanke, 1986) and information assumed available to particular economic agents (Sims, 1986).

The approach is to identify the VAR, originally proposed by Sims (1980), uses the so-called Choleski factorization of the variance-covariance matrix. The Choleski factorization suggest that the first variable in the VAR model is consider to be contemporaneously exogenous to all the other variables in that system, and the second variable is contemporaneously exogenous to all the variables with the except the first variable, and so on (Sims, 1980).

3.2 Data and Choice of Variables
3.2.1 Choice of Variables

Since VARs are data intensive, one has to decide on the minimal or the maximum set of variables to model, which might be regarded as capturing the principal relationship in the monetary policy-stock market interaction. This thesis will estimates six-variable that includes monetary policy rate (MPR), market capitalization (MC) , gross domestic product (GDP), Investment, Money supply (M2) and All Share Index (ASI) These variables are choosing base on their economic relationship (economics theory is the guide line)

Monetary Policy Rate - In Nigeria, interest rate decisions are taken by The Central Bank of Nigeria. The official interest rate is the Monetary Policy Rate (MPR)**.**The Central Bank of Nigeria Monetary Policy Committee (MPC), which is the highest economic policy decision-making organ of the apex bank fixed the rate. Usually, the central bank benchmark interest rate is the overnight rate at which central banks make loans to the commercial banks under their jurisdiction. Moving the benchmark interest rate, the central bank is able to make an impact on interest rates of commercial banks, inflation level of the country and national currency exchange rate. Reduction of interest rates should bring increase in business activity, a rise in inflation rate and weakening of national currency. In case of increase in interest rates the level of business activity is likely to drop, inflation declines and national currency strengthens. Monetary policy rate is a kind of fixed interest rate.

Broad Money Supply M2- Broad Money supply is M2. (a very liquid and reliable estimation of the money supply in an economy , as it contains cash and assets that can quickly be liquidated or converted to cash), plus short period individual and corporate   savings , and non-formal moneyin circulation than M1. Economists refer to M2[10] when looking to analyse and quantify the amount of money in the economy and trying to make explanations' on different economic monetary stance. Broad money supply is an important macroeconomic tool used to forecast inflation and analyse economic conditions.

---

[10] M2 includes all of M1 (the most liquid assets) and a collection of additional assets that are slightly less liquid. These additional assets include savings account, time deposits, certificates of deposit, foreign currency transferable deposits and repurchase agreements

All Share Index -A market index is a statistical parameter to mirror the complex value of the market feature. When we want to evaluate price behavior in the market, we have the market price index, which is a proxy that represents the overall price performance of the market with one acceptable and reliable statistic - the index value. More general, the index is calculated in a way that makes it a full representation of the market. It pictures the whole market stance. Most often, effort is made to use an idea that best achieves the intended purpose. An index can be a replica of the entire market. For example NSE All share Index or just for a section like tech stocks or the top 100 most capitalized stocks, only that the basis should be known. The NSE All share Index is a complete market (broad-base) index, reflecting a total picture of the behaviors of equities quoted on the Nigerian Stock Exchange. It is calculated on a daily basis, and indicates how prices of equities have fluctuated. It commences in the month of January 1984, the base year, with a number of 100 and has now rises up to more than 6,000.

Market Capitalisation- market capitalization measures both the prices and volumes of all the stocks traded in the stock exchange of a particular country. Market capitalization (sometimes called market value) is the share price multiply by the number of total shares outstanding. It is the market value of a company's issued shares in the market. Market capitalization is the total value of all equity securities listed on a stock exchange plus both government and corporate bonds (total market value). It is a function of the prevailing market price of quoted stocks and the size of their issued and paid up capital. Quoted domestic corporations are the domestically incorporated companies listed on the country's stock exchanges at the end of each financial year. Quoted companies do not include, mutual funds, investment companies etc

Gross Domestic Product (GDP) - is the market value of all officially recognized final goods and services produced within a country at a given period of time(most commonly use is one year). GDP per capita is in most of the time seen as a signal of a country's economic strength and development. GDP is calculated in three major ways, all of which should ideally give the same end result. They are the income approach the product (or output), and the expenditure approach. The most direct of the three is the product approach and is most widely use. The product approach adds up the outputs of every specific enterprise to come at the total end result. The production approach is sometimes called Value added method or net product approach. This approach consists of three stages:

1. Calculating the total Value of domestic output of the different kind of economic activities.
2. Identifying the intermediate consumption, for example the cost of goods, supplies and services used to produce final goods or services and finally
3. Subtracting the intermediate consumption from total Value to find the Net Value of Domestic output.

Investment - Gross capital formation (formerly gross domestic investment) is made up of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include plant, machinery, and equipment bought, construction of railways, land development, roads and the likes of schools, offices, hospitals, residential houses and industrial and commercial buildings. Inventories are stocks of material goods held by business to meet temporary or unexpected variation in production process or sales, and work in progress. According to the 1993 SNA, net total acquisitions of valuables are also considered capital formation.

3.2.2 Data

This study employed data for the period 1980-2012 for the first model while the second model period is 1985:1-2012:4. Data were obtain from various editions of the central bank of Nigeria statistical bulletin, international financial statistics data base and Nigerian stock exchange fact book.

Another important issue in the estimation of VAR is the selection of the lag order. A long lag quickly exhausts degrees of freedom and reduces the precision with which effects can be estimated, while too few may not mop up serial correlation. The determinations of lag length are a trade-off between the curses of dimensionality and abbreviate models, which are not fit suitable to indicate the dynamic adjustment. If the lag length is to short, autocorrelation of the error terms in the system could lead to apparently significant and inefficient estimators. Therefore, one would receive unreliable wrong results. With the so called curse of dimensionality we understand, that even with a relatively little lag length a large number of parameters is required. On the other hand, with substantial number of parameters, the degrees of freedom reduce, which could probably lead to result that are in significant or inefficient estimators. (Roland Fuss, 2008)

3.3 Specification/Residual Diagnostics test

As noted by Favero (2001) an important preposition of econometrics is that any design model formulated to explain economic relationships should have constant parameters over time. Before using this model, I perform some specification (diagnostic) tests on the reduced form VAR. The test for serial autocorrelation (LM test),Heteroscedasticity test (variance) and Normality test so that the result could reliable

3.4 Stationarity and Unit Root Test

Unit root tests are important in order to perform regression analysis of any time series data. This is so because most time series data exhibit non-stationary behavior in their level form. This poses a dangerous potential threat to econometric analysis and often leads to spurious results that are meaningless if the appropriate adjustments are not carried out. To guard against spurious regression and unreliable results, I checked the stationary of the variables using the Augmented Dickey-Fuller unit root test developed by Dickey and Fuller (1981). Moreover, I carry out the Phillip-Peron (PP), the KPSS test developed by Kwiatkowski to compliment the ADF test. I test for the below hypothesis for the ADF

The null hypothesis of the Augmented Dickey-Fuller t-test is
$H_0: \emptyset = 0$(I.e. the data needs to be differenced to make it stationary)
Against the alternative hypothesis of
$H_{1:\emptyset<0}$(I.e. the data is stationary and doesn't need to be differenced)

3.5 Cointegration

Economic theory usually has more concern in equilibrium relationships and has very little opinion to say about the state of economies in disequilibrium. While economic theory consider that certain macroeconomic and financial variables have equilibrium relationships among them, it always not the case, this is because real data does not confirm that equilibrium hold at all times. To deal with this problem, economists make a classification between the short-run and the long-run. The importance for the use of cointegration is that it gives out a conventional set of ideas for examining long-run models

relationship from real data. The cointegration technique permits non stationary data to be used so that spurious regression results are prevented. The method also gives room to test the reliability and logic of an existing economic theory. If a postulated explained economic relationship exists, then the selected and relevant variables under study should be cointegrated. Testing for cointegrating relationship is however a test for the presence of the equilibrium relationship in the variables of the study. Precisely, this is a test of whether or not a model is well specified. Contrary to the most arguments, however, the concept of cointegration does not accommodate any easy unusual or compromise in the modeling and estimation of dynamic time-series in economics and finance.

Johansen (1988) suggest some set of ideas capable in explaining the probability of multiple cointegrating vectors and this ideas also calls for the questions of causality and general hypothesis tests to be carried out in a more acceptable and easy way.

Johansen method of cointegration further explain not only the direct estimates of the cointegrating vectors but also gives room for the tests of the order (or rank) of cointegration. It is worth mentioning that, in a VAR model explaining Z variables, there can be at most $r = Z-1$ cointegrating vectors. It is generally believe that the statistical mechanics of the Johansen cointegration procedure are wider spread and better and the johansen cointegration test is of higher power compared to the Engle-Granger(EG) one and other tests of cointegration. However, it is pertinent to note that different cointegration method are grounded within different econometric methodologies and properties and as such cannot be directly compared. At this point, the Johansen methodology can be a good platform for single-equation modeling as supporting tool for testing the validity of the endo-exogenous variable division.

In line with the main objective of the thesis i use the Johasen cointegration test to test the long run relationship between the variables because of its superiority in cointegration analysis more especially in the area of understanding the relationship between monetary policy and stock market variables.

3.6 Causality Test

One of the important objectives of empirical studies in Financial Economics is the determination of causal relationship between two or more variables. Financial economists and econometricians have long been observing the issue of causality and causal laws. This is because the issue of recognizing causal relation between economic variables is very vital in economics and financial analysis

Clive Granger, who is a Nobel Prize winner in Economics, notably argued that causality in economic could be seen by some sort of tests and he present some ideas which are now referred to as Granger causality. The Granger causality test is a statistical postulation to test and discover if one time series is useful in forecasting and explaining another. Two causality tests are estimated in this study. The first is a normal F-type Granger-causality test and the second is a Wald-type test that is characterized by testing for nonzero correlation between the errors processes of the cause and effect variables. At first, regressions shows mere correlation. The general framework for causality in economics and finance is a time series *A* is said to Granger-cause *B* if it can be seen, usually through a series of t-tests and F-tests on lagged values of *A* (and with lagged values of *B* also included), that those *A* values provide evidence and statistically reliable important information about the expected condition of the values of *B*.

Here are three different types of situation in which a Granger-causality test can be applied:

(1)In a simple Granger-causality test there must beat at least two variables and their lags values as well.

(2) In a multiple variables Granger-causality test there have to be more than two variables included, because it is assume that more one variable can affect the results of the other variables in the system.(3) Granger-causality can also be estimated in a VAR framework; in this case the multivariate model is employed and extended in order to test for causality of all included variables at the same time.

The last situation necessitates the purpose of this study. I employ Granger causality test in other to find out the direction of causal relationship between monetary policy and stock exchange by simultaneously using the selected variables in the VAR model.

3.7 Impulse Response

Impulse response function (IRF) [11] of a dynamic system is its output when analysed with a brief input indicator, called an impulse. More generally, an impulse response means the reaction of any dynamic system in response to some external change in the system. The impulse response function of VAR is to analysis dynamic effects of the system when the model received the impulse of say one standard deviation shock. As in my VAR model, we have four variables in model A and 3 variables in model B. We can analyse the response between these variables.

---

[11] More generally, an impulse response refers to the reaction of any dynamic system in response to some external change made.

59

As observed by (Bida, 2010) the impulse response function is used to ascertain the time path of structural shocks in the VAR system. One of the common methods used to examine the time path of the shock is the Sims (1980) framework of Cholesky decomposition. This method however has been criticized base on the reasons that it is quite sensitive to the ordering of the variables in the system. This is because it is not unique as errors in the system variables are orthogonal to each other, indicating that they are some external change in the system. The impulse response function of VAR Contemporaneously uncorrelated with standard errors. To solve this problem, this study adopts the Generalised impulse response function (GIRF). This method is not sensitive to the ordering of the variables in the VAR system. The approach is unique since it shows that structural errors are correlated and therefore a unit shock to one error affects other errors in the system.

3.8 Variance Decomposition

In financial econometrics and other practical use of multiple variables analysis, a variance decomposition or as sometimes called forecast error variance decomposition (FEVD) is employed to help in giving an explanation of a vector auto regression (VAR) model once it has been estimated. The variance decomposition reveals some amount of vital information and explanation of the contribution of each variable to other variables in the system. In essence it shows the amount the forecast error variance of each of the variables can be explained by exogenous shocks to the other variables in the system. This enables us to identify which of the variables is relatively endogenous or exogenous to the system by simply decomposing the proportion variance due to its own shock and shocks of other variables in the system. For example, if the shocks of other independent variables in the system explain less of the forecast error-variance of the

dependent variable, it means that the variable is exogenous to the system. However, if it turns out that most of the shocks of the independent variables explain the forecast error-variance of the dependent variable, it means the later is endogenous to the system.

3.9 Eviews

EViews (Econometric Views) is a window statistical system soft ware package. Eviews is mainly used for time-series oriented financial and econometric analysis i.e. VAR, cointegration etc. Economists use this soft ware to carry out variety of test and analysis. It is a time saving and error avoiding machine that provide smooth estimation and test of economic models. It is initiated by Quantitative Micro Software (QMS), now a part of IHS. EViews can be used for statistical analysis and econometric analyses. The soft warecan also be used for panel data, cross sectional analysis and time series estimation and forecasting.

EViews combines spreadsheet and relational database technology with the traditional tasks found in statistical software and uses windows. This is combined with a programming language which displays limited object orientation. Result obtain from this soft ware are generally accepted among economist. The software is used to run the data and carry out the entire statistical test in this study.

CHAPTER 4
EMPIRICAL RESULTS AND ANALYSIS

This chapter analyse the empirical investigation of the effectiveness of monetary policy on the Nigerian Stock Exchange Market. Two different models are estimated using the same methodology. Model A study period is between 1980-2012 and variables are the Monetary Policy Rate (MPR/MRR), Market Capitalisation (MC), Gross Domestic product (GDP) and Investment proxy by Gross Capital Formation (GCF). While model B study period is between1985:1-2012:4 and variables are Broad Money Supply (M2), All Share Index (ASI) and Gross Domestic product (GDP). All the variables are real variables with the exception of MPR/MRR and ASI and all variables are treated in natural log. Several steps were applied in this study. Through each step, one set of analysis is applied and results determine the next steps to be taking.

4.1 Unit Root Test

I use different tests, namely ADF, PP & KPSS, to find out the order of integration of the variables that I am working with, before performing my target estimation or analysis. The below tables of unit root test comprise of all the variables of the study for both Model A and Model B.

Table 4.1: ADF, PP and KPSS test for unit root. (Constant)

LEVEL			FIRST DIFFERENCE			
	ADF	PP	KPSS	ADF	PP	KPSS
LMRR	-2.61	-2.55	0.181	-5.35*	-6.36*	0.221
MC	0.217	0.212	0.519**	-4.699*	-4.627*	0.346
GDP	-0.264	-0.264	0.635**	-4.638*	-6.702*	0.312
INV(GCF)	-2.755	-2.996*	0.615**	-3.221*	-3.2589**	0.581**
M2	-0.581	-1.711	0.867**	-12.029*	-22.283*	0.198
ASI	-1.713	-1.662	1.138**	-16.109*	-17.258*	0.2105

*, ** and *** rejection at 1%, 5%, and 10% level of significance, respectively. For ADF and PP, Ho = Variable has a unit root and for KPSS test Ho = Variable is stationary

Table 4.1 describes the results of ADF, PP [12] and KPSS unit root tests for the intercept. The tests unanimously classify selected variables as I(1) that variables are non-stationary in level but are stationary after first difference.

---

[12] The ADF and PP test the null hypothesis that the variable estimated has a unit root. If the variable is estimated non-stationary, then the null hypothesis cannot be rejected. Enders (2004) states that the ADF is biased towards the non rejection of unit root if there are structural breaks. PP is a good test and can test for unit root when the structural break is not known.

Table4. 2: ADF, PP and KPSS test for unit root. (constant and trend)

	LEVEL			FIRST DIFFRENCE		
	ADF	PP	KPSS	ADF	PP	KPSS
MRR	-2.497	-2.370	0.174**	-5.715*	-6.356*	0.056
MC	-2.009	-1.939	0.185**	-4.888*	-5.1472*	0.132
GDP	-3.242	-3.280	0.187**	-4.916*	-8.1868*	0.114
INV(GCF)	-0.535	-0.552	0.199**	-4.321*	-4.1881*	0.080
M2	-2.142	-4.265*	0.284**	-12.072*	-23.865*	0.086
ASI	-1.337	-2.101	0.250**	-16.227*	-17.367*	0.017

*, ** and *** rejection at 1%, 5%, and 10% level of significance, respectively. For ADF and PP, Ho = Variable has a unit root and for KPSS test Ho = Variable is stationary.

Table 4.2 describes the results of ADF, PP and KPSS unit root tests for both the intercept and trend. Both tests unanimously classify selected variables as I (1), variables are non-stationary in level but are stationary after first differencing. Although the PP test in table 4.2 shows that the M2 variable is stationary at level, while the ADF and KPSS test violate this result and so we can generalise by the ADF and KPSS results that the variable is non stationary at level. The ADF test results are preferred because the PP tests are more size distorted than the ADF tests and as such may reject the null of non-stationarity often when it is true.

In some scenarios the ADF and PP test results pertaining to a time series at levels conflict with KPSS test. In other words, the results from all the unit root tests are not mutually reinforcing. For example in table 1 (constant) the ADF and PP test of the LMRR variable shows that the series is not stationary at level while the KPSS test shows that the series is stationary Moreover the INV, the ADF and KPSS shows no stationary while the PP shows stationary. No test is absolutely perfect, so it is very usual that you

obtain conflicting results. You must check the strength and weakness of each test and try to choose the one that better fits your needs and your analysıs.

The ADF critical values are not sensitive to the lag order of the time series in which they are place just the sample so to simplify the model by excluding intermediate lags does not affect the critical value, but may improve the efficiency of the estimation and alter the later results. If the ADF and KPSS are compared, then the ADF is usually describe on a first differenced variable whose changes will be shorter than is the case for the non change data especially when that is describe by a random walk. While in addition to the null of the KPSS being stationary, the numerator of the test statistic includes squared cumulated residuals Hunter (2013). For ADF type unit root tests, there may be high positive autocorrelation of the data series, while the starting point for the KPSS stationarity tests is a sum of two components, one is stationary while the other one a random walk. The latter is a constant if the null hypothesis is found to be true. Due to these different models there are different results in testing stationarity versus non stationarity.

4.2 Johansen Cointegration Test

Once the unit roots are confirmed for the data series, the next step is to examine whether there exists a long-run equilibrium relationship among the

variables. This calls for johasen cointegration analysis[13] which is more significant so as to avoid the risk of spurious regression.

Table4.3: Results of Johansen's Cointegration Test

Hypothesized Number of Cointegrating Equations	Eigen Value	Trace Statistics	Critical Value at 5% (p-value)	Maximum Eigen Statistics	Critical Value at 5% (p-value)
None*	0.632668	49.94684	47.856 (0.0314)	31.04616	27.584 (0.0172)
At Most 1	0.315725	18.90067	29.797 (0.5001)	11.76127	21.132 (0.5714)

The Trace test indicates the existence of one cointegrating equation at 5 per cent level of significance and, the Maximum Eigenvalue test confirm the result obtained. This result was found when normalized with any variable in the model. The model has long-run equilibrium relationship among the variables, but this is not necessary in the short-run. In the short run there may be disequilibrium, and it is necessary to find out if such disequilibrium moves

---

[13] Enders (2004) outlined that it is typical for one of the variables to be used to normalize the co-integrating vector by setting its coefficient to one. It is considered which variable is used as the vector simply define a long-term equilibrium relationship among the variables, but does not necessarily imply causality among the variables. That is, the same conclusion can be from any re-normalization of any of the variables in the model ,the same amount of co-integrating relationships

toward the long-run equilibrium or not. In this regard Vector Error Correction Model is employed to generate, ascertain and analyse such short-run dynamics and convergence to the long run equilibrium of the model. Error correction mechanism explains the means through which part of the disequilibrium is adjusted to the equilibrium in the next period. So, error correction mechanism is a means of reconciliation between the short-run and long-run behavior in the system.

4.3 Vector Error Correction Model

Once the cointegration relationship is identified between the variables in model, then the next is to estimate the vector error correction model. The VECM gives the estimation of the error correction mechanism and the dynamic relationship of the estimated model. The reason of the error correction model is to empirically show the degree of the speed of adjustment from the short-run equilibrium to the long-run equilibrium state

A Vector Error Correction Model (VECM) is a restricted VAR that is mainly use with non-stationary data series that shows presence of cointegration. When cointegration equilibrium conditions are satisfied, the VECM explain how the evaluated model is adjusting in each time period towards its long-run equilibrium state. Since the variables are shown to be cointegrated, then in the short-run, variations from this long-run equilibrium will respond to the changes in the dependent variable in order to enforce their movements towards the long-run equilibrium state. Therefore, the cointegrated vectors from which the error correction terms are identified are each indicating an independent movement to the direction where a stable significant long-run equilibrium state exists.

The VECM cointegration relations is attractively specified so that it limits the long-run behavior of the endogenous variables to move towards

their cointegrating relationship while allowing for short-run adjustment dynamics to take its effect. The cointegration term is known as the error correction term, since the variation from long run equilibrium is corrected gradually through a series of partial short-run adjustments. The dynamic specification of the VECM allows the deletion of the insignificant variables, while the error correction term is retained. The size of the error correction term indicates the speed of adjustment of any disequilibrium towards a long-run equilibrium state. A negative and significant coefficient of the error correction term in the model indicates the presence of long-run causal relationship. On the other hand, the lagged terms appeared as explanatory variables, showing a short-run cause and effect relationship between the variables.

Thus, if the lagged coefficients of A resulted to be significant in the regression of B this implies that A causes B. Correspondingly, if the lagged coefficients of B resulted to be significant in the regression of A it that B causes A.

The estimation of a Vector Error Correction Model (VECM) needs optimal choice of a suitable and fitted lag length. The number of lags in the model is estimated according to the Eviews lag length criteria and the optimal lag is 1(result in appendix). The VECM is normalized with the Market Capitalisation variable and also from the system equations we analyse only the equation with the market capitalization as the dependant variable. Then, an error correction model with the computed t-values of the regression coefficients is estimated and the results are reported in table below.

Table 4.4 Estimates for VECM Regression

Variables	Coeffients (Probabılity)
EC	-0.026(0.9173)
LRMC	O.509(0.8572)
LMRR	0.361(0.1601)
LGDP	0.364(0.4235)
LI(GCF)	0.062(0.7152)
CONSTANT	0.086(0.2117)

The error correction model pass all the residual diagnostics test of serial autocorrelation, heteroscedasticity and normality tests (results in appendix) The coefficient of the error correction term in the LMC equation is negative, but statistically insignificant which shows that the error correction term does not contribute to explain the changes in the right hand side variables.. The insignificant and negative error-correction coefficients indicate that MC, MRR, GDP and Investment are not system equilibrating variables.

The insignificance of the result of the error correction term however, indicates no response to shocks. Theory explain that the error correction term must be significantly different from zero and the larger the extend of the equations error correction coefficient (In absolute term) the faster the variable convergence to its equilibrium once shocked. The insignificance of the error

correction term is also an indication in part that the variables are weakly exogenous[14], which means changes in any of the variables can create transitory responses only in the system. The practical meaning is that weakly exogenous variables does not give the feedback that is necessary in this VAR model, although Enders (2003) has pointed out that it is not especially troublesome since the Johansen test of cointegration revealed that the characteristics root of the system implies convergence to the long run equilibrium, that is system transformed to equilibrium in the long run. In contrast, the insignificant relationship between the variables.

Masih et al. (2009) point out that with error correction model, one can recognize a variable which is endogenous or exogenous to the correcting system but the reality of the degree of its endogeneity or exogeneity can only be effectively revealed by the variance decomposition of the system. Therefore, if a variable is mainly explained by innovation of its own shocks and less by the other variables in the system, it can be said that such variable is weakly exogenous or strongly exogenous In Nigeria, monetary policy option had been inactive in influencing these macroeconomic variables. This could step from the dominance of fiscal measures especially government expenditures in stimulating such macroeconomic variables. More so, the insignificant relationship between these variables could be explained by the underdeveloped nature of the financial institutions in transmitting monetary policy to the ultimate variables in the economy which is usually economic growth and price stability. The insignificant effect of monetary policy on

---

[14]According to Enders (2004) a weak exogeneity is simply a variable in a cointegrated system that does not respond to discrepancy arising from long-run relationship. In other words, a variable is weakly exogenous if the coefficient of the speed of adjustment is zero i.e. and this indicates that there is no feedback response from the system. .

stock market is a consequence of the autonomy that is granted to monetary authority in the management of price instability in Nigeria and also the various policy initiatives that have been adopted (such as financial regulation, interest rate and exchange rate deregulation and inflation targeting)to mitigate stock market instability in Nigeria.

The coefficients of the first difference of ΔLMC,ΔLMRR, ΔLGDP and ΔLRI   lagged one period in LMC equation in Table 4.4 are statistically insignificant which indicate the absence of short-run causality from RMC to the other variables based on the VECM estimates. For confirmation of the result of the short-run causality direction between the ΔLMC and the ΔLMRR based on VECM estimates, we employed standard Granger causality test for the estimated based on the F-value.

4.4 Granger Causality Test

The results in Table 4.5 indicate that real MRR does not Granger-cause the RMC at 5 per cent level of significance and also Investment proxy by gross capital formation(GCF) does not Granger cause MC. This result reaffirm the subsequent result obtained from VECM that there is no short-run causality at 5 per cent level of significance. The only exception is MRR which Granger causes GDP and it is unidirectional relationship. Based on this causality tests, changes in the MRR and RI cause changes in MC in the long-run, but not in the short-run. In sum the empirical evidence from the granger causality test suggest that the relationship between monetary policy and stock market is rather spurious supporting Fama's (1981) contention.

Table4. 5: Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
DLMRR does not Granger Cause DLRMC	31	2.29862	0.1407
DLMC does not Granger Cause DLMRR		0.03201	0.8593
DLGDP does not Granger Cause DLRMC	31	0.32659	0.5722
DLMC does not Granger Cause DLRGDP		0.81653	0.3739
DLI does not Granger Cause DLRMC	31	0.34978	0.5590
DLMC does not Granger Cause DLRI		0.16134	0.6910
DLGDP does not Granger Cause DLMRR	31	0.36553	0.5503
DLMRR does not Granger Cause DLRGDP		5.22711	0.0300
DLI does not Granger Cause DLMRR	31	0.45777	0.5042
DLMRR does not Granger Cause DLRI		0.25673	0.6163
DLI does not Granger Cause DLRGDP	31	0.18951	0.6667
DLGDP does not Granger Cause DLRI		4.14751	0.0513

In contrast to the findings presented here, most of studies especially from developed economies detect causal relationship either from monetary policy to stock market or less often from stock market to monetary policy (indicating information efficiency). A possible explanation for the different finding might be that developed and emerging stock market like Nigeria Stock Exchange Market have very different characteristics, especially with legal and institutional frame work. One consequence should be that the speed with which information is spread in emerging markets like (NSE) is rather low and

slow that the structure commonly used in studies of developed markets may be inappropriate for studying behavior in emerging markets.

Moreover, economist are of the view that Fiscal policy is too cumbersome to implement but has a fairly direct effect on the economy, whereas monetary policy is easily formulated and implemented but has a less immediate effect on the economy(Zvi, 2009)

4.5 VECM Causality/ Block Exogeinity WALD Test

In other to further unveil this relation we test the relationship by using the VECM causality/ block exogeneity test with the chi square. The null hypothesis that LMPR, LGDP and LI (GCF) do not Granger cause LRMC is tested using changes in RMC Inflows (DLRMC), changes in monetary policy rate (DLMRR) changes in real gross domestic product (DLRGDP) and change in real investment proxy by gross capital formation (DRI) when all of them are stationary in their first difference form in standard Granger causality regression. In Table 4. 6 the causality Test with VECM is presented.

The null hypothesis is accepted or rejected based on chi-squared test based on Wald criterion to estimate the joint significance or insignificance of the limits under the null hypothesis. The optimal lag length is justified by a minimum Final Schwarz Information Criterion (SIC) and other test that justified the SIC result (result in appendix). The criteria optimally choice is lag order 1. The result of the VECM Causality/ block exogeneity Wald test is giving below.

Table 4.6: VECM Causality/ block exogeneityWald test

Table4.6.1 Dependent variable: D(LRMC)

Excluded	Chi-sq	Df	Prob.
D(LMRR)	2.095721	1	0.1477
D(LRGDP)	0.661992	1	0.4159
D(LRI)	0.136179	1	0.7121
All	2.408624	3	0.4920

Table 4.6.2 Dependent variable: D(LMRR)

Excluded	Chi-sq	Df	Prob.
D(LRMC)	8.067956	1	0.0045
D(LRGDP)	7.436614	1	0.0064
D(LRI)	1.107817	1	0.2926
All	10.05457	3	0.0181

Table 4.6.3 Dependent variable: D(LRGDP)

Excluded	Chi-sq	Df	Prob.
D(LRMC)	0.018151	1	0.8928
D(LMRR)	5.259080	1	0.0218
D(LRI)	0.821151	1	0.3648
All	6.590860	3	0.0861

Table 4.6.4 Dependent variable: D(LRI)

Excluded	Chi-sq	Df	Prob.
D(LRMC)	0.433683	1	0.5102
D(LMRR)	0.000614	1	0.9802
D(LRGDP)	3.275795	1	0.0703
All	4.145454	3	0.2462

From the above table 4.6.1 we can see that D(LMRR), D(LRGDP) and D(LRI) individually do not cause D(LRMC) and also all the variables jointly do not cause the D(LRMC) this is because of the weakly exogeneity of the variables as already stated in the RMC equation. we can see that in the D(LMRR) table 4.6.2 there is a unidirectional causality flowing from D(LRMC)to D(LMRR) and also there is unidirectional causality flowing from D(LRGDP) to D(LMRR) both at 5 percent significance level but there is absence of causality between the D(LRI) and D(LMRR) both at 5 percent and 10 percent level of significance, also evidence shows that all the three

75

variables jointly can cause the D(LMRR) at 5 percent level of significance. In the D(LRGDP) table 4.6.3 only D(LMRR) cause D(LRGDP) at 5 percent level of significance, and since D(LRGDP) cause D(LMRR) and also D(LMRR) cause D(LRGDP) we can conclude that there is bidirectional causality between the two variables. Moreover, from the D(LRGDP) table 4.6.4 the three variables jointly cause the D(LRGDP) but only at 10 percent level of significance. Lastly is the D(LRI) table, and from the table only D(LRGDP) do cause D(LRI) at 10 percent significance level but D(LRMC) and D(LMRR) both did not cause D(LRI) and also all the three variables jointly cannot cause D(LRI). The above analysis justify (Granger, 1988) that the existence of Cointegration implies the existence of causality at least in one direction.

4.6 Generalized Impulse Response Function

Impulse response function can reflect the impact of the one-time impact of a variable[15]on other variable this section will accordingly focus on the analysis of the effectiveness of the different periods of monetary policy and investment proxy by gross capital formation on the stock market. The impulse responses of all the variables in the system are due to their own shocks. In response to a one standard deviation shock to the monetary policy rate, Market capitalisation decreases rapidly in all time. It reach it minimum fall in period two and rise a little in period three. This shows that a shock on monetary policy rate have a negative impact on market capitalization. Also responses of monetary policy rate to shock in market capitalization yield same result with a little deviation, the result reconfirm the result obtained by responses of market capitalization by shocks in monetary policy rate.

---

[15] Obtaining a one standard deviation confidence band around the mean values of the impulses.

Figure4.1 Generilized Impulse Response Function (VECM)

Response to Generalized One S.D. Innovations
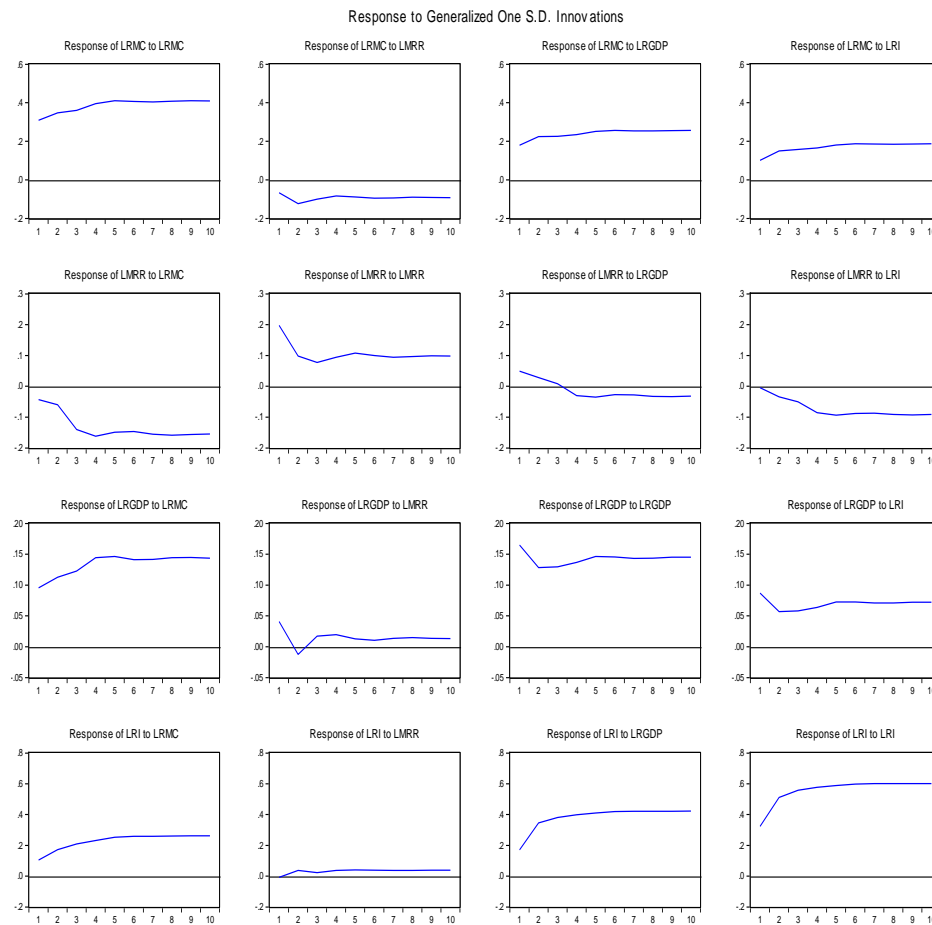
The response of market capitalization to a standard deviation shock in investment proxy by gross capital formation (GCF) is quite positive the effect is stable and continues in the sample period. It shows that giving a shock to investment will lead to a positive impact on the stock market. Moreover of investment proxy by gross capital formation reaffirm the result, that is it show that the response lead to a positive impact but this time around the impact has higher magnitude than responses of market capitalization to investment (GCF).

4.7 Variance Decomposition

From the generalized impulse response analysis we investigate further the short-run dynamic parameters of the Nigerian stock market, we employ the forecast error variance decomposition. By definition, the variance decomposition shows the percentage of forecast error variance for each variable that is attributable to its own innovation and to innovation in the other endogenous variables in the system. This method provides complementary information on the dynamic behavior of the variables in the system. That is show how much of the movements in the dependent variables are caused by their own shocks and shocks to the independent variables.

Table 4.7: Variance Decomposition (VECM)

Table 4.7.1 :Variance Decomposition ofLRMC:

Period	S.E.	LRMC	LMRR	LRGDP	LRI
1	0.309714	100.0000	0.000000	0.000000	0.000000
2	0.472221	97.33713	1.073982	1.471132	0.117752
3	0.596330	97.54261	0.830308	1.283701	0.343376
4	0.716276	97.96023	0.576071	0.898909	0.564793
5	0.827163	98.09439	0.431973	0.728412	0.745231
6	0.923763	98.05821	0.354117	0.715973	0.871698
7	1.010094	98.04740	0.300432	0.691217	0.960947
8	1.090718	98.06697	0.258263	0.646560	1.028206
9	1.166584	98.07654	0.226322	0.616197	1.080942
10	1.237623	98.07388	0.202237	0.601303	1.122575

Table 4.7.2 : Variance Decomposition of LMRR

Period	S.E.	LRMC	LMRR	LRGDP	LRI
1	0.198062	4.678158	95.32184	0.000000	0.000000
2	0.232705	10.04969	83.00153	3.144743	3.804038
3	0.299657	27.97843	52.61730	12.80469	6.599572
4	0.358191	40.06961	39.69631	11.38637	8.847714
5	0.403795	45.17199	34.87062	9.543318	10.41407
6	0.443734	48.29488	31.33070	8.851150	11.52326
7	0.483306	51.01987	28.04117	8.683741	12.25522
8	0.520772	53.20741	25.64449	8.349753	12.79834
9	0.554977	54.75481	24.02385	7.979953	13.24139
10	0.586918	55.92385	22.74386	7.736341	13.59594

Table 4.7.3: Variance Decomposition of LRGDP

:

Period	S.E.	LRMC	LMRR	LRGDP	LRI
1	0.164814	33.55578	14.67989	51.76433	0.000000
2	0.216750	46.50828	8.815605	43.84231	0.833803
3	0.259785	54.75484	9.141088	35.33508	0.768995
4	0.305329	61.97241	9.533763	27.87282	0.621009
5	0.347127	65.70408	9.105674	24.68385	0.506402
6	0.382935	67.62508	8.688923	23.24761	0.438394
7	0.415274	69.12077	8.570625	21.91758	0.391019
8	0.446024	70.37453	8.536182	20.73680	0.352490
9	0.475066	71.30396	8.458160	19.91609	0.321795
10	0.502233	71.99142	8.376806	19.33366	0.298116

Table 4.7.4 Variance Decomposition of LRI:

Period	S.E.	LRMC	LMRR	LRGDP	LRI
1	0.322571	10.55567	0.228920	20.12016	69.09525
2	0.613311	10.79011	1.598388	29.86382	57.74768
3	0.835726	12.09088	1.548645	31.23141	55.12906
4	1.021769	13.23632	1.790167	30.69173	54.28178
5	1.185275	14.37254	2.010646	29.85090	53.76591
6	1.333339	15.15210	2.113993	29.43414	53.29977
7	1.467739	15.63191	2.161912	29.24175	52.96443
8	1.590822	15.98138	2.206916	29.06039	52.75132
9	1.705261	16.26886	2.248418	28.88751	52.59521
10	1.812792	16.49580	2.278028	28.76158	52.46459

For the Market capitalization own shock variation ranged from 100 per cent down to 98 percent over the ten period horizons. The innovations of monetary policy rate which accounts for the forecast error variance of stock Market capitalisation ranged for 0.20 percent only while investment proxy by Gross Capital Formation (GCF) varies for 1.12 percent. . The persistence of past stock market capitalisation shocks after 10 period time of the shocks explains about   98 percent of the variation in current stock market capitalisation.

Monetary policy rate shocks did constitute the predominant source of variation in monetary policy rate forecast errors. The variation ranged from 95.3 percent to 27.7 percent over the ten period horizons. Market capitalization account for the high variation with 55.9 percent in the tenth period then followed by investment proxy by Gross Capital Formation (GCF) with 13.5 percent.

Also GDP own shock only contributed for 19.33 percent while the major contribution of the variation in the 10 period in GDP shock is Market Capitalisation with 71.99 percent. MRR and Investment (GCF) only account for 8.37 and 0.29 percent respectively.

Investment proxy by Gross capital Formation (GCF) own shock variation is range from 69 percent to 52.46 percent in the ten period horizon the next variable that explain the variation is the GDP with 28.76 percent then Market Capitalisation with 16.4 percent and finally monetary policy rate with 2.2 percent.

MODEL B

In this model we carried out another analysis but using the same methodology the only difference is the set of variables and while model A have 4 variables, model B have only 3 variables which are the Broad money supply (M2) which is a proxy for monetary policy, All Share Index (ASI) which also a proxy for stock market and Gross Domestic Product which replicate the economy as a whole, and the period of study is 1985-2012 with quarterly data of 112 observations.

From table 4.1 and 4.2we have already determined the order of integration of all the variables of this study including the variables of this second model and we conclude that all the variables are level non stationary but became stationary after the first difference that is variable are all 1(1) and also the optimal lag length criteria for this model is lag 4(result in appendix). The next step is to check to check the cointegration of the variables in this model using Johansen test of cointegration.

4.8 Johansen Cointegration Test (Model B)

Table 4.8: Results of Johansen's Cointegration Test (Model B)

Hypothesized Number of Cointegrating Equations	Eigen Value	Trace Statistics	Critical Value at 5% (p-value)	Maximum Eigen statistics	Critical Value at 5% (p-value)
None	0.096205	17.81859	29.79707 (0.579)	10.82339	21.13162 (0.6649)
At most 1	0.063048	6.995208	15.49471 (0.5782)	6.968241	14.26460 (0.4929)
At most 2	0.000252	0.026967	3.841466 (0.8695)	0.026967	3.841466 (0.8695)

The above table shows the result of the Johansen test for coitegration. The result of the trace statistics shows no cointegration both at 5 and 10 percent level of significance and the maximum Eigen value test complement and makes the confirmation of this result. From the result we conclude that there is no lon grun relationship between the variables that is in the long run the variables are not in equilibrium. Since no cointegration is found we have to test for an unrestricted VAR model. In an unrestricted VAR model we used stationary variables, for the case of this study we shall use the differenced variables 1(1).

4.9 Unrestricted Vector Autoregression Model

In carrying out an unrestricted VAR model first we have to obtain the optimal lag through the lag selection criteria, this is in other to find more reliable and dependable result. The selection of lag to VAR model is very important step. The lag order of the VAR model is primarily selected base on the optimal lag selection criteria, the optimal lag base on this criteria is 4(result is in the appendix).

Table4.9 Unrestricted VAR (Dependent Variable is ASI)

Regressors	Coefficient	Standard Error	T-Statistics [Prob]
DLASI(-1)	-0.489484	0.102512	-4.774893 (0.0000)
DLASI(-2)	-0.180008	0.114927	-1.566278(0.1206)
DLASI(-3)	-0.001640	0.117876	-0.013916(0.9889)
DLASI(-4)	0.124023	0.104728	1.184238(0.2393)
DLRM2(-1)	0.083255	0.113788	0.731663(0.4662)
DLRM2(-2)	0.122228	0.135135	0.904493(0.3680)
DLRM2(-3)	0.023026	0.135281	0.170206(0.8652)
DLRM2(-4)	-0.024405	0.113852	-0.214357(0.8307)
DLRGDP(-1)	-0.154594	0.961233	-0.160829(0.8762)
DLRGDP(-2)	-0.595297	0.957937	-0.621437(0.5358)
DLRGDP(-3)	0.18992	0.979704	-0.190866(0.8490)
DLRGDP(-4)	-0.453390	1.004154	-0.451514(0.6527)
Constant	0.090277	0.053549	1.685885(0.0951)

Table 4.9 shows the result of the unrestricted VAR. The main purpose of this thesis is to examine emphatically the relationship between monetary policy and Nigerian stock exchange market. Therefore, in this model we have focused on All Share Index equation in the VAR system and other equations have not been reported, the model pass the residual diagnostic checks of no serial autocorrelation and is homoskesditic but failed the normality test. Most financial data are characterized with normality problem because of the volatile nature of the variables.

The VAR results are presented in Table 4.9 When we consider the ASI equation, we see that ASI with lag DLASI (-1) is the only variable that is statistically significant. It is well known when we estimate Unrestricted

Vector Autoregressive (VAR) models that not all the coefficients will always be statistically significant. However, since the other coefficients are not statistically significant we use the Wald coefficient test to see if the variables jointly have any significant impact on the dependent variable ASI. We first check if the four lag variables of ASI jointly can significantly affect the dependent variable ASI using Wald coefficient test, evidence from the test shows that we cannot accept the null hypothesis rather we reject it and accept the alternative hypothesis that the 4 lag variables are not equal to zero meaning that the 4 lag variables jointly can influence the dependent variable. We further check if the 4 lags of RM2 jointly can influence the dependent variable ASI using the same Wald coefficient test and the result show that the 4 lags are equal to zero meaning that we have to accept the null hypothesis that 4 variables jointly are equal to zero impliedly means that 4 lag jointly are insignificant to influence the dependent variable ASI. Lastly we use the same procedure to check the significance of the 4 lag variables of RGDP to see if jointly can influence the dependent variable ASI evidence emerge from the result shoes that the jointly the variables cannot influence the dependent variable ASI.

From the analysis of the 3 Wald coefficient result (results of the tests in the appendix) we can conclude that only the lags variable of the ASI itself can influence itself while the lag of the two other variables have no influence on the dependent variable.

4.11 Granger Causality Test

The next stage is to test if causality can be seen using the standard Pairwise Granger causality test and the result of the test is presented below

Table 4.10 Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
DLRM2 does not Granger Cause DLASI	107	0.31448	0.8677
DLASI does not Granger Cause DLRM2		0.24881	0.9098
DLRGDP does not Granger Cause DLASI	107	0.19063	0.9428
DLASI does not Granger Cause DLRGDP		19.2325	1.E-11
DLRGDP does not Granger Cause DLRM2	107	0.02443	0.9988
DLRM2 does not Granger Cause DLRGDP		0.02795	0.9985

The above table is the result of the Pairwise Granger causality test and evidence from the table is that none of the variable Granger causes any in all directions. No sign of causality is shown among all the 3 variables. This result further complement the VAR system equation analyse above that the variable do not influence each other in the short run.

4.12Generalized Impulse Response Function (Model B)

Figure 4.2: Generalised impulse response at VAR level (Model B)

Response to Generalized One S.D. Innovations ± 2 S.E.
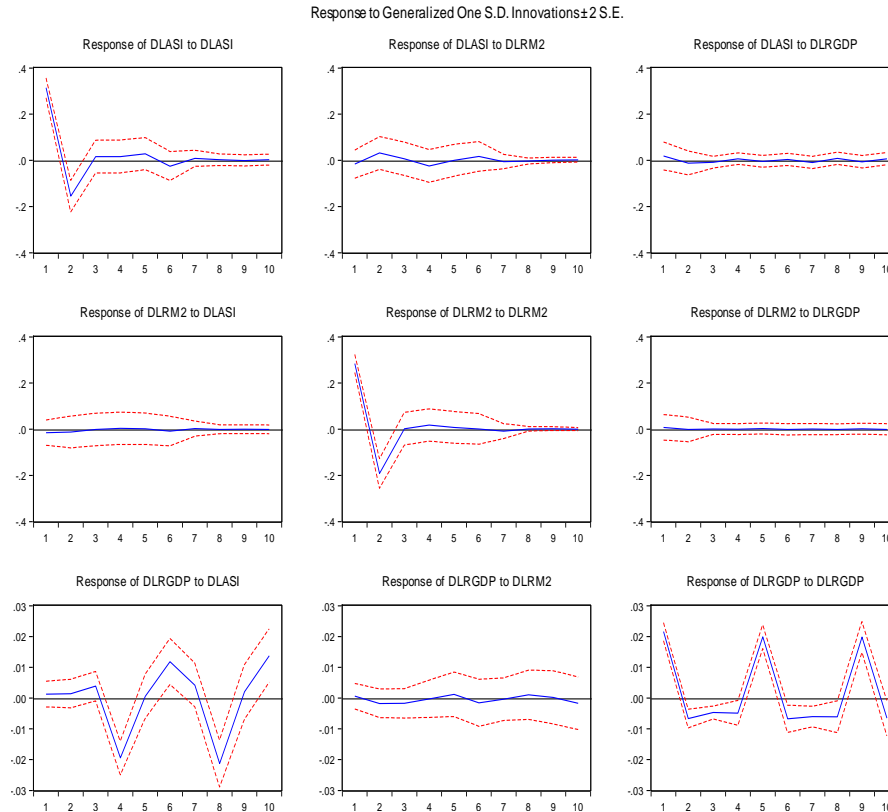
The unrestricted VAR impulse response function is presented in figure 4.2 It can be observed that there is an immediate response of DLASI, DLRM2 and DLRGDP to their own shocks. There is absolutely little or no deviation to responses of DLASI to both DLRM2 and DLRGDP it is smooth and shows no deviation for all the period. Also the DLRM2 exhibits the same result that is there is no deviation by any shock in the DLASI and DLRGDP in all the time of the study. We can say both shocks in the two cases have insignificant effect. The is little or no effect in the first two periods response of shocks to DLRGDP from LDASI and a sharp negative deviation in the third period in the fourth period it rises positively and fall again in the eight period, in the night period it rises again positively up to the tenth period the deviation of the

shock form a zigzag sharp of fall and rise and very unstable. For the responses of the DLRGDP to DLRM2 it shocks has no effect it is smoothly zero for all the period of the study.

4.13 Variance Decomposition

Table 4.11: Variance Decomposition (VAR)

Table4.11.1 Variance Decomposition of DLASI:

Period	S.E.	DLASI	DLRM2	DLRGDP
1	0.314267	100.0000	0.000000	0.000000
2	0.351337	99.54145	0.449579	0.008976
3	0.351886	99.42745	0.487745	0.084807
4	0.353102	98.95320	0.925336	0.121468
5	0.354321	98.92511	0.921170	0.153722
6	0.355586	98.72397	1.106659	0.169375
7	0.355863	98.62644	1.127378	0.246187
8	0.355982	98.56547	1.134270	0.300257
9	0.356041	98.53351	1.135184	0.331309
10	0.356125	98.49491	1.139350	0.365743

Table 4.11.2 Variance Decomposition of DLRM2

Period	S.E.	DLASI	DLRM2	DLRGDP
1	0.284601	0.273364	99.72664	0.000000
2	0.344121	0.313342	99.66097	0.025687
3	0.344129	0.314855	99.65877	0.026378
4	0.344648	0.326814	99.64644	0.026742
5	0.344748	0.329442	99.63863	0.031927
6	0.344850	0.388150	99.57971	0.032143
7	0.344964	0.392823	99.57461	0.032569
8	0.344967	0.393054	99.57378	0.033170
9	0.344979	0.393084	99.57060	0.036317
10	0.344981	0.393633	99.56958	0.036786

Table4.11.3 Variance Decomposition of DLRGDP:

Period	S.E.	DLASI	DLRM2	DLRGDP
1	0.021581	0.357709	0.098420	99.54387
2	0.022708	0.720925	0.643554	98.63552
3	0.023595	3.366624	1.001729	95.63165
4	0.030817	41.76201	0.756367	57.48162
5	0.036709	29.45778	0.644906	69.89732
6	0.039302	34.80635	0.617838	64.57581
7	0.040023	34.66971	0.597411	64.73288
8	0.045583	48.51766	0.460836	51.02151
9	0.049733	40.92627	0.391295	58.68244
10	0.052132	44.22375	0.391717	55.38454

Table 4.11 is the results of variance decomposition of the unrestricted VAR reveal the forecast error in each variable that can be attributed to innovations in other variables over ten periods. In model B, the forecast error variances of all the variables in the system are largely due to their own innovations, although over time the innovations of other variables appears to increase one step after the other.

The forecast error variance of DLASI table 4.11.1 account for 100 percent in the first period without any innovation to any of the 2 variables but in the 10 period it low down to 98.7 percent while the remaining innovation is from the two other variables.

For the DLRM2 table 4.11.2 it approximately shows the same variation both in the first and the last period, in the first period its 99.72 while in the last period is 99.56, throughout the 10 periods of the innovation variation of the

DLRM2 is smooth and stable and lastly is the variation DLRGDP own innovation in the first period account for 99.45 percent and drastically fall to 55.38 percent in the last period more of the innovation in the last period is attributed to DLASI with 44.22 percent, there is little volatility of the variation throughout the ten periods in the DLRGDP decomposed

CHAPTER 5
SUMMARY, CONCLUSION AND POLICY RECOMMENDATIONS

This chapter comprises of summary of the study, conclusion and policies recommended base on the findings of the study. It also highlights some areas for further study.

5.1 Summary

In order to empirical check weather monetary policy have an effect on Nigerian economy the thesis use time series data of six variables, the variables are Monetary police rate, Broad money supply, Market capitalization, All share index, gross domestic product and Investment proxy by gross capital formation. The motivation of the study is the hotly debate among financial economist   more especially during the recent financial crisis about the effectiveness of the monetary policy to curtail the crisis and return economies back to equilibrium. While some believe that monetary policy is a good measure some are of the view that monetary policy is ineffective.

The study analyse this relationship base on some theoretical perspective and different kind of literature are investigated and reviewed. The literatures are classified into four parts. The first part analyse empirical literature from other economies outside Nigeria and here it is make sure that several economies are analysed from different continents and both the developed and emerging economies.   The second part analysed empirical evidence from Nigeria, several studies using different methodology are reviewed. Part three analysed VAR based studies the reason for analyzing VAR based studies is

that majority of monetary policy and stock market studies use the VAR methodology. VAR has been an authoritative method in this kind of studies. Lastly is the non VAR based studies.

Despite the recognition and powerful aspect of the VAR methodology in this kind of studies it is still heavily criticized because of the problem of simultaneity and endogeinity. Therefore other methods such as the event study method were used.

This thesis fellow the path of the VAR based studies to empirically find an answer of weather monetary policy effect stock market or not, several test where carried out in other to find reliable results. The first test carried out is the unit root test, this test is carried out to test the stationarity of the data and to make sure that all the variables have no unit root we test 3 different kind of unit root test ADF, PP and KPSS. Then we carried out the Johansen cointegration test to ascertain if a long run relationship exist between the variables, we estimate the VAR model, we further estimate both standard Pairwise Granger causality test and the VECM causality/ block exorgeneity test and finally we estimate generalized impulse response and the variance decomposition.

The result of the unit root test shows all the variables are level non stationary but become stationary after first difference that is variables are order 1 (1), we then estimate the Johnsen cointegration test, model A shows that cointegration exist among the four variable (MPR/MRR, RMC, RGDP and RI) impliedly means a long run relationship exist between the variables. Having found out that cointegration exist we estimate a VECM model and the coefficient of this model is rightly singed (negative) but very low and insignificant which means that the right hand side variables are weakly exogenous. All the other coefficient of the VECM system are also insignificant. The result of the Pairwise Granger causality shows no causality among the variable except from DLMRR to DLRGDP and is unidirectional

relationship. The VECM/ Block exogeinity test shows bidirectional causality from DMRR to DLRGDP. There is also evidence of unidirectional causality from DLRMC TO DLMRR and also DRGDP cause DRI at 10 percent level of significance. The generalized impulse response shows response are all due to their own shock while market capitalization is negative for all the periods due to monetary policy shocks and also decompose variance of LRMC own variance account for 98 percent while that of LMRR is 22 percent, LRGDP own is19 percent and DRI own is 54 percent.

Model B show no presence of cointegration that is there is no long run associationship between the variable and for this reason estimate an unrestricted VAR model, we analyse the equation with the ASI as the dependent variable and the result show that all the lag variable are insignificant except the variable of the lag of the ASI. We further use the Wald coefficient test to see jointly if the lag variables can influence ASI but only the lag variables of the ASI jointly are significant while that of RM2nad RGDP are not. The granger causality also shows no causality among the 3 variables of the model. Generalized impulse response shows immediate response of own shock but no effect in the remaining variables unless that of DLRGDP from DASI.

5.2 Conclusion

The main motive of any monetary policy is to fine tune the economy when there are some abnormalities (disequilibrium) or a specific target the authority wants to achieve. Monetary policy being ineffective is not a new phenomenon there are economic theories that already provide explanation about the issue. Liquidity trap theory is a good example of such explanation. The liquidity trap theory explains that reducing interest rates in a recession

may be ineffective. This theory is connected with Keynes, and his analysis of the Great Depression. In time of economic meltdown interest rates go down towards zero so banks and other financial intermediaries prefer to hold cash rather than make loans that yield no return. Therefore, while lending may be stimulated, liquidity is not available through the system. Liquidity is hold, trapped and unavailable. This seems to deepen the ongoing problem and further weaken the real economy. When interest rates approach zero, and economy remains in recession, further interest cuts are impossible and so monetary policy is ineffective and cannot be use to achieve anything. Monetary policy effect the equilibrium if and only if it is able to alter asset returns (be them nominal or real)

Accordingly, the Fed and the ECB were saying during the crisis that stock markets will not quickly restore to equilibrium on their own. A stimulus is needed to restore them back to equilibrium. But the required stimulus is a fiscal one. Monetary policy has proven ineffective during such periods, and more of it is unlikely to adjust the economy to sustainable growth. (Stiglitz, 2012)

Moreover many empirical studies have reach this conclusion of ineffectiveness of monetary policy to stock market, studies such as that of Bordo and Jeanne (2000) and Fair (2001) are of the opinion that monetary policy has little or no effect on stock market performance.

Kontonikas et al also found out that during the economic and financial c crisis period stock market investors did not react positively to unexpected FFR cuts. They results highlight the severity of the recent financial turmoil episode and the ineffectiveness of conventional monetary policy close to the zero lower bound for nominal to bring any desired result.

Also Aliyu (2011) concludes that any anticipated monetary policy by the market participating is ineffective in bringing any changes in the Nigeria

stock market he further explain it from rationalist expectation view that economic agents change their behaviors whenever they anticipate changes. Moreover empirical evidence found in this study support the following argument of the ineffectiveness of monetary policy to stock market, this study was able to find out that monetary policy rate and broad money supply are not good policy measure to effect the stock market in Nigeria, this could be due to some structural imbalances in the economy and absence of large scale market activities compared to some highly developed markets in the globe.

Apata J.T (2007) have observed that monetary policy implemented in the Nigerian economy over the past years has been detrimental to and inconsistent with the developmental needs of the economy and have call for checks in the formulation of such policies in order to achieve the desired objection. This statement can be justified because despite various actions used by the monetary authorities in administering monetary policy in Nigeria, there are still gap to the effectiveness of monetary policy. There has been a wide gap between target and outcome due to the fact that the central bank has not been able to achieve the various objectives set out for it self. For instance, they set target for M1 (money supply) to be fixed at10.2 percent in 1998 but M1 substantially rose   by 20 percent that year. In 2001, M1 target growth rate was targeted to be 4.3percent but rose by 28.1 percent. The same pattern of failure is observed for M2 (broad money) series. There has been a problem also controlling the inflation. For example, the target for inflation in 2007 was 7 percent but inflation was about 19 percent that year.

5.3 Policy Recommendations

1) Monetary policies should   create a conducive investment environment by emergency of market based interest rate policy that attract more investment in the stock market, revive industries so that there will be high returns on

investments. In order to strengthen the financial sector, the monetary authorities have to encourage the introduction of more financial instruments that are non rigid   to meet the risk preferences and sophistication of participant in the financial sector.

2) The government should also becommitted to make the stock market less volatile and more viable as it is in developed countries. This will allow for smooth policies of the Central Bank monetary policies to be effective. Law relating to the operation of the stock market could be made a bit flexible and more favourable for the participant to have room to operate more freely.

3) In case when monetary policy is ineffective the government shall use fiscal policy as an alternative in the short run. The security and exchange commission shall step in with some ad hoc measures in other to save the stock market from crash.

4) Also the government shall come with reforms that will overhaul the whole economy and get rid of all the structural imbalances. Also the monetary policy committee shall revisit their policy formulation method and also detect and rectify all problems of monetary policy transmission mechanism.

5) public enlightenment and financial education shall be enhance so as to enlarge the level of investment in the stock market locally, high investment in the stock market will make it more vibrant and will make the stock market a full representative of the economy.

REFRENCES

Abel, A. B., Bernanke, B.S. & Smith, G. (2003), "*Macroeconomics*'' (3rd ed*.). Toronto: Pearson.*

AbdulQayyum and Anwar Saba (2011), "Impact of Monetary Policy on the Volatility of Stock Market in Pakistan", *Munich personal RePEcArchive.*2(11).

Aliyu S U R (2011), "Reactions of Stock Market to Monetary Policy Shocks during the Global Financial Crisis: The Nigeria case", *CBN Journal of Applied Statistics Abuja, Nigeria*. 3 (1).

Aliyu S U R (2009),"Does Inflation has an Impact on Stock return and Volatility? Evidence from Nigeria and Ghana", *Munich personal RePEc Archive.*

Aliyu S U R (2009),"Stock Prices and Exchange Rate Interactions in Nigeria: A Maiden Intra global Financial Crisis"*, Social Science Research Network.*

Alile H I (1984),"The Nigerian Stock Exchange: Historical Perspectives ,Operations and Contributions to Economic Development", *Central Bank of Nigerian Bullion*, 2: 65-69.

Agano, M., Panetta, F., &Zingales, L. (1998), "Why do Companies go Public? An empirical Analysis," *Journal of Finance*, 53 (1), 27-64.doi: 10.1111/0022-1082.25448.

Amassom Dittimi et al (2001), "An Appraisal of Monetary Policy and its Effect on Macroeconomic Stabilization in Nigeria*,"Journal of Emerging Trends in Economics and Management science*. 2(3),232-237.

Afzal Nasrin and Shahadat Syed H (2011),"An Empıirical Analysis of the Relationship between Macro Economic Variables and Stock Prices in Bangladesh," *Bangladesh Development Studies* XXXIV (O4)

Akingunola Richard O et al (2012),"Impact of Interest Rate on Capital Market Growth (A case of Nigeria)," *Universal journal of Management and Social Science.* 2 (11).

Abiodun L N and Elisha O O (2012),"Stock Prices, Stock Market Operations and Nigerian Economic Growth: A Granger Casualty Modeling,"*Global advance research journal of management and business studies.*1(10) 375-383.

Adaramola A Olubenga (2011),"The Impact of Macroeconomic Indicators on Stock Prices in Nigeria,"*Journal of developing country studies*. 1(2).

Ajieh H A and Nenbee S G (2010),"An Econometric Analysis of Monetary policy and Stock Prices in Nigeria (1986-2008)," *Department of economics, University of Port Harcourt. Nigeria*

Arestis, P; P.O. Demetriades and K. B. Luintel (2001), "Financial Development and Economic Growth: The Role of stock market", *Journal of Money, Credit and Banking,* 33, 16-41.

BabakMohammadpour et al (2012),"An Empirical Study of Relationship between Monetary Policy and Stock Market Performance in Malaysia, "*Journal for Basic and Applied Sciences*

Bernanke, B.S. and M. Gertler, 1999."Monetary Policy and Asset Price Volatility,"*Federal Reserve Bank of Kansas City Review 84, pp.17-50.*

Bernanke, B. and K. Kuttner (2005). "What Explains the Stock Market's Reaction to Federal Reserve Policy." *Journal of Finance* 60: 1221-1257.

Bukonla O G and Atanda A A (2012),"Determinant of Stock Market returns in Nigeria: A Time series analysis.*" African journal of Scientific Research.*9(1).

Bailey, K. (2000, October). Macroeconomic Fluctuations, Economic Policy and the Jamaican Stock Market (1991-199). Bank of Jamaica Working Paper.

BerumentHakan and Kutan A M (2007), "The Stock Market Channel of Monetary Policy in Emerging Economies. Evidence from the Istanbul Stock Exchange Market," *Scientific journal of administrative development*

Chidi Oji Chukwuka (2013) Monetary policy in Nigeria: The role in promoting stability in Nigeria .www.doublegist.com

Charles Onyeiwu (2012),"Monetary Policy and Economic Growth of Nigeria,*" Journal of Economics and sustainable development.*3(7) (www.iiiste.org)

Chami Ralph et al (1999),"The Stock Market Channel of Monetary Policy*,"* IMF working paper 99(22) p1-15

Cheng Shoaping (2008*), "*Positivist analysis on effect of Monetary policy on Stock price behaviors,*" School of Banking, Jiangxi University of Finance and Economics China*

Caulu and Zhou Xim (2010),"Impulse Response Function Analysis.An Application to Macro Economic Data of Chin,". *School of Economics and Social Science, Hoskalan Dalarma*

Carlo A. Favero (2001) *Applied Macroeconomics.*Online library wiley.com

Dyck, A., &Zingales, L. (2004), "Private Benefits of Control: An International Comparison,"*Journal of Finance,* 59(2), 537-600. doi: 10.1111/j.1540-6261.2004.00642.x

Ehrmann, M. and Fratzscher, M. (2004), "Taking Stock: Monetary Policy Transmission to Equity Markets,"*Journal of Money, Credit, and Banking, Volume36, Issue 4, pp. 719-737.*

Ehrmann, Michael and Marcel Fratzscher (2004), "Taking Stock: Monetary Policy Transmission to Equity Markets," *European Central Bank Working Paper no. 354.*

Enders, W. (2004).*Applied Econometric Time Series* (Second Edition). John Wiley and Sons Inc., United States

Fama, E. F. and K. R. French (1988),"Permanent and Temporary Components of Stock Prices, "*Journal of Political Economy***96**: 246–273.

Fisher Irving (1930) *The Theory of Interest*. New York. The macmillian Co

Focus Nigeria.com (2013) Nigerian stock exchange market.
www.fucusnigeria.com/Nigeria-stock-exchange.htm

Fuhrer, Jeff and Geoff Tootell (2004), "Eyes on the Prize: How Did the Fed Respond to the Stock Market?",*Federal Reserve Bank of Boston Public Policy Discussion Papers no. 04-2.*

Gan, C., Lee, M., Yong, H.H.A., and Zhang, J. (2006),"Macroeconomic Variables andStock Market Interactions: New Zealand Evidence,"*Investment Management and Financial Innovations*, 3(4), 89-101.

Geske, R. and Roll, R. (1983), "The Fiscal and Monetary Linkage between Stock ReturnsandInflation," *The Journal of Finance*, 38(1), 1-33.

Hamrita Mohammed .E (2011),"The relationship between Interest Rate, Exchange Rate and Stock Prices: A Wavlet Analysis, "*International Journal of Economics and Finance issues. Vol 1 NO 4 2011 PP220-228*

Hasan Arshad and Javed M T (2009),"An Empirical Investigation of the Casual Relationship among Monetary Variables and Equity Market Returns,"*The Lahore journal of economics.*14(1) 115-137

Helmut Lutkepohl (1999), "Vector Autoregressive Analysis" *Humboldt University Of Berlin Interdisplinary Research Project 373*Irwin, Scott.

Dwight Sanders, 2010, "Speculation and Financial Fund Activity," *OECD Working Party on Agricultural Policies and Markets Draft Report: Annex 1.*

Ibrahim A A and Oketoyin (2012),"Macroeconomic Policy and Return on Equities: Empirical Evidence from the Nigeria Capital Market,"*International journal of Finance and Economics.*

Ioannidis, C. and A. Kontonikas (2006). "The Impact of Monetary Policy on Stock prices, "*Journal of Policy Modeling30: 33-53.*

Maku O E and Atanda A A (2010), "Determinant of Stock Market Performance in Nigeria: Long run analysis*," Journal of Management and Organizational beheviour.vol 1, No 3 November*

I GustiNgurah A. (2009),"*Time Series Data Analysis using Eviews*," John Wiley and Sons (Asia) PTE LTD

James D. Hamilton (1994), "Time Series Analysis"*Princeton university press. Princeton NJ*

Johansen, S., 1988, "Statistical Analysis of Cointegration Vectors," *Journal of Economic Dynamics and Control, Vol. 12, No. 2–3, pp. 231–254. 18*

Johansen, S.,, 1991, "Estimation and Hypothesis Testing of Cointegration Vectors in Gaussian Vector Autoregressive Models," *Econometrica, Vol. 59, No. 6, pp. 1551–1580.*

Johansen, S.,, 1995, "*Likelihood-Based Inference in Cointegrated Vector Autoregressive Models,"*New York: Oxford University Press.

Johansen, S., and Juselius, K., 1990, "Maximum Likelihood Estimation and Inference on Cointegration–with Applications to the Demand for Money*," Oxford Bulletin of Economics and Statistics, Vol. 52, No. 2, pp. 169–210.*

La Porta, R., Lopez-de-Silanes, F., &Shleifer, A. (1999),"Corporate Ownership Around the World," *Journal of Finance*, 54(2), 471-517.doi: 10.1111/0022-1082.00115

Maysami, R. C. and Koh, T. S. (2000), " A Vector Error Correction for the Singapore Stock Market," *International Review of Economics and Finance*, Volume 9, pp.79-96.

Masih, M; A. Al-Elg and H. Madani (2009), "Causality between Financial Development and Economic Growth: an application of vector error correction and variance decomposition methods to Saudi Arabia", *Applied Economics*, 41, 1691-1699.

Mbutor O M (2010), "Exchange Rate Volatility, Stock Price fluctuations and the Lending behavior of Banks in Nigeria*," Journal of Economics and International Finance (www.acadamicjournal.org)*

Muradoglu, G., Metin, K., Argac, R. (2001),"Is There a Long Run Relationship between Stock Returns and Monetary Variables: Evidence from Emerging Markets," *Journal of Applied Financial Economics*, Volume 2, 641-649.

Milton Friedman (1956),"*Quantity Theory of Money*," New York The Macmillian Co.

National bureau of statistics (2010).The Review of Nigerian Economy. http:// www.nigerianstat.gov.ng.

Newsdesk (2013), '' The effect of monetary policy on Nigeria's economy"www.newsdesk.com.ng

Neri, Stefano (2004), "Monetary Policy and Stock Prices," *Bank of Italy Working paper No. 513, July 2004*

Oseni I O and Nwaso P I (2011),"Stock Market Volatility and Macro Economic Variables Volatility in Nigeria: An Exponential GARCH Approach,"*European journal of Business and Management (www.iiiste.org)*

Osanwoyi I S and Evbaiyiro-Osagie E I (2012),"The Relationship between Macro Economic Variables and Stock Market Index in Nigeria, "*Journal of Economics*

Olubenga A A (2012), "Exchange Rate volatility and Stock Market behavior: The Nigerian Experience," *.European journal of Business and Management*

Osuagwu E S (2010*),"*The Effect Monetary Policy on the Stock Market Performance in Nigeria, "*Department of economics, University of Lagos.*

Okpara G C (2010),"Monetary policy and Stock Market Return: Evidence from Nigeria," *Journal of Economics.*

Okoli M N (2012),"Return volatility Interactions in the Nigerian Stock Exchange Market*," Asian Economic and Social Society*

Patelis, A.D. (1997), "Stock Returns Predictability and the Role of Monetary Policy", *Journal of Finance, Volume 52, Issue 5, pp. 1951-197*

Philipp M. Hildebrand (2006) Swiss National Bank April 7th, 2006

Patelis, Alex D. (1997), "Stock Return Predictability and the Role of Monetary Policy," *The Journal of Finance52 (5), pp. 1951-1972.*

Pesaran, M. H and Y. Shin, (1998), "Generalised impulse response analysis in linear multivariate models", *Economics Letters, 58, 17–29*

Pearce, D. K. and Roley, V. V. (1985), "Stock Prices and Economic News," *JournalofBusiness*, 58(1), pp. 49-67.

Robert Rigobon and Brian Sack.(2003),"Measuring the Reaction of Monetary Policy to the Stock Market," *The Quarterly Journal of Economics 118(2):639 { 669, May 2003*

Rapach, David E. (2001), "Macro shocks and real stock prices*," Journal of Economics and Business53 (1), pp. 5-26.*

Rigobon, Roberto and Brian Sack (2003), "Measuring the Reaction of Monetary Policy to the Stock Market," *The Quarterly Journal of Economics118 (2), pp. 639-69.*

Ross Stephen (1986) Arbitrage pricing Theory. Wikipedia The free Encyclopedia

Rapach, David E. (2001), "Macro shocks and real stock prices*," Journal of Economics and Business53 (1), pp. 5-26.*

Ross Stephen (1986),"Arbitrage pricing Theory," *Wikipedia The free Encyclopedia*

SamyBennaceur et al (2009),"On the linkage between Monetary policy and MENA Stock Market*s?"Economic Research Forum.*

Sunday Barawson et al (2011), "Empirical Relationship between Stock exchange transaction and key Macro economic variables in Nigeria, *"Journal of Economics and Sustainable Development*

Sims, C. (1980), "Macroeconomics and Reality", *Econometrica, 48, 1-48.*

Sims, C. (1986), "Are Forecasting Models Usable for Policy Analysis?" *Quarterly Review, Federal Reserve Bank of Minneapolis*, 10, 2-16.

Stiglitz E. Joseph (2012), "Monetary Policy have proven Ineffective in US and Europe, need for Fiscal Stimulus," *The Economic Times*

The economy (2009) Nigerian stock exchange: After 50 years of trading. www.theeconomy.com/news59.html

Tabak M B (2006), "The Dynamic Relationship between Stock Market and Exchange rate: Evidence from Brazil" *Working Paper series Brazil.*

Thorbecke, Willem (1997),"On Stock Market Returns and Monetary Policy," The Journal of Finance, 52 (2), pp. 635-654

Umar Bida Ndako (2013),"Dynamics of Stock Prices and Exchange Rates Relationship: Evidence From Five Sub-Saharan African Financial Markets,"*Journal of African Business, 14:1, 47-57, DOI: 10.1080/15228916.2013.765322*

Umar Bida Ndako (2010),"*Financial Development, Economic Growth and Stock Market Volatility. Evidence from Nigeria and South Africa,*" doctoral dissertation Leicester University.

UtkuUtkulu(undated),"How to Estimate Long run Relationship in Economics. An Overview of Recent Development. *Department of Economics"DokuzEylul University.*

Zingales, L. (1995), "Insider ownership and the decision to go public," *The Review of Economic Studies,* 62(3), 425-448. doi: 10.2307/2298036

ZviBodie et al (2009), " *Investment*," Mcgraw Hill Irwin 8th edition

APPENDIX

VAR Lag Order Selection Criteria
Endogenous variables: LRMC LMRR LRGDP LRI
Exogenous variables: C
Date: 12/23/13   Time: 16:30
Sample: 1980 2012
Included observations: 30

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-74.24593	NA	0.002166	5.216396	5.403222	5.276163
1	26.62293	168.1148*	7.65e-06*	-0.441529*	0.492603*	-0.142692*
2	41.04791	20.19498	9.06e-06	-0.336528	1.344909	0.201378
3	57.33850	18.46266	1.05e-05	-0.355900	2.072842	0.421076

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.614068	Prob. F(1,24)	0.4409
Obs*R-squared	0.773383	Prob. Chi-Square(1)	0.3792

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.313655	Prob. F(8,22)	0.0571
Obs*R-squared	14.16434	Prob. Chi-Square(8)	0.0776
Scaled explained SS	7.265975	Prob. Chi-Square(8)	0.5082

MODEL B

Lag	LogL	LR	FPE	AIC	SC	HQ
0	28.32563	NA	0.000123	-0.491760	-0.415020	-0.460678
1	50.96707	43.52431	9.42e-05	-0.756642	-0.449683	-0.632313
2	110.4104	110.8070	3.54e-05	-1.736124	-1.198947	-1.518549
3	174.6394	115.9864	1.21e-05	-2.808533	-2.041136	-2.497711
4	221.4983	81.88930	5.83e-06	-3.543656	-2.546041*	-3.139588*
5	226.3102	8.128740	6.34e-06	-3.462333	-2.234498	-2.965018
6	240.1862	22.63277*	5.80e-06*	-3.557013*	-2.098960	-2.966452
7	242.9245	4.306826	6.60e-06	-3.435427	-1.747154	-2.751619
8	249.4124	9.826304	6.99e-06	-3.386648	-1.468156	-2.609593

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.604464	Prob. F(12,94)	0.8335
Obs*R-squared	7.665234	Prob. Chi-Square(12)	0.8107
Scaled explained SS	107.4893	Prob. Chi-Square(12)	0.0000

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.373566	Prob. F(4,90)	0.8269
Obs*R-squared	1.747498	Prob. Chi-Square(4)	0.7821

Wald Test:
System: Untitled

Test Statistic	Value	Df	Probability
Chi-square	25.42149	4	0.0000

Null Hypothesis: C(1)=C(2)=C(3)=C(4)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(1)	-0.489484	0.102512
C(2)	-0.180008	0.114927
C(3)	-0.001640	0.117876
C(4)	0.124023	0.104728

Restrictions are linear in coefficients.

Wald Test:
System: Untitled

Test Statistic	Value	Df	Probability
Chi-square	1.264531	4	0.8674

Null Hypothesis: C(5)=C(6)=C(7)=C(8)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(5)	0.083255	0.113788
C(6)	0.122228	0.135135
C(7)	0.023026	0.135281
C(8)	-0.024405	0.113852

Restrictions are linear in coefficients.

Wald Test:
System: Untitled

Test Statistic	Value	Df	Probability
Chi-square	0.789068	4	0.9399

Null Hypothesis: C(9)=C(10)=C(11)=C(12)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(9)	-0.154594	0.961233
C(10)	-0.595297	0.957937
C(11)	-0.186992	0.979704
C(12)	-0.453390	1.004154

Restrictions are linear in coefficients.

C: CURRICULUM VITAE

PERSONAL INFORMATION

Surname, Name: YOLA T. Abdulnasir

Nationality: Nigeria

Date and Place of Birth: 27 January 1983, Kano

Marital Status: Single

Phone: +2348032388669

email: Abtyola@yahoo.com

EDUCATION

Degree	Institution	Year of Graduation
MS	Çankaya Univ. Economics.	2014
BS	Bayero University Kano. Economics.	2011
High School	Federal Government College, Kano.	2001

HOBBIES

Reading and jogging