

**THE RELATIONSHIP BETWEEN INTEREST RATE AND STOCK MARKET  
PERFORMANCE IN NIGERIA (1980-2013)**

*BY*

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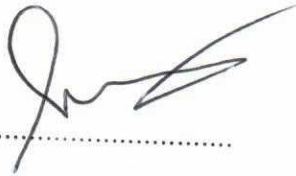
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## CERTIFICATION

This is to certify that this work was carried out by Akanni Ayobami Zainab with matric number: EDS/11/0158 in the Department of Economic and development studies of Federal University Oye Ekiti, under the supervision of Dr Ditimi Amassoma.

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## DEDICATION

This project is dedicated to almighty God, the most gracious the most merciful, and to my beloved father Mr W Akanni, my precious mother Mrs O. ladoye/Akanni, my late grandparents, my dearest step father Mr C. Daramola, my helper Mr Olanrewaju Ogunsola, my school mother Mrs Temitope Ogunsola, my best friend Akinsanmi Ronke Mary, and also my best sister Ogunrin Omowunmi, Mr Kaleyemi, Mrs Ayogu, Mr Shola, Mr Kola, my Landlady.

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## TABLE OF CONTENT

TITLE PAGE	
CERTIFICATION.....	ii
DEDICATION.....	iii
ACKNOWLEDGEMENT.....	iv-v
TABLE OF CONTENT.....	vi
<b>CHAPTER ONE</b>	
GENERAL INTRODUCTION	
1.0 BACKGROUND TO THE STUDY.....	1 - 3
1.1 STATEMENT OF RESEARCH PROBLEM.....	3
1.2 OBJECTIVES OF THE STUDY.....	3 - 4
1.3 RESEARCH HYPOTHESIS.....	4
1.4 SIGNIFICANCE OF THE STUDY.....	4
1.5 SCOPE OF THE STUDY.....	4 - 5
1.6 OPERATIONAL DEFINITION OF TERMS.....	5
1.7 ORGANIZATION OF THE STUDY.....	5 - 6
<b>CHAPTER TWO:</b>	
LITERATURE REVIEW	
2.0 INTRODUCTION.....	7

2.1 CONCEPTUAL ISSUES AND THEORETICAL PERSPECTIVES.....	7
2.1.1 INTEREST RATE.....	7
2.1.2 INTEREST RATE RISK.....	7 - 8
2.1.2.1 TYPES OF INTEREST RATE RISKS.....	8 - 10
2.1.3 STOCK MARKET.....	10
2.1.4 FUNCTIONS OF STOCK MARKET.....	10 - 11
2.1.5 ANALYSIS OF THE NIGERIAN STOCK MARKET PERFORMANCE.....	11 - 14
2.2 THEORETICAL FRAMEWORK.....	14
2.2.1 THE LOANABLE FUNDS THEORY OF INTEREST RATE.....	14
2.2.2 JOHN KEYNES' LIQUIDITY PREFERENCE THEORY OF INTEREST RATE.....	15 - 16
2.2.3 CRITISMS OF THE THEORY OF INTEREST.....	16 - 17
2.2.4 CLASSICAL THEORY OF INTEREST RATE.....	17 - 20
2.2.5 THEORY OF INSTITUTIONAL FAILURE.....	20 - 21
2.2.6 THE RATIONAL MARKET ADJUSTMENT THEORY.....	21
2.2.7 THE SPECULATIVE MARKET THEORY.....	21 - 22
2.3 EMPIRICAL EVIDENCE.....	22 - 24
2.3.1 SUMMARY OF EMPIRICAL REVIEW.....	25

**CHAPTER THREE:**

**RESEARCH METHODOLOGY**

3.0 INTRODUCTION.....	26
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3.1 MODEL SPECIFICATION/ THEORETICAL FRAMEWORK OF MODEL.....26 - 27

3.1.1 MODEL SPECIFICATION.....27 - 28

3.2 THEORETICAL EXPECTATIONS /APRIORI EXPECTATION..... 28 - 29

3.3 DEFINITION OF VARIABLES IN THE MODEL.....29 - 30

3.4 ESTIMATION TECHNIQUES.....30

3.4.1 DECISION CRITERIA.....30 - 31

3.5 SOURCES AND METHODS OF DATA COLLECTION.....31

**CHAPTER FOUR**

**DATA ANALYSIS AND INTERPRETATION**

4.0 INTRODUCTION.....32

4.1 DESCRIPTIVE STATISTICS..... 32 - 33

4.2 UNIT ROOT TEST..... 33 - 34

4.3 CO - INTEGRATION ESTIMATE.....34 - 35

4.4 REGRESSION ESTIMATE ON THE IMPACT OF INTEREST RATES ON STOCK MARKET CAPITALIZATION IN NIGERIA.....35 - 37

4.5 CAUSALITY TEST.....37

**CHAPTER FIVE**

**SUMMARY, CONCLUSION AND POLICY RECOMMENDATION**

5.0 SUMMARY.....38

5.1 CONCLUSION.....38 - 39

5.2 POLICY RECOMMENDATION.....39



REFERENCE

BIBLIOGRAPHY

APPENDIX

## **ABSTRACT**

*The aim of this research work is to examine the relationship between interest rate and stock market performance in Nigeria from 1980- 2013 using market capitalization (MC) as the dependent variable, and others as explanatory variables which are all secondary data sourced from CBN statistical bulletin and Nigerian Stock Exchange bulletin respectively. The study employed some econometric techniques for simplicity. The descriptive statistics was used to examine the trend of interest rate and market capitalization in Nigeria from 1980 to 2013. Econometric techniques like that of unit root test (Augmented Dickey Fuller) and co-integration (Johansen method) test were used to check for the time series properties and long run linear relationship respectively. The result of above shows that all variables used were integrated of order one. Similarly the co-integration test showed that there exist long run linear relationships between the variables of interest. Furthermore, the empirical results confirms that in the long run, inflation rate, exchange rate, money supply, treasury bill rate and monetary policy rate have significant effect which the appropriate signs attached. On the other hand, the causality test x-rayed that there is a unidirectional causality which runs from real interest rate (RIR), money supply (MS2), Treasury bill rate (TBR) and monetary policy rate (MPR) to market capitalization (MC) without a corresponding reversal feedback response. Therefore, the study recommend that there is need for the Nigeria government to ensure appropriate incentives and policies to guarantee that lending rate (interest rate) is kept at one digit (not high) in order to encourage investors to borrow money from banks and private sectors to be able to inject it into capital market.*

## CHAPTER ONE

### INTRODUCTION

#### 1.0 Background to the Study

The Nigerian stock market has witnessed massive development since its inception (Olowe, 2011; Bassey, 2013). Although still considered as an emerging market when compared to developed economies, the Nigerian stock market is an avenue that ensures long-term commitments in real capital (Ologunde, Eluminade and Asaolu, 2006). This viewpoint is reaffirmed by Alam (2009) and Akpan (2014) who opined that the impacts of interest rate on stock exchange provide important implications for monetary policy, risk management practices, financial securities valuation and government policy towards financial markets. The stock market (also known as the share market) is the place where purchasers or merchants meet for claiming stocks including securities recorded with respect to a stock trade. Such merchandise is exchanged privately. Those securities exchange will be general population substance and will stand out among the critical sources of finances for both privately claimed and publicly possessed organizations and nations.

Interest rate is the percent charged or paid for the utilization of cash. It can also be charged on the cash borrowed and is to be paid at the specified period signed by the borrower. Obodike (2015) characterized interest rate as outstanding among all other macro-economic variables that can be used to save money for commercial enterprises to utilize. It is also significantly related to financial development. Amadeo (2014), Ikechukwu (2011) and Akpan (2014) likewise characterize it as the exchange or yield value or cost of deferring present utilization. UNCTAD (2012) defined interest rate as the cost or price of borrowing, or the gain from lending, normally expressed as an annual percentage amount. The OECD (2015) perceived interest as the price paid by the borrower for the use of funds saved by the lender and the compensation to the lender for his deferring expenditures.

According to OECD (2010), long-term interest rates are government bonds with a residual maturity of about ten years. They are not the interest rates at which the loans were issued, but the interest rates implied by the prices at which these



government bonds are traded on financial markets. Long-term interest rates are mainly determined by three factors: the price that lenders charge for postponing consumption; the risk that the borrower may not repay the capital; and the fall in the real value of the capital that the lender expects to occur because of inflation during the lifetime of the loan (OECD Fact Book, 2010). The real interest rate is an important determinant of the savings and investment behaviour of households and enterprises and is of key importance in terms of cyclical development and long term economic growth. Interest rates plays a crucial role in the resourceful allocation of resources aimed at facilitating growth and development of an economy and as a demand management technique for achieving both internal and external balance. It is also one of the macroeconomics variables that affect the performance of the stock market (Lobo, 2000).

The stock market serves as an economic guide for any country or economy. Ologunde et al (2006) observed that the stock market makes it possible for the economy to ensure long term devotion on real capital. Alile (1997) opines that essentially the stock exchange worldwide is a form of preservation for the efficient market with attendant benefit of economic growth. The measurement of the efficiency of stock market is very important to policy makers because a stock market index is a statistical parameter to reflect the composite value of a market characteristic, the overall direction of the market and the scope of its movement.

The Nigeria Stock Exchange (NSE) is authorized to observe market exchanges, prevent breaches of market rules and to deter and detect unjust manipulations and trading practices. The market has witnessed apparent transformations in recent years, as shown by the increased involvement of private and public investors at the floor of the stock exchange and in different public offers of quoted companies. It has also attracted and embraced the awareness and interest of international investors by increasing capital inflow. The unstable growth of the market has also contributed sizably to the share of the global boom, especially in Africa. For example, the overall market capitalization had risen from 1,698.1million in 1980 to a high of 1,325,672.9 in 2003 from (CBN Bulletin.2003). The rapid developments in the market are attributable to the stock market growth linkages observable through the mechanism of liquidity creation.



To promote the growth of the Nigerian stock market, the interest rate is important. Interest rates assist in the decision of where and how to invest. If the interest rate paid by banks to depositors is increased, investors will patronize the banks more and fewer investors will invest in the stock market which will lead to a decrease in capital investment in the economy. Also, disparity in interest rate might cause investors to either go to the bank or buy government development stock like bond. Modigliani (1971) and Mishkin (1977) identify that lower interest rates increase stock prices and later lead to increased business investment. Bosworth (1975) agrees with the above although he adds that higher stock prices reduce the yield on stock and reduce the cost of financing investment spending through equity issuance.

### **1.1 Statement of Research Problem**

The financial systems of most developing countries came under pressure as a result of the economic upset of the 1980s. The interest rate policy in Nigeria lacked stability during the Structural Adjustment Program (SAP) as periods of liberalization were entangled with impositions of some credit controls (IMF, 1997). The administration of low interest rate which was proposed to encourage investment permitted a dynamic interest rate regime where rates were more influenced by market forces. It however failed to yield desired result of stimulating the needed investment growth. Several factors like political instability, war, terrorist threats, boycotts and strikes, economic trends and international trade contribute to stock market problems. Resulting from the foregoing, this study seeks to examine the relationship between interest rate and stock market performance in Nigeria. It will also observe the extent to which other macroeconomic variables affect the stock market. In addition, the trend of interest rate and stock market performance in Nigeria within the last three decades is examined.

### **1.2 Objectives of the study**

The main purpose of this research work is to examine the relationship between interest rate and stock market performance in Nigeria from 1980 to 2013. The specific objectives are:

- To identify the relationship that exists between interest rate and stock market performance variables;
- To examine the impact of interest rate on stock market capitalization;
- To investigate and analyze the effect of interest rate on market capitalization; and,
- To determine whether causality runs between interest rate and stock market performance variable.

### **1.3 Research Hypothesis**

In view of the objectives of the study, the research hypotheses to be tested are as follow:

**H<sub>0</sub>:** There is no positive relationship between the interest rate and stock market performance in the Nigeria economy.

**H<sub>1</sub>:** There is a positive relationship between interest rate and stock market performance in the Nigerian economy.

### **1.4 Significance of the Study**

The study adds to existing knowledge about interest rate and stock market performance in Nigeria. It provides a basis for other researchers to investigate the Nigeria stock market, by also understanding the impact of the exchange rate and interest rate on the stock market. It will also stimulate Nigerian policy makers to successfully plan and forecast the impact of economic policies with a view to attracting investors to invest in the stock market. Well-thought policies ensure economic growth and this will be reflected in an active stock market with its index trending upwards.

### **1.5 Scope of the Study**

This project focuses on the relationship between interest rate and stock market performance in Nigeria. It has a study period of 1980 to 2013. This period is chosen because, in Nigerian economic history, it is a period characterized by wide scale reformation of the Nigeria stock market. The study is however limited to



macroeconomic variables such as interest rate, and exchange rate, inflation rate etc. that affect the stock market and the economy as a whole.

### 1.6 Operational Definition of Terms:

For the purpose of this research, key terms are under listed and defined thus:

- **Interest Rate:** Generally, interest rate is considered as the cost of capital means, the price paid for the use of money for a period of time. From the point of view of a borrower, interest rate is the cost of borrowing money (borrowing rate). From a lender's point of view, it is the fee charged for lending money (lending rate) (Uddin, 2007). It is also defined as the return or yield on equity or opportunity cost of deferring current consumption into the future. Thus, any economy that wishes to grow must pay proper attention to the changes in interest rate (Uchendu 1993).
- **Stock Market:** A stock market or equity market is a public entity for the trading of company's stock (shares) or derivatives at an agreed price. These are securities listed on the stock exchange as well as those only traded privately. It is an important source for companies to raise money as it allows businesses to publicly trade or raise additional capital for expansion by selling shares of ownership in a public market (Ortega, Edgar, Yalman and Onaran, 2006).
- **Stock Market size:** The common index used as a measure of stock market size is market capitalization. Market capitalization is the total value of all listed shares. In terms of economic significance, market size and the ability to mobilize capital and diversify risk are positively correlated (Bosworth, 1975).
- **Exchange rate:** An exchange rate (also known as foreign exchange rate) between two currencies is the rate at which one currency will be exchanged for another. It is regarded as the value of one country's currency in terms of another currency. Exchange rates are determined in the foreign exchange market (Leahy 1993).

### 1.7 Organization of the Study

This research work is divided into five chapters. Chapter One involves the general introduction and this includes Background to the Study, Statement of the Problem, Research Hypothesis, Aim and Objectives of the Study, Significance of the Study,

Scope of the Study, Operational Definition of Terms and Organization of the Study. Chapter Two focuses on the review of related literatures and theoretical framework. Chapter Three involves the research methodology, specification of models, method of evaluation and justification of model. Chapter Four is devoted to the presentation of data, analysis and result discussion. Chapter Five is based on summary of the study, conclusion and policy recommendations.



## CHAPTER TWO

### LITERATURE REVIEW

#### 2.0 Introduction

This chapter focuses on the review of literatures that are relevant to the present research. This involves the reflection and discussion of relevant previous studies. This is with a view to situating this work within existing studies as well as specifying the gap this study intends to fill.

#### 2.1 Conceptual Issues/ Theoretical perspectives

##### 2.1.1 Interest rate

The interest rate was first used as an instrument of monetary policy in Nigeria in 1962 following the introduction of money market instrument. Interest rate is the cost of funds used for financing a business. During periods of high government borrowing, interest rate may be reduced to minimize cost of servicing public debt. The use of interest rate as an instrument of monetary policy in Nigeria was based on two main assumptions: that the bank rate can influence all other rates in the economy, and that the demand for money is interest elastic.

In Nigeria, interest rate guidelines/regulations are contained either in the Federal Government Annual Budget document or the Monetary/Credit Policy Circulars of the Central Bank of Nigeria (CBN). In August 1987, the CBN liberalized the interest rate regime and adopted the policy of fixing only its Minimum Rediscount Rate (MRR) and it was however modified in 1989, when the CBN issued further directives on the required spreads between deposit and lending rates.

##### 2.1.2 Interest Rate Risk

This is the risk that an investment's value will change due to a change in the absolute level of interest rates. Interest rate risk is the possibility that a fixed rate debt instrument will deteriorate in value as a result of a rise in interest rates. Whenever an investor buys securities that offer a fixed rate of return, they open themselves to

interest rate risk. Interest rate measurement is usually a dynamic process and does not take into account credit risk. Interest rate risk is a valuable financial measurement which helps investors, managers and regulators to understand the fluctuations in fixed income securities. The risk pertains to the experience an investors has if the bond needs to be liquidated due to past maturity records. Bonds go up in value when the interest rates go down. They also fall in value when rates go up. The calculation of the risk helps investors to properly allocate investment funds that will meet the investment objectives.

### **2.1.2.1 Types of Interest Rate Risks**

According to Abey Francis (2010), the feelings by which interest rate fluctuations will arise due to the mixed affect of a host of other risks that comprise the interest rate risk. These risks when isolated fall into the following categories:

1. **Rate Level Risk:** During a given period, there is the possibility for restructuring the interest rate levels either due to the market conditions or due to regulatory intervention. This phenomenon affects decisions regarding the type and the mix of assets/liabilities to be maintained and their maturation periods. The interest rate restructuring in the Indian market involved a phased lowering if the Statutory Cash Reserve Ratio for banks by the Reserve Bank of India. Each time the CRR was reduced, there was an increase in the liquidity which further resulted in lowering the interest rate levels. The risk that arises due to this reduction can be understood from the fact that the revised rates of interest will be applicable to all the new deposits, which will lower the marginal costs of funds. However, the effect will be seen on all the existing assets. Consequently the loss of interest income on assets is likely to be higher than the reduction in the interest cost of deposits leading to lower spreads.
2. **Volatility Risk:** In addition to the implications of interest rate changes, there are short term fluctuations which are to be considered in deciding on the mix of assets and liabilities, the pricing policies and thereby the business volumes. However, the risk will acquire serious proportions in a highly volatile market when the



impact will be felt on the cash flows and profits. The affect of fluctuations in the short term have a greater impact since the adjustment period is very short.

3. **Prepayment Risk:** The fluctuations in the interest rate may sometimes lead to prepayment of loans. For instance, in a situation where the interest rate is declining, any cash inflows that arise due to prepayment of loans will have to be redeployed at a lower rate invariably resulting in lower yields.
4. **Call/Put Risk:** When funds are raised through bonds/securities, it may include call/put options. A call option is exercised by an issuer to redeem the bonds before maturity, while the put option is exercised by the investor to seek redemption before maturity. These two options expose to a risk when the interest rate fluctuate. A call option is generally exercised in a declining interest rate scenario. This will affect the bank if it invests in such bonds since the intermediate cash inflows will have to be reinvested at a lower rate. Similarly, when the investor exercises the put option in an increasing interest rate scenario, the bond-issuing banks have to face greater replacement costs.
5. **Reinvestment Risk:** This can be associated to the intermediate cash flows arising due to the payment of interest, installments on loans etc. These intermediate cash flows arising from a security/loan are usually reinvested and the income from such re-investments will depend on the prevailing rate of interest at the time of reinvestment and the reinvestment strategy. Due to the volatility in the interest rates, these intermediate cash flows when received may have to be reinvested at a lower rate resulting in lower yields. The variability in returns from re-investments due to interest rates changes is called the reinvestment risk.
6. **Basis Risk:** When the cost of liabilities and the yields of assets are linked to different benchmarks resulting in a floating rate and there are no simultaneous matching movements in the benchmark rates, it leads to basis risk. When the change in the interest rates, which are set as a benchmark for assets/liabilities, is not uniform, it will lead to a decrease/increase in the spreads.
7. **Real Interest Rate Risk:** The inflation factor has to be considered in order to assess the real interest cost/yields. This occurs because the changes in the nominal interest rates may not match with the changes in inflation.



The presence of the above mentioned risks either individually or collectively result in interest rate risk. These risks affect the income/expenses of the bank's asset/liability portfolio and consequently impact on the value of assets and liabilities of the bank. It even affects the market value of the bank.

### **2.1.3 The Stock Market**

The stock market or equity market is a public entity for the trading of company's stock or derivatives at an agreed price through the public transaction. Stocks are listed and traded on stock exchanges because they are entities of a corporation or mutual organization specialized in the business of bringing buyers and sellers of the organizations to a listing of stocks and securities together. The stock market serves as one of the most important sources for companies to raise money either for capital or continuation of their business. Participants in the Nigerian stock market include the Nigerian Stock Exchange (NSE), discount houses, development banks, merchant banks, stock broking firms, insurance and pension organizations, quoted companies, governments at all levels, individuals and the Nigerian Securities and Exchange Commission (NSEC). Stock market consists of the primary market that is more concerned with the offering of new issues or the initial issuance and sale of securities.

Some of the instruments issued on the stock exchange include debt instruments comprising federal government development stocks (FDSs), and industrial loans and bonds issued by corporate bodies and equity capital (ordinary shares of corporate entities) which grants the holders some ownership rights to the business concerned. The secondary market also trades on securities that have already been listed on the stock exchange and it is often contended that the existence and the allocation of efficiency of the primary market depends on the existence and efficiency of the secondary market (Mbat, 2001).

### **2.1.4 Functions of Stock Market**

The functions of a well functioning stock market include:

- **Mobilization of Savings:** At all stages of a nation's development, both the government and the private sectors require long term capital. Companies would need to build new factories, expand existing ones or buy new machinery. The government would also require funds for the provision of infrastructures. All these activities require long term capital, which is provided by a functioning stock market.
- **Creation of Liquidity:** Stock market may also affect economic activities through the creation of liquidity. Liquid equity markets make available savings for profitable investment that requires long term commitment of capital. As asserted by Bencivenga, Smith and Starr (1996), without liquid capital market there would be no industrial revolution. This is because savers would be less willing to invest in large, long term projects that characterized the early phase of industrial revolution.
- **Risk Diversification:** The stock market can affect economic growth when it is internationally integrated. This enables greater economic risk sharing. Because high return projects also tend to be comparatively risky, stock markets that facilitate risk diversification encourage a shift to higher return projects (Obstfeld, 1994). The resultant effect is a boost in the economy leading to growth through the shifting of society's savings to higher return investments.
- **Improved Dissemination and Acquisition of Information:** Accelerated economic growth may also result to acquire information about firms. Reward often comes to an investor able to trade on information obtained by effective monitoring of firm's for profit. Thus, improved information will improve resource allocation and promote economic growth.

### 2.1.5 Analysis of the Nigerian Stock Market Performance

The Nigerian capital market has performed fairly well despite its numerous challenges. Some of the challenges include the buy and hold attitude of Nigerians, massive ignorance of a large population of the Nigerian public of the nature and benefits of the capital market, few investment outlets in the market. In addition are lack of capital market friendly economic policies, political instability, private sector



led economy and less than full operation of recent developments like the Automated Trading System (ATS), Central Securities Clearing System (CSC), On-line and Remote Trading, Trade Alerts and Capital Trade Points of the Nigerian Stock Exchange. Some noteworthy developments from the Nigerian Stock Exchange are:

- **Market Capitalization:** This is the total value of the company based on its current share price and the total number of exceptional stocks. Market capitalization is widely used as an indicator in assessing the size of a capital market in an economy. The percentage of market capitalization can be used to compare to the economy's Gross Domestic Product (GDP) which helps in assessing the size of the stock market.
- **Value of Transactions:** It can be defined as the customs value of imported goods which can be computed on the basis of the price that is actually paid or payable for the goods at the time when it was exported. Between 2001 to 2009 values of securities traded on the exchange were N57.6 billion, N60.3 billion, N120.7 billion, N 225.8 billion, N262.9 billion, N470.3 billion, N2.1trillion, N2.4 trillion and N2.6 trillion, respectively. As market capitalization is used in measuring the size of the stock market, so the value of transaction traded is used to measure liquidity of the market and the price paid for an imported goods. The percentage of total value of transactions when compared to the economic Gross Domestic Product it helps to review the liquid of the stock market.
- **Value of Transactions Traded Ratio (VTR):** It is the ratio of one to the other which might be a useful metric in determining the accurate reflection of the true transaction volume. This measure equals to the total value of transactions traded on the stock market exchange that is being divided by GDP.
- **Market Capitalization Ratio:** It is the ratio used to measure whether a general market is undervalued or overvalued. The ratio can be used to focus on specific markets, example is the U.S. market, or it can be applied to the world market depending on what values are used in the calculation. It implies that although a market may be large but there may be little trading.



- **Turnover Ratio (TR):** This ratio equals the value of total transactions traded divided by market capitalization. Though it is not a direct measure of theoretical definitions of liquidity, high turnover is often used as an indicator of low transaction costs. The turnover ratio complements the **market capitalization ratio**. A large but inactive market will have a large market capitalization ratio but a small turnover ratio. Turnover also complements the **total value traded ratio**. While the total value traded ratio captures trading relative to the size of the economy, turnover measures trading relative to the size of the stock market. A small liquid market will have a high turnover ratio but a small total value traded ratio.
- **All Share Index:** An index finger is a statistical data computed to meter changes in the value of commodities, security system, etc. It is derived from the Mary Leontyne Price of all or some market constituents, usually expressed in percentage change from the base period. Indices are important menstruation of execution of an economic system or financial securities industry place. (Akinsulire, 2011). Index was formulated in Jan 1984; the indicant is called the Nigeria Stock Exchange All Share Index. Only common line (i.e. ordinary shares or equities) are included in the estimate. The index is a value relative index with 1984 as base year (January 3, 1984 = 100). The index increased from 100 to 6992.10 in 1996. It fell from 6992.10 to 5266.43 between 1996 and 1999. The pedigree exchange recorded the highest index (57,990.22) in 2007. This fell to 31,450.78 in 2008 due to global financial crises and later increased to 53,690 in 2009. According to conventional economic abstract thought, pastime pace has negative impact on line market index. When the pursuit rate is high, investors will shift their money from higher risk instrument which is the stock market to savings or fixed bank deposit accounts. On the other hand, when the interest rate is too low, investors will move the money out to invest in stock market in the hope of getting a higher return. Interest rate can only affect, but not determine the stock market (Mueller, 2006). When the interest rate is increased, borrowing will become difficult. Companionship will have less money to expand the business and the profit will be affected. Bonuses and

dividends will be cut and the investors will be affected eventually. The stock market will then become a less attractive instrument for investment funds. However, the interest rate is not the only ingredient that affects the stock market. Stock market index might be trending upward due to other factors like economic growth, political issues and monetary insurance policy even when the interest rate is high. Since interest rate is determined by monetary policy of a country, policy makers should carefully plan and focus on it to attract investors to invest in the market (Zafar et. al., 2008)

## **2.2 Theoretical Frameworks**

There are two key theories that shape discussions on interest rate and securities industry by scholars globally. These are Loanable Funds Theory and Keynes' Liquidity Preference Theory of Interest rate. The theories are further explained as.

### **2.2.1 The Loanable Funds Theory of Interest Rate**

The loanable fund theory of interest rate is another room for the classical savings and investment theory of interest rate which has to do with both monetary divisor and non-monetary constituent of savings and investment. The theory is associated with the names of Wicksell and several other Swedish economists and the British economist D.H. Robertson. According to the loanable fund theory, the interest rate is determined by the requirement for and the supplying of funds in saving at the level at which the two (demand and supply) can be equated. In addition, it is a demand and supply theory as it was applied to the market for loanable funds (credit), treating the rate of interest as the price (per unit fourth dimension) of such funds. This theory also has some assumptions which include: the perfective mobility of fund through the market and utilization of partial equilibrium approach where all other element that can influence the demand or supply of loanable funds is assumed to be held constant to credit a few.



### 2.2.2 John Keynes' Liquidity Preference Theory of Interest rate

Keynes defines the rate of interest as the reward for parting with liquidity for a specified period of time. According to him, the rate of interest is determined by the demand for and supply of money. Need for money: Liquidity preference means the desire of the public to hold cash. According to Keynes, there are three motivations behind the desire of the public to grip/hold cash: 1. the transaction motive, 2. the precautionary motive, and 3. the speculative motive.

**Transactions Motive:** The transactions motive relates to the demand for money or the need of cash for the flow transactions of individual and occupation enterprise interchange. Individuals hold cash in order to bridge the gap between the receipt of income and its consumption also called the income motive. Someone also needs to hold ready cash in order to meet their current needs like payment for raw materials, transport, wages e.t.c, while it is also called the business motive.

**Precautionary motive:** Precautionary motive for holding money refers to the desire to hold cash remainder for unforeseen contingencies. Individuals hold some cash to provide for illness, accidents, unemployment and other unforeseen contingencies. Similarly, businessmen keep cash in reserve to tide over unfavourable conditions or to gain from unexpected deals. Keynes holds that the transaction and precautionary need are relatively interest inelastic, but are highly income elastic. The total of money held under these two motives (M) is a function (L) of the stratum of income (Y) and is expressed as  $M = L (Y)$

**Speculative Motive:** The speculative motive relates to the desire to hold one's resources in fluidness form to take reward of futurity changes in the charge per unit of involvement or bond damage. Bond prices and the rate of interest are inversely related to each other, if bond damage are expected to wage hike, i.e., the charge per unit of stake is expected to slope down, and sell bonds when the price later actually rises. If, however, bond prices are expected to drop, i.e., the charge per unit of interest is expected to rise, people will sell bonds to avoid losses. According to John Maynard Keynes, the higher the rate of interest, the lower the speculative need for money, and



lower the rate of interest, the higher the speculative demand for money. Algebraically, Keynes expressed the speculative demand for money as:  $M = L(r)$  Where, "L" is the speculative demand for money, and "r" is the rate of interest. Geometrically, it is a smooth curve that slopes downward from left to right. The totality liquid money is denoted by M, the transactions plus precautionary motive by  $M_1$  and the speculative motive by  $M_2$ , then  $M = M_1 + M_2$ . Since  $M_1 = L_1(Y)$  and  $M_2 = L_2(r)$ , the total liquidity preference function is expressed as  $M = L(Y, r)$ .

**Supply of Money:** This refers to the total quantity of money in the country. Though the provision of money is a function of the rate of interest to a certain degree, yet it is considered to be fixed by the monetary authorities. Hence the supply curve of money is taken as perfectly inelastic represented by a vertical straight line. If there is any deviation from this equilibrium position, an allowance will take place through the change per unit of involvement, and equilibrium E will be re-established. It may be noted that, if the supply of money is increased by the monetary authorities, but the liquidity preference curve remains the same, the rate of interest will fall. If the demand for money increases and the liquidity preference curve shifts upward, given the supply of money, the rate of interest will rise.

### 2.2.3 Criticisms of the Theory of Interest

Keynes' Theory of Interest has been criticized on the following grounds:

1. It has been pointed out that the pace of pursuit is not purely a monetary phenomenon. Real forces like productivity of capital and thriftiness or economy by the people also play an important role in the determination of the rate of interest.
2. Liquid preference is not the only divisor governing the rate of interest. There are several other components which influence the rate of interest by affecting the need for and supply of investible investment trust.
3. The liquidity preference theory does not explain the existence of different 4 senses of rate of interest prevailing in the market at the same time.

4. Keynes ignores delivery or waiting as a means or source of investible fund, to part with liquidity without making any saving meaningless.

5. The Keynesian theory only explains interest in the short run. It gives no clue to the rates of interest in the long run.

6. Keynes theory of interest, like the classical and loanable funds possibility, is indeterminate. We cannot know how much money will be available for the speculative demand for money unless we know how much the dealing demand for money is.

#### 2.2.4 CLASSICAL THEORY OF INTEREST RATE

According to the classical theory, involvement is the price wage for rescue of upper case. The Classical theory is also called 'Real' theory of stake group, because it is based on real number effect of need and provision face, i.e., it seek to balance the productivity of cheaper goods on the one hand and rescue or supply of capital goods on the other, interest on capital has to be salary in order partly to induce people to postpone uptake and partly to induce them to risk their economy's business. The more consumption they have to postpone, the greater must be the inducing or interest offered. The actual rate of interest is determined by investment (demand side) and saving (supply side). The equilibrium rate of interest brings savings and investment together. Like the value of other things, the price of saving is determined by its demand for and supply of savings, by considering the demand and supply sides separately.

**Demand Side:** Demand for capital comes mostly from businesses. There are, of course, some people who borrow for function of consumption, litigation or religious or sociable ceremony. But most of the capital is the requirement today by entrepreneurs who use it for productive intent. They will not pay for its service at a charge per unit higher than its productivity at the tolerance and productivity goes on diminishing as more and more in an industry. The borrower compares the prevailing rate of interest with the marginal productivity of capital i.e., the measure added to the total output by the use of the last installment of capital. He holds where he feels the productivity to be equal to the interest pay. He will not pay more than the worth of



capital to him at the margin. When the rate declines, it becomes worthwhile to use capital in job of lower productivity and demand for it expands, all this is true of borrower as a whole too. Thus, it is clear that demand for capital (or demand for savings to bargain the capital) will slope downwards towards the right

**Supply Side:** According to the classical theory, the money which is to be used for purchasing uppercase commodity is brand available by those who save from their current income. By postponing expenditure of a parting of their income, they wave resources for production. Economy involves the element of waiting for the future enjoyment of preservation. But multitude prefer the nowadays enjoyment of goods and services to the future enjoyment of them. Therefore, if masses are to be persuaded to save money and to lend it to entrepreneurs, they must be offered some pursuit as payoff. In other language, to shuffle people overcome their time orientation, inducing must be offered in the shape of pursuit. The more savings the people will do, the more consumption they will have to postpone, the greater must be the rate of interest they will ask to make such a postponement worthwhile. Thus, in order to induce people to save more, a higher rate of interest must be offered. Moreover, higher (Ordered by Estimated Frequency) of rate of interest have to be paid if savings have to come from the people whose rates of time-preference are relatively more strongly weighted in favour of the present people. The supply curve of capital will therefore slope upwards to the right.

#### **Equilibrium between Demand and Supply:**

The interest rate is determined by the interaction of the forces of requirement for capital (or investment) and the supply of savings is at equilibrium. The way in which the rate of interest group is determined by need for investment and supply of savings in which SS is the supply curve of savings and I-I is the demand curve of savings to invest in capital goods (I-I is also called demand curve for investment funds or simply investment demand curve). The demand for investment and supply of savings are in equilibrium at rate of interest where the curves intersect each other. Hence the equilibrium rate of interest which will come to stay in the market. In this equilibrium position, OM quantity of savings is lent, borrowed and invested. If any variety in the



demand for investment and/or supply of savings comes about, the curves will shift accordingly and the equilibrium rate of interest will also change. The classical possibility of interest came in for serious criticism, especially at the hand of Keynes. The main ground on which it was criticized is given thus:

- i) It is pointed out that classical theory of interest is based upon the assumption of full employment of resources. In other words, it assumes that an increase in the output of one thing must mean the withdrawal of some resourceful from the yield of other thing. If investment funds are to be increased, for example, this can only be done if resourcefulness is withdrawn from the product of consumer goods. Therefore, if people are to be induced to postpone their expenditure or hold for the future enjoyment of their deliverance, the advantage is that the involvement must be paid. Within the framework of a system of theory, built on the assumption of full employment, the sake of advantage for waiting or abstention is highly plausible. It is the premise that resources are typically fully employed that lacks plausibility in the contemporary world. If at any time in the country, unemployed resources are discovered on a large scale, there is no need for paying people to abstain from consumption, i.e. in order to wait for more resources should be devoted for the product of cheaper goods. When there is unemployment of resources, more capital goods can be produced by putting these idle resources from the production of capital goods. Therefore, something other than a theory of 'waiting' or 'time preference' is needed to explain why interest is paid.
- ii) According to the classical theory of interest rates, more investment funds (production of capital good) can take place only by curtailing ingestion. The more the reduction of consumption, the more are the deliverance and, therefore, the more the investment. But a lessening in the need for consumer good is likely to lessen the incentive to produce capital goods and, therefore, will affect investment adversely.
- iii) By assuming full employment the classical theory has reflected changes in the income horizontal surface. By neglecting changes in the income level, the classical possibility is led into the error of viewing the rate of interest as the factor which brings about equivalence of savings and investing. As John Maynard Keynes asserts,

equation between savings and investment is brought about not by changes in the rate of interest but by changes in the level of income.

iv) According to the classical theory, the investing demand schedule can change or shift without causing a change or shift in the savings curved shape schedule. For example, if investment demand schedule or curve II shifts downwards, then the new equilibrium rate of interest will be determined by where these new investment demand curves meets the old savings curve which has remained unchanged.

v) The classical theory, as pointed out by Keynes, is indeterminate. The income position of saving agenda depends upon the income level, that is the position of the savings curve or agenda will vary with the level of income. There will be different savings schedule for different degree of income. As income rises, for example, the savings schedule or curve will fault to the right. Thus, we cannot know what the rate of interest will be unless we already know what the income level is. And we cannot know the income level without already knowing the rate of interest, since a lower interest rate will mean a larger volume of investment and so via the multiplier, a higher level of real income. The classical theory, therefore, offers no solution and is indeterminate.

### **2.2.5 Theory of Institutional Failure**

The theory of institutional failure assumes that stock prices are normally determined by expected corporate earnings and attributes clamoring to developments that had effectively turned the separate market for stocks, stock exponent future and options into one market that lacked sufficient regulations. The institutional market mechanism had been weakened by new, moral force, computerized trading strategy that linked the stock index future market and the cash market for stocks. This created a new ability for speculative trading in the future market to actually drive prices in the cash market (Barro, 1991). Critics of the thesis that bankruptcy of institutional mechanics caused break have argued that the cascade theory is seriously flawed in concept. Tosini (1988), for example, noted that the cycle would tend to be broken as arbitrage buying would put upward pressing on future prices. Moth miller (1991) and others have



argued that the bulk generated by index arbitrage and portfolio insurance policy was too small to explain the crash. Moreover, as the processing of transaction failed to provide the up-to-date information on prices needed to run the computerized trading course of study, both the arbitrageurs and portfolio insurers were quickly sidelined as the crash developed.

### **2.2.6 The Rational Market Adjustment Theory**

The rational market adjustment accommodation guess eternal sleep on the efficient securities industry hypothesis, that all information about factors that affect both monetary value is immediately impounded in marketplace place damage (Fama, 1990). As readiness cost are sentiment as rational assessments of expected future payoffs, that is, they reflect the present value of economic agent's unbiased computing of expected corporate returns (Romer, 1992). With electric current terms of as Set always rational, there is no need for assumption regarding the manner in which first moment of economic federal agent are formed. That simplifying feature article is viewed as strength of the theory by its proponents. The rational market adjustment theory clearly suffers several conceptual failures. Ross (1991) conceded that "attempt to formalize the efficient market hypothesis as consistent, analytical economic theories have met with less success than the empirical tests of hypothesis". Fama (1989) conceded that there is no significant way to determine whether Price is rational, that is, unbiased estimate of fundamental values. Under the dictate of the pure form of the theory, analysis of the line of descent market crashes would be limited to statements that the market movement swiftly from one rational set of prices to another set. Since rational markets proponents view the stock certificate market as an efficient mechanism, they view stock crashes as a rational market working with impressive speed were presented as arguments against the need for any reform (Arbel et al. 1988).

### **2.2.7 The Speculative Market Theory**

A speculative market exist due to continuous ascension in the origin of monetary value demanded, with little or no regard wage to the relationship between the price of stock and future earnings potency . To some extent, speculative market is related to



the growing of the securities market place, but its campaign in market cannot be determined with ease. In the full general possibility of employment, interest, and money, Keynes (1935) defined speculation as “the activity of prediction the psychological science of the market”, as opposed to enterprise, “the activity of forecasting the prospective yield of asset over their whole life history”. Given the way in which market participant tends to make decision to bargain and sell inventory, the risk of the prevalence speculation over enterprise grows as securities market become better organized to provide “liquidity”. Investors are always hindered in their decision by a great lack of knowledge about future events. But with the growth of ownership of stock by those not involved in management, there has been a serious decline in “the constituent of real knowledge in the rating of investments by those who owns them or contemplate purchasing them”. Under these circumstances, investor turn to the convention that the nowadays is a reliable guide to the future. The existing state is not expected to continue indefinitely, but as long as they can rely upon the maintenance of that convention, investor can legitimately convince themselves that their only risk “is of a genuine change in the new future”. Each investor attempts to form its own judgment as to the likeliness of such a change under the qualified belief that it usually will not very large.

### **2.3 Empirical Evidence**

Hamid and Sumit (1998) examined the relationship between stock market development and economic growth for 21 emerging markets over 21 years, using a moral force panel method. Their results indicate that a positive relationship between several indicators of stock market performance and economic growth both directly and indirectly boost private investment behaviour. Osinubi and Amaghionyeodiwe (2003) also examined the relationship between the Nigerian stock market and economic growth between 1980-2000 using Ordinary Least Square regression (OLS). The result indicates a positive relationship between the stock market and economic growth and also suggests that there should be a pursuit of insurance policy geared towards rapid development of the stock market.

Nwokoma (2002) sought to establish a long-run relationship between the stock market and some macroeconomic indicators. Results indicate that only industrial production and level of interest rates have a long run relationship with the stock market. He also found that the Nigeria market responds more to its past changes in the macroeconomic variables in the short run. Lobo (2000) studied the force of interest rate changes on stock cost by examining the behaviour of stock prices after federal fund rate promulgates. He observed that before promulgation of addition in Federal official fund rate the irregularity in price adjustments gets narrow. In addition, the stock market responds quicker to the news of overpricing than news of under- pricing. The study concluded that target rate announcement has significant impact on stock prices and convey new information to stock market. Adam and Sanni (2005) analyzed parts of securities exchange to Nigeria's financial development utilizing Granger-Causality test regression analysis. They discovered a restricted causality at the middle of GDP development also market underwriting and two approach causality the middle of GDP development. They also observed critical association in GDP Growth turnover proportions. They encouraged that administration if energize the improvement of the money business sector in this way it need a sure association with budgetary development.

Obamiro (2005) investigated the Nigerian securities exchange in the light of financial development. A positive critical sure impact about share trading system on financial development was noted. Kolapo (2012) also checked how to cultivate budgetary and fiscal growth for Nigeria. Ologunde, Elumilade and Asaolu (2006) also inspected the association between securities exchange to investment rate. Furthermore, they additionally discovered that administration advancement stock rate has negative impact on share trading system investment rate. Obanuyi (2009) concentrated on the relationship between interest rate and economic growth in Nigeria. The study utilized co-integration and error correction modeling technique. The investigation then postulated that financing is cordial with investment rate arrangements fundamental to pushing budgetary development necessities to make figured and appropriately executed.



Ezeoha et al (2009) investigated the nature of the relationship that exists between stock market development and the level of investment flows in Nigeria. They discovered that stock market development promotes domestic private investment flows thus suggesting the enhancement of the economy's production capacity as well as promotion of the growth of national output. However, the results show that stock market development has not been able to encourage the flow of foreign private investment in Nigeria (Olugbenga, 2015). Okpara (2010) analyzed the effect of monetary policy on the Nigerian stock market returns from 1985 to 2007, using the Two Stage Least Squared Method on a set of simultaneous equations which were found to be over identified. The stationarity was tested by utilizing the augmented dickey fuller (ADF) unit root test and co-integration test. Likewise Vector Error Correction Model (VECM) and the Forecast Error Decomposition Analysis (FEDA) were utilized with a focus on the long run and short run dynamic properties of the equations. Their major discovery is that monetary policy is a significant determinant of long run stock market returns in Nigeria. Particularly, Treasury bill rate lessens securities exchange returns and reveals to a confirmation for fiscal strategy endeavors on influence of stock market returns in the economy.

Additionally Maku and Atanda (2010) analyzed the determinants of securities exchange execution in Nigeria utilizing the ADF, Co-integration and ECM model. They indicated that in the long-run, the share trading system may be more responsive with the previous cash supply, trade rate, expansion rate, and genuine yield previously in Nigeria from 1984 to 2007. Eze (2011) examined the impact of macroeconomic variables on securities exchange in Nigeria by utilizing Co-integration test, Vector Error Correction Model; they discovered that both in the short run and long run, wide cash supply, buyer value record would answer for share trading system execution. Ahmed and Suliman (2011) uncovered a uniform directional causation of the supply from claiming cash and value developments perusing Olulu Briggs (2015). Those causation from cash supply and stock costs was viewed as a proof for supporting those monetarists claim, of the interest rate and stock development with the processing division of the economy, the supply from claiming cash will bring a regulate impact on costs.



## **2.4 Summary of Empirical Review**

Past investigations on stock market examined the impact of stock market on economic or monetary policy on stock market return without considering the stock market performance and also the determinant of stock market such as interest rate in Nigeria. This paper subsequently extends the writing by taking under account about yearly time arrangement information done on other macroeconomic variables that could affect stock market performance such as money supply, exchange rate, inflation, treasury bill rate and monetary policy rate.

## CHAPTER THREE

### RESEARCH METHODOLOGY

#### 3.0 Introduction

This chapter explains the methodology of the study which involves data identification and definition of variables in the model, sources, model specification/theoretical framework, estimation techniques, evaluation techniques among others.

#### 3.1 Model specification/ Theoretical Framework of Model

The theoretical framework is the theory upon which this study is hinged. This study employed the loanable fund theory. The theory is a long-run theory of pastime charge per unit finding and is most appropriate for explaining long-term interest rates. According to this theory, the rate of interest is determined at that level where the provision of securities is equal to the requirement for them, or, stated differently, the constituent determining the interest rate are real investment demand and real savings, the neoclassical economist called the forces 'productivity and thrift' (Froyen 1996: 66). The neoclassical view begins with the premise that an individual has many desires in life-time, some of which require instant satisfaction, while others can be deferred. In deciding between instant satisfactions or nowadays use of goods and services and future satisfaction or saving, the individual is concerned with the chance price of each alternative. This opportunity cost is represented by the rate of interest. The higher (lower) the rate of interest, the greater (smaller) the opportunity cost of present consumption, the higher (lower) the rate of saving. The saving function is represented by the equation:

$$S = S(i), \text{ where}$$

S= saving

i = interest rate

Saving (S) provides the demand for bonds or, as the classical economists call it, the supply of loanable funds. Real investment, on the other hand, is a negative function of

the interest rate since the interest rate reflects the cost of finance. All things equal, the lower the rate of interest, the more investment projects become profitable and the more willing investors will be to borrow in order to invest. The investment function is represented by the equation:

$$I = I(i), \text{ where}$$

$I$  = investment

$i$  = interest rate

Investment ( $I$ ) is a negatively sloped line plotted against the interest rate. In neoclassical language, this is the demand for loanable fund. The overlap of the delivery and investing schedule produce the equilibrium rate of interest,  $i$ , where savings will be peer to investment ( $S= I$ ). According to the loanable funds theory, given an exogenous shock, the system maintains itself in equilibrium at full exercise by changes in the equilibrium rate of interest. Any fall in investment would be perfectly offset by an increase in consumption, and vice versa for a rise in investment demand. Similarly, any shift in the saving schedule will cause, via the rate of interest, an offsetting change in investment so as to ensure full employment

### 3.1.1 Model Specification

To capture the relationship between interest rate and stock market performance, the stock market performance would be measured by utilizing market capitalization. Market capitalization is used because the Stock market capitalization is an objective measure of the performance of the market, and leading indicator of a stock's present and future price movements. For instance, Vesela (2007) opined that market capitalization and trading volumes are the measures that actually represent the significance, size and position of different stock exchanges all over the world. Specifically, in this research work, the Nigeria Market capitalization would serves as dependent variable while the independent variables are real interest rate, inflation rate, exchange rate, broad money supply, Treasury bill rate and monetary policy rate.



Multiple regression method of data analyses would be employed and the estimation technique would be ordinary least square (OLS). The model adopted is as stated below:

$$MC = f(IR) \dots\dots\dots (1)$$

$$MC = (RIR, INF, EXCHR, MS2, TBR, MPR) \dots\dots\dots (2)$$

Similarly, equation (2) can be expressed econometrically as

$$MC = \beta_0 + \beta_1 RIR + \beta_2 INF + \beta_3 EXCHR + \beta_4 MS2 + \beta_5 TBR + \beta_6 MPR + u \dots\dots (3)$$

The purpose of including the error term in the model is to account for those variables that are likely to affect stock market performance apart from the ones stated in the model.

Therefore, equation (3) forms the theoretical specified model for the study. Again, equation (3) can also be expressed in log form which makes it more realistic result than when a linear regression model is used for the large values data.

$$\text{Log}MC = \beta_0 + \beta_1 \text{Log}RIR + \beta_2 \text{Log}INF + \beta_3 \text{Log}EXCHR + \beta_4 \text{Log}MS + \beta_5 \text{Log}TBR + \beta_6 \text{Log}MPR + u \dots\dots\dots (4)$$

Where MC = Market capitalization

RIR = Real Interest Rate

INF = Inflation rate

EXCHR = Exchange Rate

MS<sub>2</sub> = Broad Money Supply

TBR = Treasury bill rate

MPR = Monetary policy rate

B<sub>0</sub> is the intercept while β<sub>1</sub>, β<sub>2</sub>, β<sub>3</sub>, β<sub>4</sub>, β<sub>5</sub> and β<sub>6</sub> are slope of the explanatory variables.

### 3.2 Theoretical Expectations /Apriori Expectation

The apriori expectation provides expected signs and significance of the values of the coefficient of the parameters under review on the part of the empirical evidence. The apriori expectation of this study is stated thus:

The coefficient signs are as follows:  $\beta_1, \beta_3, \beta_4, \beta_5$  and  $\beta_6 > 0$  and  $\beta_2 < 0$

### 3.3 Definition of Variables in the Model

**Market capitalization:** This is the total value of the company based on its current share price and the total number of exceptional stocks. Market capitalization is widely used as an indicator in assessing the size of a capital market in an economy.

**Real Interest Rate:** Is the rate of interest an investor expects to receive after allowing for inflation. It can be described more formally by the Fisher equation, which states that the real interest rate is approximately the nominal interest rate minus the inflation rate.

**Inflation Rate:** Is the rate at which the general level of prices for goods and services is rising and consequently, the purchasing power of currency is falling.

**Exchange Rate:** Is the rate at which one currency will be exchanged for another. It is regarded as the value of one country's currency in terms of another currency. Exchange rates are determined in the foreign exchange market, which is open to a wide range of different types of buyers and sellers and where currency trading is continuous (Leahy 1993).

**Broad Money Supply:** A measure of money supply that includes cash and checking deposits (M1) as well as near money. M2 includes savings deposits, money market mutual funds and other time deposits, which are less liquid and not as suitable as exchange mediums but can be quickly converted into cash or checking deposits

**Treasury bills Rate:** They are discounted short-term debt securities with maturities of up to one year. Treasury bills are ways to cover short-term state budget deficits; for the central bank it is a way to control banking sector liquidity.

**Monetary policy Rate:** Is one of the macroeconomic policies laid down by the central bank. It involves management of money supply and interest rate and is the demand side economic policy used by the government of a country to

achieve macroeconomic objectives like inflation, consumption, growth and liquidity.

### **3.4 Estimation Techniques**

Two method of estimating techniques would be employed in this study; the descriptive statistics and econometric analyses. The descriptive statistics analysis will be used in achieving the second objective of examining the trend and pattern of interest rate and stock market performance in Nigeria. This will be supported by econometric technique. Under the econometric techniques, we explore the co-integration test and unit root test. This is due to the fact that the variables of interest are simultaneously related, hence the need to treat each variable symmetrically and allow feedback among them. This technique enables us to verify the stationarity as well as the order of integration of the variables used in the model. The method also enables us to establish the long-run relationship between stock market capitalization, interest rate, exchange rate, money supply, inflation, Treasury bill rate and monetary policy rate.

#### **3.4.1 Decision Criteria**

##### **(i) Economic Criteria**

This refers to the sign and size of the parameters in economic relationships. The expected relationship between the dependent and each of the explanatory variables shall be based on macro-economic principles.

$B_0$  is the intercept while  $\beta_1$ ,  $\beta_2$ ,  $\beta_3$  and  $\beta_4$  are slope of the explanatory variables.

The coefficient signs are as follows:  $\beta_1$ ,  $\beta_3$  and  $\beta_4 > 0$  and  $\beta_2 < 0$

However, if the estimates of the parameter turn up with signs or size not conforming to economic theory, they should be rejected, unless there is a good reason to believe that in the particular instance, the principles of economic theory do not hold.



**(ii) Statistical Criteria**

This aims at the evaluation of the statistical reliability of the estimates of the parameters. In this line, the “t-statistics” will be employed to test the hypotheses concerning the true values of the population parameters.

**(iii) Econometric Criteria**

It aims at detecting the violation or validity of the assumption of the econometric technique employed (i.e. OLS). For instance to test the validity of the assumption of non-correlated disturbances, the “Durbin Watson Statistic” would be used in the evaluation of the results of estimates.

**3.5 Sources and Methods of Data Collection**

The data for this study are obtained from secondary sources. The secondary data comprises annual time series spanning 1980 through 2013. The variables of interest are: Market capitalization, interest rate, inflation rate, exchange rate, monetary policy rate, and broad money supply and Treasury bill rate. All these data would be source from the Central Bank of Nigeria Statistical Bulletin (2013) and CBN Annual Report (2013).

## CHAPTER FOUR

### DATA ANALYSIS AND INTERPRETATION

#### 4.0 Introduction

This chapter involves the presentation of data and interpretation of result analyzed in respect of this research work.

#### 4.1 Descriptive Statistics

The descriptive statistics of the variables is provided in table 2 below. From the table, the averages of the variables are 63.99, 20.02, 5.30, 12.84, 12.73, 20.01 and 12.27 for exchange rate (EXCH), inflation rate (INF), market capitalization (MC), money supply (MS), monetary policy rate (MPR), real interest rate (RIR) and treasury bill rate (TBR) respectively. The maximum values of the variables are 163.23, 72.80, 9.82, 16.52, 26.00, 36.09 and 26.9 for exchange rate (EXCH), inflation rate (INF), market capitalization (MC), money supply (MS), monetary policy rate (MPR), real interest rate (RIR) and treasury bill rate (TBR) respectively while the minimum values of the variables are 0.55, 5.40, 1.50, 9.50, 6.00, 9.50 and 5.00 for exchange rate (EXCH), inflation rate (INF), market capitalization (MC), money supply (MS), monetary policy rate (MPR), real interest rate (RIR) and treasury bill rate (TBR) respectively. The standard deviation showed that exchange rate (63.56) was the most volatile variable in the time series. This is followed by inflation rate (17.28), real interest rate (6.18), Treasury bill rate (4.88), monetary policy rate (4.35) and market capitalization (2.92) while money supply (2.38) was the least volatile of the time series.

The skewness statistic from table below revealed all the variables (exchange rate (EXCH), inflation rate (INF), market capitalization (MC), money supply (MS), monetary policy rate (MPR), real interest rate (RIR) and treasury bill rate (TBR)) were positively skewed. The kurtosis statistics showed that exchange rate, market capitalization and money supply were platykurtic, suggesting that the distributions is flat relative to normal distribution while inflation rate, monetary policy rate and

treasury bill rate were leptokurtic, suggesting that the variable has a normal distribution. However, the real interest rate revealed that the variable was normally distributed. The Jarque-Bera statistic rejected the null hypothesis of normal distribution for inflation rate at five per cent critical value while the Jarque-Bera statistic could not rejected the null hypothesis of normal distribution for the remaining variables at five per cent critical value.

**Table 2: Descriptive Statistics**

Variable	EXCH	INF	LMC	LMS	MPR	RIR	TBR
Mean	63.986	20.018	5.297	12.844	12.728	20.005	12.274
Median	21.886	11.850	5.606	12.843	12.875	20.810	12.125
Maximum	163.230	72.800	9.820	16.522	26.000	36.090	26.900
Minimum	0.546	5.400	1.495	9.497	6.000	9.500	5.000
Std. Dev.	63.563	17.280	2.916	2.379	4.351	6.181	4.875
Skewness	0.330	1.545	0.129	0.078	0.683	0.327	0.747
Kurtosis	1.304	4.447	1.563	1.634	3.888	3.118	3.709
Jarque-Bera	4.691	16.486	3.020	2.678	3.761	0.624	3.877
Probability	0.096	0.000	0.221	0.262	0.153	0.732	0.144
Observations	34	34	34	34	34	34	34

## 4.2 Unit Root Test

Following the descriptive statistics of the variables, this time series properties of the variables was conducted by the Augmented Dickey-Fuller (ADF) and the result presented in table 3. The Augmented Dickey Fuller (ADF) test showed that all the variables were integrated of order one; that is, the variables became stationary after first difference.



**Table 3: Unit Root Test Result**

<b>Augmented Dickey-Fuller (ADF) Test</b>			
Variables	Level	1 <sup>st</sup> Diff	Status
EXCH	0.0871	-5.1063*	I(1)
INF	-2.8849	-5.7193*	I(1)
LMC	0.3802	-4.4976*	I(1)
LMS	0.6729	-3.1148**	I(1)
MPR	-2.8236	-5.9742*	I(1)
RIR	-2.7250	-6.0198*	I(1)
TBR	-2.9245	-7.0476*	I(1)

Note: \* and \*\* denote 1% and 5% percent significance level respectively.

### 4.3 Co-integration Estimate

The result of the co-integration estimate is presented in table 4 below. From table 4, it is observed that the null hypothesis of no co-integration, for  $r=0$  and  $r \leq 1$  were rejected by the both the trace and the maximum eigen-value statistic. The statistical values of these tests were greater than their critical values at  $r=0$  and  $r \leq 1$ . The null hypothesis of no co-integration for  $r \leq 2$  was rejected by the trace statistics because the trace statistical value was greater than the critical values while null hypothesis of no co-integration for  $r \leq 2$  could not be rejected by the maximum eigen-value statistics because the statistical value was less than the critical values, thereby indicating the existence of two co-integrating equation by the maximum eigen-value estimate. Also, the null hypothesis of no co-integration for  $r \leq 3$  and  $r \leq 4$  were rejected by the trace statistics because the trace statistical value was greater than the critical values while null hypothesis of no co-integration for  $r \leq 5$  could not be rejected by the trace statistics because the statistical value was less than the critical value at  $r \leq 5$ , thereby indicating the existence of five co-integrating equations by the trace estimate. Despite the conflict in the results above, both the trace and maximum eigen-value revealed the existence of co-integration among the variables.

**Table 4: Summary of the Co-integration Estimate**

Trace Test				Maximum Eigen value Test			
Null	Alternative	Statistics	95% critical values	Null	Alternative	Statistics	95% critical values
$r=0$	$r \geq 1$	201.52	125.62	$r=0$	$r=1$	68.24	46.23
$r \leq 1$	$r \geq 2$	133.28	95.75	$r \leq 1$	$r=2$	42.01	40.08
$r \leq 2$	$r \geq 3$	91.27	69.82	$r \leq 2$	$r=3$	32.21	33.88
$r \leq 3$	$r \geq 4$	59.06	47.86	$r \leq 3$	$r=4$	25.35	27.58
$r \leq 4$	$r \geq 5$	33.71	29.80	$r \leq 4$	$r=5$	21.04	21.13
$r \leq 5$	$r \geq 6$	12.67	15.49	$r \leq 5$	$r=6$	12.56	14.26

Source: Authors computation 2015

#### 4.4 Regression Estimate on the impact of Interest Rates on Stock Market Capitalization in Nigeria

The long run regression estimate of the impact of interest rates on stock market capitalization in Nigeria from 1980 to 2013 is presented on table 5 below. The coefficient of determination (that is  $R^2$ ) showed that the explanatory variables jointly explained about 99 per cent of variations in stock market capitalization in Nigeria during the study period. The F-statistics (730.53;  $p < 0.05$ ) showed that the model estimated is appropriate while the Durbin Watson statistics is 1.78, indicating the absence of serial auto-correlation in the long run estimate.

The regression estimate presented on table 5 below showed that exchange rate (EXCH) and inflation rate (INF) had negative and insignificant effects on stock market capitalization in Nigeria. This therefore suggests that over the study period (1980 - 2013) both exchange rate and inflation rate do not have any significant influence on stock market capitalization in Nigeria. Money supply was observed to have a positive (1.35) and significant impact on stock market capitalization in Nigeria; thereby suggesting that a unit increase money supply will promote stock market capitalization by 1.34 per cent. Also, the monetary policy rate was observed to have a



positive (0.05) and significant impact on stock market capitalization in Nigeria; thereby suggesting that a unit increase monetary policy rate will promote stock market capitalization by 0.05 per cent in the long run. Real interest rate had negative and insignificant effects on stock market capitalization; thus suggesting that during the scope of this study, the real interest rate does not have any significant influence on stock market capitalization. Finally, the treasury bill rate had a negative (-0.06) and significant effects on stock market capitalization; thus suggesting that a unit decrease in treasury bill rate would enhance the growth of stock market capitalization in Nigeria.

With respect to the objective of this study which is to examine the impact of interest rates on stock market capitalization in Nigeria, the regression estimate showed only monetary policy rate and the treasury bill rate had significant effects on stock market capitalization while real interest rate had insignificant influence on stock market capitalization in Nigeria during the period 1980 to 2013.

**Table 5: Regression Estimate on the Impact of Interest Rates on Stock Market Capitalization in Nigeria 1980 - 2013**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXCH	-0.004049	0.002469	-1.639576	0.1127
INF	-0.002596	0.003074	-0.844613	0.4057
LMS	1.349233	0.066881	20.17359	0.0000
MPR	0.052083	0.025258	2.062008	0.0490
RIR	-0.021767	0.015647	-1.391125	0.1755
TBR	-0.057582	0.020970	-2.745848	0.0106
C	-11.24211	0.665183	-16.90078	0.0000
R-squared	0.993878	Mean dependent var		5.297088
Adjusted R-squared	0.992517	S.D. dependent var		2.915593
S.E. of regression	0.252205	Akaike info criterion		0.264091



Sum squared resid	1.717396	Schwarz criterion	0.578341
Log likelihood	2.510460	Hannan-Quinn criter.	0.371259
F-statistic	730.5380	Durbin-Watson stat	1.783694
Prob(F-statistic)	0.000000		

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#### 4.5 Causality Test

The test for causality is presented in Table 8. The null hypothesis that RIR, MS2, TBR and MPR does not cause MC is strongly rejected at the 5% significance level ( $F=3.95887$ ,  $P<0.0311$ ), ( $F=5.91813$ ,  $P<0.0074$ ), ( $F=4.64386$ ,  $P<0.0185$ ) and ( $F=5.31469$ ,  $P<0.0113$ ); hence, there is a uni-directional causality from RIR, MS2, TBR, MPR to MC. It is the supply of money that actually influences asset prices in Nigeria. Notably, the outcome of this study corroborate observations from Maku and Atanda (2010), Eze (2011), Ahmed and Suliman (2011), Ossisanwo and Atanda(2012), Chude and Chude (2013) respectively.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND POLICY RECOMMENDATION

#### 5.0 Summary

This research work examined the relationship between interest rate and stock market performance in Nigeria from 1980 to 2013. The loanable fund theory was adopted as theoretical framework. Data were gathered on specified variables from CBN statistical bulletin (various issues) and the Nigeria Stock exchange bulletin. Augmented Dickey Fuller test was used to test stationarity of all-time series. To test long-run relationship of the variables, Johansen test was applied and the F-statistics was (730.53;  $p < 0.05$ ) showed that the model estimated is appropriate while the Durbin Watson statistics is 1.78, indicating the absence of serial auto-correlation in the long run estimate and a unit increase money supply will promote stock market capitalization by 1.34 per cent. Also, the monetary policy rate was observed to have a positive (0.05) and significant impact on stock market capitalization in Nigeria. First, the Unit root test of Augmented Dickey Fuller (ADF) test showed that all the variables were integrated of order one; that is, the variables became stationary after first difference. Second, the Johansen co-integration test indicate more than one co-integrating equations at the 0.05 level. Consequently, we can say that a long- run equilibrium relationship exist between Market capitalization and interest rate. This further supports the long-run equilibrium relationship that exists between the variables. Furthermore, we employed the Granger causality test to know which of the variables is leading or following. Our result indicated that RIR, MS2, TBR and MPR granger cause market capitalization in uni-direction. Finally, the response of Log(MC) to its own shocks, EXCH and TBR in all the 10 periods is positive while the response of Log(MC) to RIR, INF, LOG(MS2) and MPR is both positive and negative.

#### 5.1 Conclusion

In conclusion, the focus of this study is on the relationship between interest rate and stock market performance in Nigeria. The result in some of the findings indicates that the innovations of rate of interest can be a better predictor for stock market

performance in Nigeria. A high interest rate attracts more savings and discourages the flow of capital to the stock markets leading investors to demand for a higher risk premium which impedes investment. Whereas a low interest rate encourages higher capital flows to the stock market in expectation for a higher rate of return. In addition, the result of this study based on the results obtained and interpreted in chapter four, this study has found out that there is an insignificant positive relationship between interest rate and stock market performance in Nigeria.

## **5.2 Policy Recommendation**

From the findings of this research, the following are recommended:

- The government through the monetary authorities should be careful enough to avoid discretionary policies that might tramp the rate of interest; otherwise the flow of fund to the market will be derailed.
- There is need for the government to express appropriate incentives and policies to ensure that lending rate is kept at one digit (not high) in order to encourage investors to borrow money from bank and inject it into capital market.
- Investor's confidence in the capital market should be uninterrupted by the improvement of security and legal frame work which will likely increase information disclosure and reduce misrepresentation and other financial malfeasances, leading to improved investors confidence building, thereby enhancing market participation, investment and economic growth stimulation.



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## Appendix

**Table 1: Data on market capitalization, Real interest rate, inflation rate, exchange rate, money supply, Treasury bill rate and minimum rediscount rate in Nigeria 1980-2013**

Year	MC(#'B)	RIR(%)	INF (%)	EXCH (#/\$)	MS2 (N'm)	TBR (%)	MPR (%)
1980	4.46	9.5	9.9	0.5464	13,324.21	5	6
1981	5	10	20.9	0.61	14,471.17	5	6
1982	5	11.75	7.7	0.6729	15,786.74	7	8
1983	5.7	11.5	23.2	0.7241	17,687.93	7	8
1984	5.5	13	39.6	0.7649	20,105.94	8.5	10
1985	6.6	11.75	5.5	0.8938	22,299.24	8.5	10
1986	6.8	12	5.4	2.0206	23,806.40	8.5	10
1987	8.2	19.2	10.2	4.0179	27,573.58	11.75	12.75
1988	10	17.6	38.3	4.5369	38,356.80	11.75	12.75
1989	12.8	24.6	40.9	7.3916	45,902.88	17.5	18.5
1990	16.3	27.7	7.5	8.0378	52,857.03	17.5	18.5
1991	23.1	20.8	13	9.9095	75,401.18	15	14.5
1992	31.2	31.2	44.5	17.2984	111,112.31	21	17.5
1993	47.5	36.09	57.2	22.0511	165,338.75	26.9	26
1994	66.3	21	57	21.8861	230,292.60	12.5	13.5
1995	180.4	20.79	72.8	21.8861	289,091.07	12.5	13.5
1996	285.8	20.86	29.3	21.8861	345,853.96	12.25	13.5
1997	281.9	23.32	8.5	21.8861	413,280.13	12	13.5
1998	262.6	21.34	10	21.8861	488,145.79	12.95	14.31
1999	300	27.19	6.6	92.6934	628,952.16	17	18
2000	472.3	21.55	6.9	102.1052	878,457.27	12	13.5
2001	662.50	21.34	16.5	111.9433	1,269,321.61	12.95	14.11
2002	764.90	30.19	12.1	120.9702	1,505,963.50	18.88	19

2003	1,359.30	22.88	23.8	129.3565	1,952,921.19	15.02	15.75
2004	2,112.50	20.82	10	133.5004	2,131,818.98	14.21	15
2005	2,900.10	19.49	11.6	131.6619	2,637,912.73	7	13
2006	5,120.90	18.7	8.5	128.6516	3,797,908.98	8.8	12.25
2007	13,181.70	18.24	6.6	121.07	5,127,400.70	6.91	8.75
2008	9,563.00	21.18	15.1	137.65	8,008,203.95	9.55	9.81
2009	7,030.80	22.15	11.5	149.8	9,411,112.25	6.13	7.44
2010	9,918.20	20.5	13.5	152.63	11,034,940.93	10.25	6.13
2011	9,672.70	22.15	13.8	153.8616	12,172,490.28	16.75	9.19
2012	14,800.90	16.55	11.5	157.4994	13,895,389.13	13.39	12
2013	18,390.40	13.25	11.2	163.23	14,975,000.65	15.38	12

SOURCES: Central Bank of Nigeria Statistical Bulletin (2013)

**Table 6. Granger Casuality Test Result**

Pairwise Granger Causality Tests

Date: 08/13/15 Time: 22:00

Sample: 1980 2013

Lags: 2

Null Hypothesis:	Obs	F-	
		Statistic	Prob.
RIR does not Granger Cause MC	32	3.95887	0.0311
MC does not Granger Cause RIR		0.19305	0.8256
INF does not Granger Cause MC	32	0.91998	0.4107
MC does not Granger Cause INF		0.85608	0.4360
EXCH does not Granger Cause MC	32	1.04961	0.3639
MC does not Granger Cause EXCH		3.70825	0.0378



MS2 does not Granger Cause MC	32	5.91813	0.0074
MC does not Granger Cause MS2		0.98363	0.3870
TBR does not Granger Cause MC	32	4.64386	0.0185
MC does not Granger Cause TBR		0.10871	0.8974
MRR does not Granger Cause MC	32	5.31469	0.0113
MC does not Granger Cause MRR		0.59467	0.5588
INF does not Granger Cause RIR	32	1.35574	0.2747
RIR does not Granger Cause INF		1.56531	0.2274
EXCH does not Granger Cause RIR	32	0.46143	0.6353
RIR does not Granger Cause EXCH		0.26553	0.7688
MS2 does not Granger Cause RIR	32	3.25847	0.0540
RIR does not Granger Cause MS2		2.38585	0.1111
TBR does not Granger Cause RIR	32	0.20760	0.8138
RIR does not Granger Cause TBR		0.09624	0.9086
MRR does not Granger Cause RIR	32	1.53662	0.2333
RIR does not Granger Cause MRR		0.24415	0.7851
EXCH does not Granger Cause INF	32	0.91282	0.4134
INF does not Granger Cause EXCH		1.09051	0.3504
MS2 does not Granger Cause INF	32	2.88721	0.0731
INF does not Granger Cause MS2		1.58662	0.2231
TBR does not Granger Cause INF	32	3.41970	0.0474
INF does not Granger Cause TBR		1.91143	0.1673
MRR does not Granger Cause INF	32	3.01688	0.0657
INF does not Granger Cause MRR		2.21191	0.1289
MS2 does not Granger Cause EXCH	32	2.89975	0.0723