Share Price and Macroeconomic Variables in Nigeria: A Granger Causality Approach

Abdulrahman Abdullahi Nadani

Submitted to the
Institute of Graduate Studies and Research
in partial fulfillment of the requirements for the degree of

Master of Science
in
Economics

Eastern Mediterranean University
February 2016
Gazimağusa, North Cyprus

Approval of the Institute of Graduate Studies and Research

Prof. Dr. Cem Tanova
Acting Director

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

Prof. Dr. Mehmet Balcilar
Chair, Department of Economics

We 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 in Economics.

Assoc. Prof. Dr. Hasan Güngör
Supervisor

Examining Committee

1. Prof. Dr. Sevin Uğural

2. Assoc. Prof. Dr. Hasan Güngör

3. Asst. Prof. Dr. Çağay Coşkuner

ABSTRACT

The objective of this study is to investigate the relationship between share price and macroeconomic variables in Nigeria using monthly variables from January 2001 to December 2014. Johansen cointegration test is employed to investigate if there is a possible long haul relationship between variables and vector error correction model (VECM) is used to see if thus the long run relationship exists between share price and the variables under study. Estimates reveal the existence one cointegration equation exists between share price and the macroeconomic variables under study. VECM exhibit long run relationship running from CPI, M2, EXR, OP, and INTR to SP and it's all statistically insignificant. Furthermore, unidirectional causality exist from OP to SP, SP to M2, SP to EXR, INTR to OP, OP to EXR, M2 to EXR, EXR to INTR and CPI to EXR. However, bidirectional causality exists from EXR to M2.

Keywords: Share price, macroeconomic variables, cointegration and Granger causality

ÖZ

Bu çalışmada amaçlanan hisse fiyatları ile makroekonomik değişkenler arasındaki ilişkiyi Nijerya için Ocak 2001 – Aralık 2014 dönemi için aylık veriler kullanarak analiz etmektir. Johansen eş bütünleşim testi kullanılarak değişkenler arası uzun dönem ilişki olup olmadığı araştırılmış aynı zamanda Vektör Hata Düzeltme Modeli kullanılarak hisse fiyatları ve diğer değişkenler arasındaki olası uzun dönem ilişkinin varlığı test edilmiştir. Çalışma bulguları bir adet eş bütünleşme denkleminin hisse fiyatları ile çalışmada kullanılan diğer makroekonomik değişkenler arasındaki varlığına işaret etmektedir. Vektör Hata Düzeltme Modeli ise Tüketici Fiyat Endeksinden, İkincil Para Arzı (M2), Döviz Kuru (EXR), Petrol Fiyatlarına (OP) ve Uluslararası Ticaretten (INTR) Hisse Fiyatlarına doğru uzun dönem ilişkiye işaret etmektedir. Ne var ki bu ilişkilerin tamamı istatistiki açıdan güvenilmezdir. İlave olarak, petrol fiyatlarından hisse fiyatlarına, hisse fiyatlarından ikincil para arzına, hisse fiyatlarından döviz kuruna, uluslararası ticaretten petrol fiyatlarına, petrol fiyatlarından döviz kuruna, ikincil para arzından döviz kuruna, döviz kurundan uluslararası ticarete ve tüketici fiyat endeksinden döviz kuruna yönelik tek yönlü nedensellik ilişkisi karşımıza çıkmıştır. Öte yandan döviz kuru ile ikincil para arzı arasında çift yönlü nedensellik karşımıza çıkmaktadır.

Anahtar Kelimeler: Hisse fiyatları, makroekonomik değişkenler, eşbütünleşme ve Granger nedenselliği.

DEDICATION

To the Almighty Allah for seeing me through the program and progressing to the next stage in life.

ACKNOWLEDGEMENT

I must be grateful to Almighty Allah for his love, care and protection without Him (Allah) this academic pursuit would not have materialized.

This research has been accompanied through the immeasurable and tireless corrections, suggestions and contributive criticism of my humble supervisor Assoc. Prof. Dr. Hasan Güngör despite his tight schedule and personal commitments, He devoted his time to go through my work and proffered laudable observations as and when due. I am indeed grateful.

I must also accord my profound gratitude and acknowledge my lecturers Prof. Dr. Glenn Jenkins, Prof. Dr. Mehmet Balcilar, Prof. Dr. Sevin Uğural, Prof. Dr. Fatma Güven Lisaniler, Asst. Prof. Dr. Çağay Coşkuner, Prof. Dr. Vedat Yorucu, Asst. Prof. Dr. Kemal Bağzıbağlı and Pejman Bahramian.

Also the actualization of my desired goal is not possible without the moral guidance of my parents; Engineer Ahmad Nadani (FNIOB), Malama Maryam and Hajiya Lubabatu. I am also highly grateful to my Uncles and Aunties who prayed for my progress; Col. A. Nadani, Murtala Nadani, Al-amin Bajoga, Dr. A. Bajoga and Aishatu Bajoga (Esq) and my family members God Almighty blesses them.

My mission has been achieved with the help of positive criticisms and understanding from my course mates. Worthy to mention include; Hayatu, Yahya, Bilyameen, Zainab, Gizem, Balarabe Dutse, Al-amin, Musaddiq, Bata, Alhassan Kumo, Ibbo Guru Victor, Abubakar Hassan and Abubakar Nyako.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

ADF	Augmented Dickey-Fuller
APT	Arbitrage Pricing Theory
ARIMA	Autoregressive Integrated Moving Average
AR	Autoregressive Model
CAPM	Capital Asset Pricing Model
CP	Consumer Price Index
DMB	Deposit Money Banks
EXR	Exchange Rate
EMH	Efficient Market Hypothesis
GDP	Gross Domestic Product
IMF	International Monetary Fund
INTR	Interest Rate
M2	Money Supply
NSE	Nigeria Stock Exchange
NEEDS	National Economic Empowerment and Development Strategy
OP	Oil Price
PP	Phillips-Perron
SAP	Structural Adjustment Program
SP	All Share Prices
S&P 500	Standard and Poor 500
KSE 100	Karachi Stock Exchange
VAR	Vector Autoregressive
VECM	Vector Error Correction Model

Chapter 1

INTRODUCTION

1.1 Introduction

When we talk about Stock Exchange market we often refer to the network that links those buying with those selling stocks, bonds and shares. Many researchers argued that the stock market is one of the most important sectors in the emerging as well as the developed economies. As many growth theories emphasized on sufficient inflows of capital to trigger the pace of investment which in turn affects other important sectors through employment generation boosting national earnings and liberalizing the economy.

As shown by Talla J. T. (2013) many variables can be attributed to the high return and participation in the stock market, one of which are Macroeconomic variables. The various patterns and changes in those variables have tremendous effect on returns realized from stocks and shares. Therefore, the importance of the study can never be overemphasized.

This study will focus on the effect of some selected macroeconomic variables as follows;

- Exchange rate
- Money supply
- Inflation

- All share prices
- Interest rate
- Oil Price

To describe the financial sector in Nigeria, one has to mention 1980s episode. During this period the world witness a major fall in the crude oil price which necessitates the government to think of other sources that will wall the county's economy from doom. Some the policies adopted include Austerity Measures of Buhari administration, which entail the reduction of government spending in the early 1980s, Structural Adjustment Program (SAP) era of Babangida administration, which is actually IMF's imposed policy, National Economic Empowerment and Development Strategy (NEEDS) of Abacha regime in 2004 and more recent SEVEN POINTS AGENDA of late President Yar Aduwa in 2007. At that time, the attention of Nigerian policy maker started to shift towards the financial sector.

But with the deregulation era (1986), the Nigerian financial sector experienced tremendous structural reforms. The liberalization policy made the government to left the huge financial deals to the individual private financial organizations. At the time, many institutions were set up to foresee the affairs and act as regulatory agents in the financial market and properly guarded by the constitution of Federal Republic of be because of the lack of being consistent, as some argued. The entire financial Nigeria. Institutions such as SEC, Nigeria Deposit Insurance Corporation (NDIC) were product of this deregulation policy.

However, despite those beautifully and carefully established policies, the efforts are yet to gain success. This may sector of the country is fall at the hands of commercial

bank. It was recorded that, during the 2000 fiscal year. Of the whole Noncentral assets, 93% was accounted by DMBs. In the year 2003, the percentage increased to 95. Again in 2003, DMBs accounted for 60% of Stock market capital as well.

1.2 Objectives of the Thesis

The goal of the study is to examine the relationship between share price and macroeconomic elements in Nigeria while the particular targets incorporate the accompanying;

- To empirically inquire the possible long run relationship using the Johansen Cointegration Test.
- If long run relationship thus exist, Vector Error Correction Model (VECM) would be used for analysis of variables otherwise Vector Autoregressive (VAR) would be used.
- To explore the direction of causality by utilizing the Granger Causality Test.

1.3 Structure of the Study

This work comprises of six chapters. Chapter one briefs how the stock market influence the Nigerian economy in history. Chapter two dwells on the theoretical and empirical literature. Chapter three gives the methodologies employed for the study. Chapter four detailed the empirical specification and econometric techniques. Chapter five pinpoints detailed empirical results. Finally, chapter 6 gives the conclusion and strategy proposal for the study.

Chapter 2

THEORETICAL WORKS, EMPIRICAL REVIEW AND THE NIGERIAN ECONOMY

2.1 Theoretical Background

Markowitz (1952) was the first person to develop the stock price behavior theory. His idea on period model gave way to for portfolio on starting financial period. The aim of investor is always to maximize returns on portfolio given the prevailing calculated risk. The behavior of investors concerning risk and considering this single time model gave the room for measuring risk using the variance square and variance on portfolio return.

By purchasing more securities, the investors are expecting more return on portfolios subject to the way their securities were added to the ones in the portfolio. But the upper part of the frontier line is always preferred as in the following figure. As in the figure below, Markowitz demonstrated how individual investors make their choices each according to his level of risk tolerance. Risk takers will go towards point A while those who dislike risks tend to choose portfolio B.

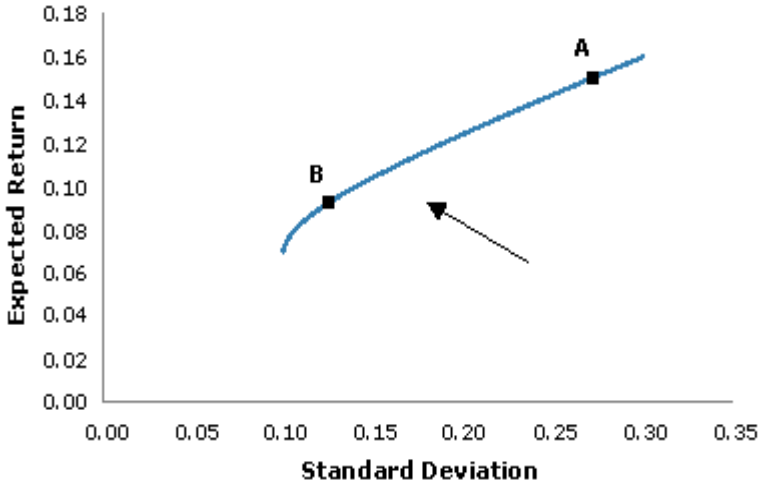

Figure 1. Efficient Frontier

Various models in finance give an insight on how to elaborate risk in relation to return, but Capital Asset Pricing Model (CAPM) and the Arbitrage Pricing Theory (APT) considered the best by the majority of financial analysts. By, beta is the main measure of stock's instability which demonstrates how the cost of stocks hops all over while the APT forecast the relationship between the return of portfolios and that of a risky asset but does not explain the nature and prices of many risk factors. However, this chapter provides an insight into the two models (CAPM and APT) that attempts to explain the relationship between risk and return.

2.2 Capital Asset Pricing Model (CAPM)

Sharpe (1964), Lintner (1965) and Mossin (1966) built another model as an extension to Markowitz, called 'the Capital Asset Pricing Model (CAPM)'. This CAPM presumes that assets with no risk attached have specific rate of returns, which translate that, the frontier line in the above diagram now has a little usage for market speculators; rather their target is linear as in diagram below which depicts risk free rate because of its tangency to the frontier line. The line shows combination of risky and a risk free asset is called a 'capital Market Line'.

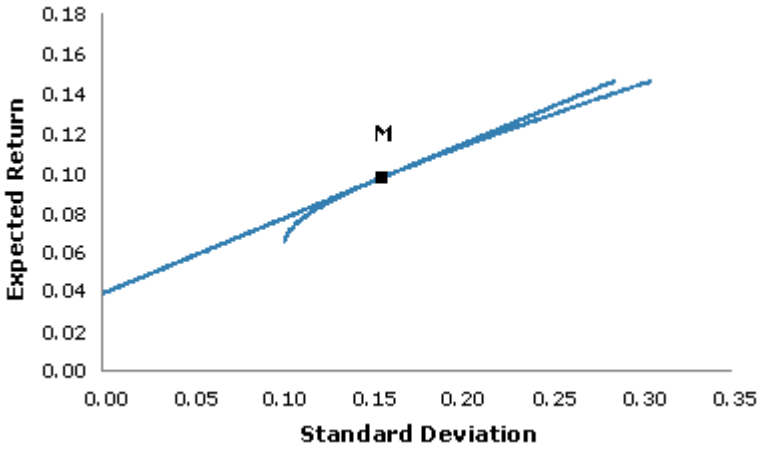

Figure 2. Capital Market Line

The equilibrium point in the market is where quantity of supply is exactly equals to demanded quantity. Therefore, those investing in the market combine the market portfolio with those risk free stocks and still get payments for the risk they bear from the portfolios. This is shown in the below equation;

$$\gamma(\delta_i) = \delta_f + \beta_i[\gamma(\delta_m) - \delta_f] \quad (1)$$

Where: $\gamma(\delta_i)$ is the investment on asset$i$

$\gamma(\delta_m)$represent the investment on securities

$\delta_f$is the risk-free

$\beta_i$is the beta coefficient for asset i.

The beta measures risk of an asset as compared to the rest of the portfolio. If the beta of an asset is greater than 1, the standard deviation changes proportionately in reaction to market conditions. Hence, beta less than 1 has a small contribution to the risk of an asset.

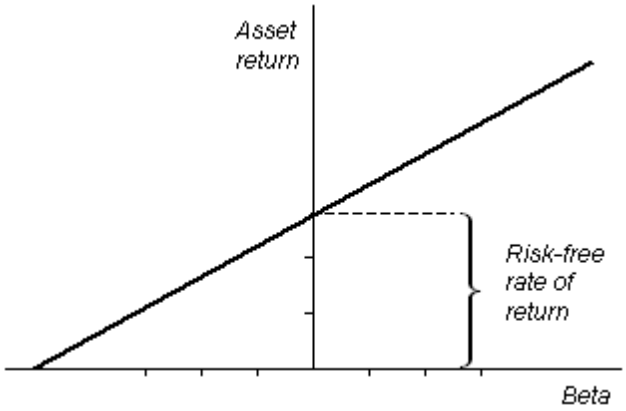

Figure 3. Security Market Line

The security market line depicts the relations of the beta and the assets forecasted return.

The CAPM is regarded by most individuals as a model for the evaluation of portfolios. This makes utilization of the security market line (SML) its connection to security future financing and precise risk (beta) to show how the business and financial sector assesses singular securities in connection to investors bearable risk class.

The SML chart the outcomes from the CAPM recipe. The x-axis indicates risk (beta) and the y-axis represents the forecast investment. The business sector risk payment is resolved from the incline of the Security Market Line (SML).SML model holds that stocks expected return ought to be equivalent to the risk-free resource with the expansion to the risk premium. In an effective business sector, financial specialists don't hold a normal danger premium underneath$\beta_i[\gamma(\delta_m) - \delta_f]$.

If $\gamma(\delta_m) - \delta_f$ is assumed to be the market cost of risk for productive portfolios, then, it is the additional return that can be gained by expanding the level of risk of an effective portfolio by a unit.

According to CAPM, portfolio risk comprises of systematic risk and unsystematic risk. These two types of risks are also known as undiversifiable and diversifiable risk respectively. The systematic risk or undiversifiable risk affects the overall financial wing, not just a group of shares or industry. It is unpredictable and almost impossible to avoid it. It cannot be regulated through diversification but hedging or proper asset distribution strategy. Also, the indiscriminate risk would be regulated through diversification. By having stocks in various companies and industries, investors will be less emotional by a decision that has a negative impact on a specific sector.

2.2.1 Suspicion of the CAPM

Assumptions of the CAPM are as follows:

1. The security market is a perfectly competitive market with many investors who are price takers who cannot influence the price by his/her individual market decision.
2. There is perfect information available for all investors for investment analysis.
3. Investors have the privilege of the risk-free rate to lend and borrow unlimited public traded securities.
4. Investors trade securities without any transaction cost or taxation cost.
5. Investors are diversified across various investments opportunities according to their sensitivity for risk and expected return.

6. Everyone in the market has homogenous expectations concerning the distributions of returns.
7. Holding period of securities is simultaneous across all investors.

2.2.2 Asset Pricing

An asset is precisely evaluated when its forecasted price is equal to the present value of expected money flows discounted at the CAPM rate. When forecasted price is more than the CAPM appraisal, the asset is said to be underrate and vice-versa when the forecasted value is lower, the CAPM appraisal. There could be mispricing when the asset lies not on the Security Market Line (SML).

2.2.3 The Market Portfolio

Market structure portfolio consists of the weighted sum of all assets in the market with weights equal to the proportions that they exist in the business and also considered indefinitely indivisible. The future profit for the business sector portfolio is equal to the forecasted return of the market because the business sector portfolio is totally broadened and subject to methodical risk.

A financial specialist who put an extent of his asset in a dangerous portfolio with his other extent gaining interest at the risk-free rate here, the relationship between risk advantages for the risk-free resource is straight since it doesn't choose the general return. The likelihood of investing so as to have a specific return is all securities in a hazardous portfolio or putting a proportion of one's security in a dangerous portfolio and the rest of money that can either be contributed or borrowed out.

The risk-free asset has the lowest risk and by definition uncorrelated with any other asset. Therefore, for a given level of return the risk-free asset will have the lowest

variance and be more efficient than investing all securities in a risky portfolio. This connection holds for portfolio along the efficient frontier.

2.2.4 Shortcomings of the CAPM

Fama and French (2004) contended that "the disappointment of the CAPM in exact test infers that most utilizations of the prototype are irrational".

The model proposes that the variance of returns as a yardstick for measurement of risk. This assumes that returns would be distributed normally. Be that as it may, in monetary financial matters risk is not variance but rather the likelihood of losing.
The model does not provide comprehensive explanations of the variance in returns.

Empirical research demonstrates that low beta might offer exceptional yields than the model would gauge. Fischer Black, Michael Jensen and Myrion scholes exhibited a meeting paper in mid-1969 that evidence either the truth of the matter is sane (confirmation the effective business sector speculation however CAPM seemed, by all accounts, not be right) or it is nonsensical (which verification CAPM yet makes EMH off-base).

The model accepts that given the forecasted level of return, shareholders will lean toward lower risk to a higher one and at a specific risk level will favor higher comes back to lower returns. It doesn't change for shareholders who acknowledge lower returns for inflated risk.

2.3 Arbitrage Pricing Theory (APT)

The arbitrage estimating hypothesis was created by Stephen Ross in 1976. It is a hypothesis of benefit evaluating which holds that the asset return can be displayed as a linear capacity of a couple of macroeconomic variables or business sector records,

where the reactivity to changes in every component is represented by an element beta coefficient. The inferred rate of return ought to be utilized to value the advantage precisely which ought to be identical to expected price for end of a period marked down at the rate recommended by the model. On the off chance that the costs go astray, arbitrage ought to take it back to balance.

Risky asset returns follow a factor power structure which can be expressed as follows;

$$z_j = a_i + b_{i1}A_1 + b_{i2}A_2 + \cdots + b_{in}A_n + \in_i \quad (2)$$

Where: $a_i$is the constant

$A_k$represent the systematic factor

$b_{in}$is the affectability of the $i\ th$ advantage for variable n

$\in_i$shows the risky asset shock with mean zero

By APT model, when the profits of an asset take after a component structure the relationship that exists between future return and element sensitivities are as per the following;

$$\gamma(r_i) = z_f + b_i 1PR_1 + b_{i2}PR_2 + \cdots + b_{in}PR_n \quad (3)$$

Where: PR_k is premium risk

$r_f$is risk free

That is, the forecasted return of an asset is a linear capacity of the benefit's affectability to n components.

In the APT structure, arbitrage includes exchanging two securities with one being mispriced. A security is mispriced if its present value goes astray from the cost

determined by the model. The present security cost ought to be proportionate to every single future stream marked down at the APT rate, and the normal return is a linear capacity of couple of macroeconomic elements and the reactivity to change in each component is delineated by the element particular beta coefficient.

2.3.1 Assumptions of APT

The assumption of the arbitrage pricing theory is as follows;

1. The market is a perfectly competitive and frictionless where everyone has a homogeneous expectation on the distribution of returns.
2. Investors have tedious sunken utility capacity; the quantity of securities in the budgetary wing from which portfolios is bigger than the quantity of variables.
3. The theory assumes there are no transaction costs for investors and zero taxes for transactions incurred.
4. Investors can create diversified portfolios
5. It also has no restrictions on short-term selling.

2.4 Empirical Literature

Ross (1976) develop a model called APT, later in 1980 him and his colleague Roll made the first empirical work to examine the asset returns. They adopted a 2 stage testing where 42 groups among the thirty securities was taken into examination during the period 1962 to 1972. The maximum probability analysis was employed in this research for estimating coefficients of this time series upon the respective returns on those assets. At the same time they estimate pricing relations using cross section dynamics. The findings of this research suggested that, between three to six variables, but no more than that, have effect on the return on shares in this group.

Kryzanowski (1983) also adopted APT test using Canada and United States' data on stock pricing to investigate returns on security. They came to realize that, as 18 to 20 factors are needed to represent returns on security in Canada, but for the United States it only require five factors, as drown from the increasing size identified group.

Dhrymes, Fried and Gultekin (1984) built on the findings of Roll and Ross, but criticized some of their findings. They argued that, as the portfolios are getting larger and larger so also the number of factors is increasing. They further ascertained that at 5% significance levels, as the amount of securities increase the factor are does increase too.

The debate kept on as Roll and Ross (1984) in retaliation to the Dhrymes' critics, they asserted that, it is likely to be the cases that as sample size increase so does the factors, and this is because the causality between them is expected to increase with increase in samples. They point however that, the major thing to consider is the number of factors measured in dynamic portfolio by the market.

Cho, Elton and Gruber (1984) used the same analysis procedure as Ross and Roll by measuring the valued factors involved in stock earnings. They found that five major factors which are priced. They posit that factor that are priced more affects the return on stock which clearly support the argument of Ross Roll paper.

Mookerjee and Yu (1997) research the relationship between macroeconomic variables and stock prices in a small open economy: the case of Singapore. Cointegration and causality together with gauging comparisons were utilized to test for educational inefficiencies in both the short run and long run individually. Stock

prices exhibit a long run association with foreign exchange reserve and money supply whereas exchange rate does not. Findings between forecasting and causality generate different results. The causality test demonstrated market inefficiencies with respect to broad money supply and market efficiency with respect to the narrow money supply. Estimating mathematical statements create market wastefulness as for restricted cash supply and outside trade saves and display no data in wide cash supply.

In contrast, multivariate vector autoregressive (VAR) was used by Gjerde and Saettem (1999) to examine the causal relations between stock returns and macroeconomic variables in a small open economy such as the Norwegian economy. Stock returns happen to have a quick rejecting reaction to the interest rate in a VAR system and little variety in the expansion (inflation) while the rate of interest explains considerable fraction. There is also an insignificant relationship between real activity and expansion (inflation) in Norway. Due to high dependency on oil, the share trading system reacts to changes in oil costs.

Cointegration and VECM were utilized by Kwon and Shin (1999) to examine the relation between securities exchange returns and macroeconomic variables in Korea. The study analyzed that the Korean securities exchange thinks about macroeconomic variables a stock price index. Likewise, the stock price is cointegrated with production, exchange rates, trade and cash supply which give long haul harmony each with the stock value index. At long last, stock price index is not a main marker to macroeconomic variables.

Nasseh and Strauss (2000) analyzed the cointegration approach between stock prices and residential and worldwide macroeconomic action in 6 European nations to be specific; France, Germany, Italy, Netherlands, Switzerland and the UK. Quarterly information from 1962:1 to 1995:4 was utilized to do the examination. Macroeconomic variables, for example, genuine industrial production lists and business reviews for assembling (BSM) requests were utilized as intermediaries for genuine local macroeconomic action, industrial production is a measure of current action, FT500 is the share price for the UK, industrial share price speak share price for France and all the offer value file is utilized for Netherlands, Germany and Switzerland, MSE is the all share price index for Italy. Johansen cointegration shows to be decidedly and essentially identified with industrial production, short and long haul loan costs, business reviews of assembling requests, production, and interest rate and outside stock prices.

Granger et al. (2000) explained the causality among stock price and rates of exchange from current Asian flu data. However, findings from South Korea indicate exchange rates to influence stock prices while the Philippian economy suggests stock prices influencing the exchange rates with a negative connection. Results from the other countries indicate solid correlation i.e. the market take the lead in determining stock prices whereas the economy of Indonesia and Japan did not reveal any pattern.

Mansur and Sulaiman (2001) employed the Vector Autoregression (VAR) to study the dynamic interactions among three major macroeconomic variables (i.e money supply, real output, and price level) in Malaysia. They relied on the variance decomposition and impulse response to seeing the connection among elements. They discovered cash supply to positively affect stock prices in the short-run and

contrarily related in the long haul. Also, depreciation exerts a negative impact on the stock price.

Maghayeneh (2002) investigate the long run haul by utilizing the Jordanian stock prices and macroeconomic elements using the Johansen cointegrating investigation from 1987:1 to 2000:12. The long run relationship is found to exist between share price and macroeconomic variables. In addition, foreign reserve, export, and industrial production are emphatically related and statistically significant to stock prices. Moreover, interest rates and inflation are adversely related and statistically significant while money supply (M1) is also negative but statistically significant.

In contrary, Kim (2003), investigate the long run link among stock prices, industrial production index, real exchange rate, inflation and rates of interests in the United States. Using monthly data from 1974:1 to 1998:12. S&P 500 is influenced independently by inflation, money supply, real dollar exchange rate, interest rate and inflation in the United States. In addition, VECM analysis reveals stock prices, industrial production, and inflation to make a certain adjustment to bring back equilibrium among the macroeconomic variables while variance decomposition is driven to accommodating by innovation in the interest rates.

Kim (2003) used VECM and found long haul between stock price and macroeconomic elements under study. He found S&P 500 to be decidedly associated with industrial production yet contrarily identified to the exchange rate, interest rate, and inflation.

Doong et al (2005) studies six Asian countries to analyze the bond between shocks return and currency exchange rate, he uses the Granger Causality test. The result this research shows highly significant negative relationship between stocks and exchange rate volatility for five among the six countries under study.

Gan et al (2006) inspected the relationship of the New Zealand stock price and seven elements of macroeconomics. Utilizing the Johansen Maximum Likelihood and Granger Causality test they found the New Zealand stock Index not to be the main pointer to macroeconomic variables. Moreover, the record is reliably dictated by the rate of interest, real GDP and cash supply.

Uddin and Alam (2007) investigated the linear causality between rates of interest and share price and also the effect of fluctuations of interest rate on the share price. They also try to discover the relation between the volatility of share price and interest rate and finally the volatility of share price and fluctuations of interest rates. They used Bangladesh as a case study. Interestingly, they found a highly negative relationship in all scenarios between interest rate and share price as well as interest rate volatility on share price changes.

Ratanapakorn and Sharma (2007) explore the short and long haul relationship between U.S stock value list i.e S&P 500 and 6 elements of macroeconomics from 1975:1 to 1999:4. S&P 500 is observed to be contrarily identified with long haul financing cost however decidedly identified with inflation, cash supply, industrial production, exchange rate and short-term interest rate. In Granger causality, every element of macroeconomics Granger Cause stock price in the long haul however contrary to the short term. In addition, difference deterioration likewise proposes the

outcome by expecting stock prices to be generally exogenous in connection to different variables on the grounds that for all intents and purposes 87% of its own fluctuation is clarified by its own particular stock.

The examination concerning the impact of macroeconomic elements on securities exchange returns for four emerging countries; Brazil, Russia, India and China (BRIC) carried out by Gay Jr. (2008) utilizing Box-Jenkins and ARIMA model. Findings suggest no significant relationship between the effect of macroeconomic factors of oil price and exchange rate on the stock market exchange price of Brazil, Russia, India, and China. While variables such as production, inflation, and dividend yield, rate structure, interest rate, and trade balance may influence the determination of stock prices expectations. Additionally, stock price and exchange rates are absolutely related for Brazil, India and China aside from Russia until the MA (12) level, which might be clarified by a thin diminishing pattern in the RBL/USD rate in prior to 2003.

Ali et al (2009) completed a study to research the association between stock price and macroeconomic markers in Pakistan utilizing month to month information found no causal relations between macroeconomic pointers and stock price in Pakistan.

Humpe and Macmillan (2009) in the context of standard discounted model, a number of macroeconomic variables influencing the U.S and Japan are examined. Cointegration is carried out to model the long-run association between industrial production, CPI, long-term rates of interest, money supply and stock prices in the U.S and Japan. U.S data are found to be are observed to be steady with a solitary cointegrating vector, whereas stock prices have positive relation to industrial

production, and negatively related to consumer price index and the long-term interest rates. An insignificant associative is found between stock prices and cash supply in the U.S. However, two cointegration vectors are found in Japan one vector that stock prices are emphatically affected by industrial production and contrarily by cash supply. In addition, industrial production is observed to be adversely impacted by CPI and long-haul short-term rates of interest in the second vector. The contracting result might be subject to droop in the Japanese economy amid the 1990s and ensuing liquidity trap.

George Filis (2010) examine the links between stock market, CPI, industrial production and oil prices in Greece; A VAR is utilized to look at the relationship among the cyclical segments. Oil costs and securities exchange record have a constructive outcome over the long haul. Repeating parts recommend oil costs have huge impact to money markets. Oil price likewise have a negative impact to CPI. In addition, no impact is found between industrial production and securities exchange for the Greek economy.

Akbar et al (2011) investigate the association between stock price and macroeconomic elements. VECM and granger causality were used to examine between Karachi Stock Exchange Index (KSE100) and macroeconomic variables. Stock prices and macroeconomic variables are found to be cointegrated. The normalized cointegrating coefficients found stock prices to be identified with cash supply, interest rates, and veto to inflation and exchange reserve. However, relations between industrial production indexes, the exchange rate with stock prices are statistically insignificant.

Geetha et al (2011) tried to analyze the causality between stock market, expected and startling inflation rates, interest rate, exchange rate and gross domestic product by the USA, China, and Malaysia as a case study. They used VECM to determine the short-run association among this variable and the amount cointegrating vectors were determined using cointegration test, so as to know if long-run connection exists between elements. Their result shows the existence of long-run association among those variables and the stock market in all the countries (The USA, Malaysia, and China). But vector error correlation result shows no short-run haul existence on either side of independent variables and the stock market in Malaysia and U.S, on the other hand, the VEC result shows that the short-run connection exists between the stock market and anticipates inflation in China.

Ray (2012) employed granger causality to test for the relation between macroeconomic variables and stock price behavior the case of India. However, findings shows no causal relation between share price, short term rate and industrial production index, but rather unidirectional causality between share price and some few variables. Furthermore, bi-directional causality exists between share price and variables such as exchange, cash supply, crude petroleum and whole price index. With the aid of regression oil price and gold price have a negative effect on share price while variables like the interest rate, industrial production index, GDP, the balance of trade, foreign exchange reserve, money supply have a favorable influence on stock price.

Nak and Padhi (2012) utilized the Johansen cointegration and VECM to examine the relationship between Indian securities exchange record and the accompanying macroeconomic variables specifically; exchange rate, industrial output, treasury

charges rate, wholesale value and cash supply from 1994:4 to 2011:6. They observed the variables be cointegrated with securities exchange list, subsequently, long run relationship exist. They watched stock price to be emphatically identified with money supply and industrial index yet adversely identified with expansion (inflation). Besides, conversion rate and interest rate are unimportant in deciding share price. Under the granger causality test, bi-directional causality prevail between the industrial index and stock price and unidirectional causality from cash supply to the stock value, the loan fee to stock prices and stock prices to inflation.

2.5 An Overview of the Nigerian Economy and Financial Sector

Although Nigeria is among the less developed nations, but it remains the "Giant of Africa" in terms of economy and population and even the influence in the world politics. The projected population of Nigeria 2015 is precisely 183 523 432, which make the country 7th most populated nation in the whole world. When considering this large population, one can say the country is not doing too well, but it is worth mentioning that the country earned 20th position in the whole world in terms of PPP and 21th in terms of nominal GDP.

Before the 1970, more than 70 percent of Nigeria's revenue came from crude oil. With discovery of oil, gradually the economy moved to more-cultural, by 1970s the oil sector overtook the position occupied by agriculture, which most academicians regarded as the beginning of lost in development track that country found itself. Of course, the discovery of oil in Nigeria is both a blessing and curse. It's a blessing because it generated enough money for development and curse because it leads to neglect of the other important sectors of its economy (agriculture). The mistake was

started reveal itself with crash of oil price in the early 1980s, different policies kept on emerging since that time, but up till today the mistake is tailing the country.

For describing the financial sector in Nigeria, one has to mention 1980s episode. During this period the world witness a major fall in the crude oil price which necessitates the government to think of other sources that will wall the county's economy from doom. Some of the policies adopted include Austerity Measures of Buhari administration, which entail the reduction of government spending in the early 1980s, SAP era of Babangida administration, which is actually IMF's imposed policy, NEEDS of Abacha regime in 2004 and more recent SEVEN POINTS AGENDA of late President Yar Aduwa in 2007. At that time, the attention of Nigerian policy maker started to shift towards the financial sector.

During the deregulation era (1986), the Nigerian financial sector experienced tremendous structural reforms. The liberalization policy made the government to left the huge financial deals to the individual private financial organizations. At the time, many institutions were set up to foresee the affairs and act as regulatory agents in the financial market and properly guarded by the constitution of Federal Republic of Nigeria. Institutions such as SEC, NDIC were product of this deregulation policy.

Despite those beautifully and carefully established policies, the efforts are yet to gain success. This may be because of the lack of being consistent, as some argued. The entire financial sector of the country is fall at the hands of commercial bank. It was recorded that, during the 2000 financial year. Of the whole Noncentral assets, 93% was accounted by DMBs. In the year 2003, the percentage increased to 95. Again in 2003, DMBs accounted for 60% of Stock market capital as well.

Other policies include the founding of Nigerian Deposit Insurance Corporation (NDIC), enhancing the strength of the existing regulatory bodies, capital market regulations were reviewed, instrument of indirect monitory policy were introduced, some low performing banks were liquidated, some were taken over by the central Bank of Nigeria and others were sold by private sector through selling of their shares. Foreign exchange market was dismantled by allowing Bureau de Change operations but still official exchange rate exists along with market price for foreign currencies.

Premature as it is, Nigeria's financial sector is pedaling with series of challenges, which includes; non-existence of commercial lending, under-capitalization by almost all the banks, lack of proper risk management, internal control and lending practice, where non-performing loans are flattering continuously.

Tremendous progress has been achieved in recent time, which include improvement in the structures of cooperate governance and risk management system, and cumulative stock of non-performing loans are yet be wiped out.

Chapter 3

METHODOLOGY

3.1 Research Methodology

This research is designed to critically analyze the causal relations between share price and macroeconomic variables in Nigeria. It employs the VAR/VECM and Granger causality approach between share and macroeconomic variables. The research utilized monthly time series data from 2001 to 2014. The data are obtained from the Thomson Reuters Financial Datastream.

3.2 Model Specification

The model specification for this study is formulated using all share price index as a dependent variable to find its causal relationship with some macroeconomic variables in Nigeria. Model specified below is meant to incorporate explanatory variables to what is observed on previous empirical works The macroeconomic components in this study incorporate consumer price index (CPI), exchange rate (EXR), interest rate (INTR), money supply (M2) and oil prices (OP).The decision of variables is practically like Chen, Roll and Ross (1986), Hammao (1988), Darrat and Mukherjee (1987), Darrat (1990), Al-sharkas, Adel (2004), Ibrahim, Yusoff (2001), Raymond (2009) Talla (2013). The fundamental reason for using multivariate model is that analyses base on bivariate and triviate models is sometimes misleading as the estimated model may suffer from omitted variables (Woodrige 2000). However, variables that are considered relevant are incorporated into the model to avoid omitted variables biased and multicollinearity which are almost unavoidable in time

series research such as this. Therefore, the functional model to evaluate the causal relationship ofshare price and macroeconomic variables can be formulated as follows:

$$SP_t = f(M2_t, INTR_t, CPI_T, EXR_t, OP_t) \quad (1)$$

Where:

SP is the All Share Price

M2 is the Money Supply

INTR is the Interest Rate

CPI is Consumer Price Index

EXR is the Exchange Rate

OP is the Oil Price

The rationale for choosing these variables is as follows;

3.2.1 Money Supply

The money supply variable that will be used is M2 It's a measure that incorporates money and checking deposits (M1) and in addition, near money. Be that as it may, "Near Money" in M2 incorporates mutual funds, and time deposit, which are less liquid and not fitting as exchange mediums but rather can be changed over into money and deposits. A vast range of research on the relation between money supply and share price can be found. (See Hamburger and Kochin (1972), Malkiel and Quant (1972), Rozeff (1974), Pearce and Roley (1983). It will be of centrality to research the dynamic relationship between this variable and share price in Nigeria.

3.2.2 Exchange Rate

The measure of exchange rate will be the average monthly exchange rate indicated in terms of national currency per dollar. Doong et al (2005), Robert D Gay (2008), included this variable in their research work. After the initiation of the Structural

Adjustment Program (SAP) in 1986, with its fundamental of a deregulated foreign exchange, exchange risk has been a worry for both local and foreign investors. However, before the introduction of the Structural Adjustment Program (SAP), the devaluation of the Naira between 1980 and 1986 was 102.06% and after the introduction of SAP between 1988 and 2004 the rate for devaluation for local currency was 6,506.97% Olowe, R. Ayodeji (2007). It will be of interest to investigate the relationship between this variable and share price in Nigeria.

3.2.3 Interest Rate

Deposit rate of interest is another variable used for this study. It is the rate paid by the monetary establishments to deposit account holders. It incorporates certificates of deposits, savings account and store retirement account. M. Ariff et al (2012)

3.2.4 Crude Oil Price

Crude oil price fluctuation is very important as it could affect the Nigerian economy because crude oil contributes to 80% of the country's revenue. Most firms in Nigeria depend directly or indirectly on the oil sector. It would be of interest to examine the relation of this variable in Nigeria.

3.2.5 Consumer Price Index (CPI)

The CPI will be used as a proxy to inflation. Roll and Ross (1986), Chen, Roll and Ross (1986), Sorenson, Salomon, Davenport and Fiore (1988) also include this variable in their research. Annual inflation in Nigeria rose to 9.4% in September 2005 from 9.3% from the previous month. It was the highest since February 2005, inflation in Nigeria is averaged 12.16% from 1996 to 2015 reaching all time highest of 47.56% in January 1996 and a record low of -2.49% in January 2000. However, CPI increased from 175.40 index points in August 2015 to 176.46 index points in September 201. CPI in Nigeria averaged 74.33 index points from January 1995 to

2015 reaching a record low of 14.36 index points in January 1995 and all time record high of 176.46 index points in September 2015. (http://www.tradingeconomics.com/nigeria/inflation-cpi)

However, industrial production index is an important variable that is mostly utilized in previous research to gauge the fluctuations in share price, however, is exempted from this study because of absence of reliable data for the exploration period.

The above functional specification can be transformed into mathematical equations as follows:

$$SP_t = \beta_0 + \beta_1 M2_t + \beta_2 INTR_t + \beta_3 CPI_t + \beta_4 EXR_t + \beta_5 OP_t \quad (2)$$

Econometrically speaking, the above mathematical model can be transformed into econometrics model with an error term as below:

$$SP_t = \beta_0 + \beta_1 M2_t + \beta_2 INTR_t + \beta_3 CPI_t + \beta_4 EXR_t + \beta_5 OP_t + \varepsilon_t \quad (3)$$

Econometric models generally have some potential econometric problems such as misspecification, multicollinearity and heteroskedasticity. This arises because of irrelevant variables which could result in; loosing degree of freedom, explanatory variables may be correlated with irrelevant variables, thereby raising the standard errors.

The next chapter dwells on econometrics methodology for the study.

Chapter 4

ESTIMATION TECHNIQUE

4.1 Econometrics Technique

As this research utilizes monthly time series information, (OLS) technique can't continue, unless the variables under study are stationary. Therefore, the research run unit root test to appraise for stationary of the variables within the study. Next are the cointegration test, then VAR/VECM technique and ultimately the Granger Causality test is embraced to check for the causal relations

4.2 Unit Root

The traditional way to deal with the test for stationary of time-series Xt is to evaluate ADF statistic. Non-stationary variables are integrated to make elements stationary it q times; communicated as Yt~I(q). this can be done by using an AR(1) model.

$$\Delta X_t = \delta x_{t-1} + \sum_{i=1}^{p} \alpha \Delta X_{t-1} + \varepsilon_t \qquad (4)$$

Where, Xt is a specific time series; first difference is indicated by Δ; δ decides stationary of series for H0: δ = 0 which is the null hypothesis non-stationaryalternative H1: δ < 0 stationary); p is the ideal number of lags.

Because the ADF test is not much effective, Phillips-Perron is utilized as a distinct option for backing.

4.3 Cointegration

The essential thought of cointegration is that if over the long haul, two or more series move solidly jointly, regardless of the way that the arrangement themselves are slanted, the refinement between them is consistent.

It is possible to see these elements as portraying a long-run haul, as the refinement between them is stationary (Hall and Henry, 1989). A nonappearance of integration recommends that such variables have no long-run haul: in focal they can wind subjectively a long way from each other.

In particular, if Yt is a vector of n stochastic variables, then there exists a p-lag vector auto regression:

$$X_t = \sigma + \Delta_1 x_{t-1} + - - - + \Delta q Y_{t-p} + \varepsilon_t \qquad (5)$$

Where Yt is a nx1 vector of elements

The equation above is written as:

$$\Delta X_t = \alpha + \beta_{xt-1} + \sum_{i=1}^{h-1} \sigma_i \Delta X_{t-1} + \varepsilon_t \qquad (6)$$

$$\Pi = \sum_{i=1}^{h} B_{i-1} \ \sigma_i = -\sum^{h} Bj \qquad (7)$$

Johansen statistical test consist of two techniques to test for cointegration, namely the trace test and the maximum eigenvalue test. This are formulated as follows:

a) Trace test:

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^{n} \ln(1 - \hat{\lambda}_i) \qquad (8)$$

A joint test with null and alternative hypothesis of:

***Ho*: Number of cointegration vectors ≤ r**

***Ha*: Number of cointegration vectors > r**

b) Maximum eigenvalue test:

$$\lambda_{(r,r+1)} = -T \ln(1 - \hat{\lambda}_{r+1}) \quad (9)$$

A different test for each eigenvalue with null and alternative hypothesis of:

Ho: Number of cointegration vectors = r

Ha: Number of cointegration vectors = r+1

When we can't reject either the null hypothesis of the trace or maximum eigenvalue we have no cointegration. In other words if this happens there is zero cointegration equations otherwise we have a cointegration equation.

4.4 VECM Technique

This study employs VECM approach as estimation techniques to explore the relationship between share costs and macroeconomic variables in Nigeria.

In the event that the variables under study are integrated of the same order, for example, I(1) and they are cointegrated in view of Johansen test, VECM would be utilized to study the relationship between share price and macroeconomic variables. The variables under study need to be cointegrated if error correction model will hold (Engle and Granger 1991). An error correction model has the following form:

$$\Delta X_t = \beta + \sum_{=1}^{q} \alpha \Delta X_{t-1} + \pi ECT_{t-1} + \varepsilon_t \quad (10)$$

Difference operator is the$\Delta X_t, \rho \times 1$elements are integrated (1), $X_{t-1}$is period lag of the integrationECT_{t-1} is the one period lag. While $\beta, \alpha \; and \; \pi$ represent the

coefficient, with β as the intercept, $\alpha \, and \, \pi$ as the short-run and long-run coefficients respectively.

Chapter 5

EMPIRICAL RESULTS

5.1 Introduction

This section exhibits the aftereffects of the experimental results of the work. The estimation starts with the routine unit root utilizing ADF and PP to perceive the integration. Starting there, the part continues with cointegration test in the wake of finding that elements are non-stationary at level however integrated at by using difference operator. Ensuring to perceiving the vicinity of cointegration among elements, VECM is utilized to gauge long haul progress between share price and macroeconomic variables. At last, Granger causality is utilized to discover the course of causality among elements.

5.2 The Unit Root Outcome

Unit root are carried out by using the Augumented Dickey-Fuller and Phillips-Perron. The outcomes are exhibited in Table 5.1 and 5.2 for all test outcomes.

Table 1. Augmented Dickey Fuller (ADF)

Variables	LEVELS		Remark	FIRST DIFFERENCE		Remark
	Intercept	Trend & Intercept		Intercept	Trend & Intercept	
SR	-2.197 (-3.437)	-2.068 (-3.437)	**NS**	-5.917 * (-2.878)	-9.051 *(-3.437)	**S**
M2	1.704 (-2.878)	-1.755 (-3.436)	**NS**	-11.27 *(-2.878)	-11.59 *(-3.437)	**S**
INTR	-1.913 (-2.878)	-3.067 (-3.436)	**NS**	-16.87 *(-2.878)	-16.83 *(-3.437)	**S**
CPI	-2.024 (-2.878)	-1.180 (-3.437)	**NS**	-10.25 *(-2.878)	-10.62 *(-3.437)	**S**
EXR	-0.696 (-2.878)	-2.282 (-3.437)	**NS**	-9.436 *(-2.878)	-9.418 *(-3.437)	**S**
OP	-1.893 (-2.878)	-2.384 (-3.437)	**NS**	-10.31 *(-2.878)	-10.33 *(-3.437)	**S**

Note: * (**) and *** denotes significance at 1% (5%) and 10% level, respectively. S = Stationary, NS = Non stationary. Figures within parenthesis indicate critical values.

Table 2. Phillips-Perron (PP) Unit Root Test

Variables	LEVELS		Remark	FIRST DIFFERENCE		Remark
	Intercept	Trend & Intercept		Intercept	Trend & Intercept	
SR	-1.982 (-2.878)	-1.920 (-3.436)	**NS**	-9.541 * (-2.878)	-9.556 *(-3.437)	**S**
M2	-1.950 (-2.878)	-1.619 (-3.436)	**NS**	-11.26 *(-2.878)	-11.37 *(-3.437)	**S**
INTR	-1.974 (-2.878)	-3.329 (-3.436)	**NS**	-16.27 *(-2.878)	-16.24 *(-3.437)	**S**
CPI	3.155 (-2.878)	-0.744 (-3.436)	**NS**	-10.05 *(-2.878)	-10.56 *(-3.437)	**S**
EXR	-0.788 (-2.878)	-2.109 (-3.436)	**NS**	-9.436 *(-2.878)	-9.418 *(-3.437)	**S**
OP	-1.875 (-2.878)	-2.510 * (-3.436)	**NS**	-10.35 *(-2.878)	-10.38 *(-3.437)	**S**

Note: * (**) and *** denotes significance at 1% (5%) and 10% level, respectively. S = Stationary, NS = Non stationary. Figures within parenthesis indicate critical values.

ADF result is displayed in Table 5.1 above all elements are not stationary in level form but stationary in first difference. the ADF measurements are non-stationary in level form and but happen to be stationary in first difference at 1%, 5% and 10% significance level respectively.

Subsequently, PP unit root in Table 5.2 also affirmed the not stationary of elements in level form and stationary by using difference indicator, which means the PP statistics are also significant at 1%, 5% and 10% significance level respectively.

Apparently, the tests uncover that elements are portrayed by the vicinity of non-stationary in levels yet stationary by using difference operator. Furthermore, at first difference, variables are integrated of order one [i.e. I(1)] which may reveal a positive long run relationship.

5.3 The Cointegration Analysis

After recognizing integration, utilizing the outcomes of unit root test proposed long run association of elements under study might exist. In this manner, it is engaging to explore if the elements under study can really unite over the long haul. To

demonstrate this, this study utilized Johansen technique. The outcomes are introduced in Table 5.5 and Table 5.6 for the Trace and Maximum Eigenvalue rule, individually.

We can see from Tables, Trace test statistic reject the null hypothesis of no cointegration at 5% level of while the Maximum Eigenvalue test found no cointegration existence, So we conclude on the outcomes of the Trace test of one cointegration specifically.

Table 3. Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.184088	98.04854	95.75366	0.0344
At most 1	0.149178	64.27612	69.81889	0.1278
At most 2	0.071536	37.45840	47.85613	0.3262
At most 3	0.068627	25.13727	29.79707	0.1566
At most 4	0.055967	13.33546	15.49471	0.1031
At most 5	0.022483	3.774824	3.841466	0.0520

Trace test indicates 1 cointegratingeqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.184088	33.77242	40.07757	0.2158
At most 1	0.149178	26.81772	33.87687	0.2732
At most 2	0.071536	12.32113	27.58434	0.9190
At most 3	0.068627	11.80182	21.13162	0.5673
At most 4	0.055967	9.560634	14.26460	0.2424
At most 5	0.022483	3.774824	3.841466	0.0520

Max-eigenvalue test indicates no cointegration at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

The normalized cointegration coefficient suggests that positivity share price, money supply and inflation exist and negativity relations to crude oil price, interest rates and exchange rates in Table 5.6.

Positive relations between share price and money supply are reliable with Bruner (1961) findings who recommended that money supply as an explanatory variable can explain the variation in share price. Increment in money supply is connected with increment in sales of shares on the stock market floor and it's also has rising shares and volumes of trading.

Table 4. Normalized Cointegration Coefficients

1 Coiintegrating Equation(s):	Log likelihood	-5177.205			
Normalized cointegrating coefficients (standard error in parentheses)					
SP	OP	M2	INTR	EXR	CPI
1.000000	1329.760	-0.002198	5326.193	3982.583	-1827.156
	(324.345)	(0.00416)	(1836.75)	(656.589)	(670.826)

The existence of negative relation between share price and interest rates is not reliable with financial hypothesis. Interest rates influence share price to go up because it boost investment and economic growth of an economy. Positive correlation between share price and inflation recommend share price to hedge inflation especially in the long haul.

The Error Correction Model in appendix A is -0.01645 because of the negative coefficient and it's statistically insignificant. The ECM shows long run running from CPI, M2, EXR, OP, and INTR to SP.

Table 5. Pairwise Granger Causality Test

Pairwise Granger Causality Test				
Lags 2	**Obs.**	**F stat**	**Prob.**	
Null Hypothesis				
OP doesn't Granger Cause SP		2.42397	0.0918***	Reject
SP doesn't Granger Cause OP		0.24337	0.7843	Accept
M2 doesn't Granger Cause SP		0.12367	0.8838	Accept
SP does not Granger Cause M2		2.79042	0.0644***	Reject
INTR doesn't Granger Cause SP		0.41846	0.6588	Accept
SP doesn't Granger Cause INTR		0.87593	0.4185	Accept
EXR doesn't Granger Cause SP		2.30487	0.1031	Accept
SP doesn't Granger Cause EXR		4.62000	0.0112**	Reject
CPI doesn't Granger Cause SP		0.26936	0.7642	Accept
SP doesn't Granger Cause CPI		0.24365	0.7841	Accept
M2 doesn't Granger Cause OP		0.47035	0.6256	Accept
OP doesn't Granger Cause M2		0.78896	0.4561	Accept
INTR doesn't Granger Cause OP		3.37324	0.0367**	Reject
OP doesn't Granger Cause INTR		0.79627	0.4528	Accept
EXR doesn't Granger Cause OP		2.30693	0.1028	Accept
OP doesn't Granger Cause EXR		4.66884	0.0107**	Reject
CPI doesn't Granger Cause OP		2.20858	0.1132	Accept
OP doesn't Granger Cause CPI		1.15281	0.3183	Accept

INTR does not Granger Cause M2		0.13126	0.8771	Accept
M2 doesn't Granger Cause INTR		1.54280	0.2169	Accept
EXR doesn't Granger Cause M2		2.45329	0.0892***	Reject
M2 doesn't Granger Cause EXR		3.68903	0.0271**	Reject
CPI doesn't Granger Cause M2		1.88750	0.1548	Accept
M2 doesn't Granger Cause CPI		1.86865	0.1577	Accept
EXR doesn't Granger Cause INTR		5.27502	0.0060*	Reject
INTR doesn't Granger Cause EXR		0.32360	0.7240	Accept
CPI d doesn't oes not Granger Cause INTR		1.87108	0.1573	Accept
INTR doesn't Granger Cause CPI		0.07887	0.9242	Accept
CPI doesn't Granger Cause EXR		3.44614	0.0342**	Reject
EXR doesn't Granger Cause CPI		0.67013	0.5131	Accept

Source: Authors estimate

* (**) *** indicates significant causal relationship at 1 % (5%), 10%

- Unidirectional causality exist from OP to SP at 5%
- Unidirectional causality from SP to M2 at 10%
- Unidirectional causality running from SP to EXR at 5% and 10%
- Furthermore, unidirectional causality running from INTR to OP another unidirectional from OP to EXR all at 5% and 10% level of significance.
- Unidirectional causality from M2 to EXR at 5% significance
- Bidirectional causality running from EXR to M2 at 10% level of significance
- And a unidirectional causality running from EXR to INTR and also unidirectional from CPI to EXR all at 5% and 10% level of significance.

All other variables are not explained because no causal relationship exist between them all at 5% and 10% level of significance, therefore, we do not accept the null hypothesis as indicated in Table 5 above.

Chapter 6

CONCLUSION AND RECOMMEDATION

6.1 Introduction

This chapter provides a summary of the findings for this research work and also the policy implications and recommendation of local and international investor.

6.2 Conclusions

In conclusion, the variables under study prove to be stationary by conducting both ADF and PP test which means the variables are integrated or order one. However, variables hint single cointegration equation at 5% level of significance.

The Vector Error Correction Model (VECM) presents all variables to be statistically significant except for the money supply which is statistically insignificant though the negative sign from Table 5.6 indicates long run haul among variables.

The findings of this research paper suggested a negative relationship between the Nigerian stock returns and inflation. This finding is also supported by the Ross's and Roll's (1986) and Mukherjee's and Naka's (1995) findings which also suggested a negative relationship between variables in question. This is normally the case in period of inflation the demand falls; hence investment is discouraged because it's no longer profitable.

As for the interest rate, the result found from this research showed a positive and significant correlation with Nigerian stock return. Again our result is compatible with Mukherjee's and Naka's (1995) findings in the case of Japan and Bulmash's and Trivoli's (1991) for the United States case.

The findings of this paper again, showed a strong positive relationship between Nigerian stock returns and the exchange rate variable. This finding is supported by the Maysami et al (2004) paper on the case of Singapore's stock market and Maysami and Koh (2000). This is true because by strong currency value, importers of input will find there imported material relative cheap and when local producers want to export they will gain competitive advantage concerning the prices in international market.

The Granger Causality test pinpoints causality from OP to SP at 5% significance level, and SP to M2 at 10%. Unidirectional causality exist from SP to EXR at 5% and 10% significance and from INTR to OP and OP to EXR all at 5% and 10% level of significance.

The only bidirectional causality exist from EXR to M2 at 10% significance level and lastly, unidirectional causality from EXR to INTR and CPI to EXR all at 5% and 10% significance level.

Further research could be carried out to detect for structural breaks in the model. And additional variables could be included such as industrial production, natural gas, and energy prices. Different methodology could also be adopted to examine the relationship between share price and macroeconomic variables.

6.3 Policy Implication and Recommendation

The above result makes us to believe that the macroeconomic variables have implication on the following three major actors in the stock market;

- Local and international investors
- Regulators of the stock market
- Market Analysts and other stake holders

For local and international investors, the result is particularly important to make a right decision with regards to investment choice for profit realization.

As for those regulating the market, the result will help them drive some inference on how to improve the market and sanitize it to ensure healthy effective competition and avoid market manipulation opportunity in a more efficient way.

Planned analysts can research the impact of macroeconomic variables on share prices utilizing elective techniques and day by day or week after week information to observationally evaluate whether the outcomes are delicate to the recurrence information.

REFERENCES

Akbar, M., Ali, S., & Khan, M. F. (2012). The Relationship of Stock Prices and Macroeconomic Variables revisited: Evidence from Karachi Stock Exchange. *African Journal of Business Management*, 6 (4): 1315-1322.

Akbar, M, & Kundi, O. (2009). Monetary policy variables and stock prices in Pakistan. *Interdiscip. J. Contemp. Res Bus*., 1(6) 84-101

Akmal, M. S. (2007). Stock returns and inflation: An ARDL econometric investigation utilizing Pakistani Brunner K (1961) Some major problems in monetary theory. *Am. Econ. Rev. Proc., 51: 47-56*

Ali, I., Rehman, K. U., Yilmaz, A. K., Khan, M. A., & Afzal, H. (2010). Causal relationship between macro-economic indicators and stock exchange prices in Pakistan. *African Journal of Business Management*, *4*(3), 312.

A., Humpe, & Macmillan, P. (2009). Can macroeconomic variables explain long-term stock market movements? A comparison of the US and Japan. *Applied Financial Economics*, *19*(2), 111-119.

Ariff, M., Chung, T. F., & Shamsher, M. (2012). Money supply, interest rate, liquidity and share prices: A test of their linkage. *Global Finance Journal*, *23*(3), 202-220.

Chen, N. F., Roll, R., & Ross, S. A. (1986). Economic forces and the stock market. *Journal of business*, 383-403.

Cho, D. C., Elton, E. J., & Gruber, M. J. (1984). On the robustness of the Roll and Ross arbitrage pricing theory. *Journal of Financial and Quantitative Analysis*, *19*(01), 1-10.

Chen, S. J., & Jordan, B. D. (1993). Some empirical tests in the arbitrage pricing theory: Macro variables vs. derived factors. *Journal of Banking & Finance*, *17*(1), 65-89.

Darrat, A. F. (1990). Stock returns, money, and fiscal deficits. *Journal of Financial and Quantitative Analysis*, *25*(03), 387-398.

Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American statistical association*, *74*(366a), 427-431.

Dhrymes, P, Friend, I. & Gultekin, B (1984). A Critical Re-examination of the Empirical Evidence on the Arbitrage Pricing Theory.*Journal of Finance*. Vol39. No2. pp323-346.

Doong, S.-Ch., Yang, Sh.-Y., Wang, A., (2005). The dynamic relationship and pricing of stocks and exchange rates: Empirical evidence from Asian emerging markets; *Journal of American Academy of Business*, Cambridge, Vol.7, No1, pp.118-23.

Engle, R.F., Granger, C.W., (1987). Co-integration and error correction: representation, estimation and testing. *Econometrica* 55, 251–276.

Elton, E. & Gruber, M (1995). Modern Portfolio Theory and Investment Analysis. Fifth edition. *New York: John Wiley & Sons.*

Eugene F. Fama & Kenneth R. French (2004). The Capital Asset Pricing Model: Theory and Evidence. *Journal of Economic Perspectives*. 18(3), pp. 25.

Fama, E. (1990). Stock Returns, Expected Returns, and Real Activity. *Journal of finance*. Vol 45, No 4, pp1089-1108.

Fama, E. & French, K. (1992). The Cross-section of Expected Stock Returns. *Journal of Finance*. Vol47, No2, pp427-465.

Fama, Eugene F. & French, Kenneth R. (Summer 2004). The Capital Asset Pricing Model: Theory and Evidence. *Journal of Economic Perspectives* **18** (3): 25–46. *doi*:*10.1257/0895330042162430*

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

Gay Jr, R. D. (2011). Effect of macroeconomic variables on stock market returns for four emerging economies: Brazil, Russia, India, and China. *International Business & Economics Research Journal (IBER)*, *7*(3).

Geetha, C., Mohidin, R., Chandran, V. V., & Chong, V. (2011). The relationship between inflation and stock market: Evidence from Malaysia, United States and China. *International journal of economics and management sciences*, *1*(2), 1-16.

Filis, G. (2010). Macro economy, stock market and oil prices: Do meaningful relationships exist among their cyclical fluctuations?. *Energy Economics*, *32*(4), 877-886.

Granger, C. W., Huangb, B. N., & Yang, C. W. (2000). A bivariate causality between stock prices and exchange rates: evidence from recent Asianflu☆. *The Quarterly Review of Economics and Finance*, *40*(3), 337-354.

Gjerde, Ø., & Saettem, F. (1999). Causal relations among stock returns and macroeconomic variables in a small, open economy. *Journal of International Financial Markets, Institutions and Money*, *9*(1), 61-74.

Gujarati, D. N., & Porter, D. C. (1999). Essentials of econometrics.

Brunie, C. H., Hamburger, M. J., & Kochin, L. A. (1972). Money and stock prices: the channels of influence. *The journal of Finance*, *27*(2), 231-249.

Johansen, S. & Juselius, K., 1990. Maximum likelihood estimation and inference on cointegration with applications to the demand for money. *Oxford Bullet in of Economics and Statistics* 52, 169–210.

Ki-ho Kim (2003). Dollar exchange rate and stock price: evidence from multivariate cointegration and error correction model; *Review of Financial Economics* Volume 12, Issue 3, Pages 301–313

Kwiatkowski, D., Phillips, P. C., Schmidt, P., & Shin, Y. (1992). Testing the null hypothesis of stationarity against the alternative of a unit root: How sure are we that economic time series have a unit root?. *Journal of econometrics*, *54*(1), 159-178.

Kryzanowski, L., & To, M. C. (1983). General factor models and the structure of security returns. *Journal of Financial and Quantitative Analysis*, *18*(1), 31-52.

Kwon, C. S., & Shin, T. S. (1999). Cointegration and causality between macroeconomic variables and stock market returns. *Global Finance Journal*, *10*(1), 71-81.

Lintner, J. (1965). The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets. *The review of economics and statistics*, 13-37.

Lintner, J. (1973). Inflation and common stock prices in a cyclical context. *Annual Report. National Bureau of Economic Research. New York: Author*, 23-36.

Ibrahim, M. H., & Yusoff, S. W. (2001). Macroeconomic variables, exchange rate and stock price: A Malaysian perspective. *International Journal of Economics, Management and Accounting*, *9*(2).

Malkiel, B. G., & Quandt, R. E. (1972). The supply of money and common stock prices: Comment. *The Journal of Finance*, *27*(4), 921-926.

Markowitz, H. (1959). Portfolio selection: efficient diversification of investments. *Cowies Foundation Monograph*, (16).

Markowitz, H. (1952). Portfolio selection. *The journal of finance*, *7*(1), 77-91.

Maysami, R. C., Howe, L. C., & Hamzah, M. A. (2004). Relationship between macroeconomic variables and stock market indices: cointegration evidence from stock exchange of Singapore's all-S sector indices. *Jurnal Pengurusan*, *24*(1), 47-77.

Mookerjee, R., & Yu, Q. (1997). Macroeconomic variables and stock prices in a small open economy: The case of Singapore. *Pacific-Basin Finance Journal*, *5*(3), 377-388.

Mukherjee, T. K., & Naka, A. (1995). Dynamic relations between macroeconomic variables and the Japanese stock market: an application of a vector error correction model. *Journal of Financial Research*, *18*(2), 223-237.

Mossin, J. (1966). Equilibrium in a capital asset market. *Econometrica: Journal of the econometric society*, 768-783.

Naik, P. K., & Padhi, P. (2012). The impact of macroeconomic fundamentals on stock prices revisited: evidence from Indian data. *Eurasian Journal of Business and Economics*, *5*(10), 25-44.

Nasseh, A., & Strauss, J. (2000). Stock prices and domestic and international macroeconomic activity: a cointegration approach. *The Quarterly Review of Economics and Finance*, *40*(2), 229-245.

Ratanapakorn, O., & Sharma, S. C. (2007). Dynamic analysis between the US stock returns and the macroeconomic variables. *Applied Financial Economics*, *17*(5), 369-377.

Pearce, D. K., & Roley, V. V. (1983). The reaction of stock prices to unanticipated changes in money: A note. *The Journal of Finance*, *38*(4), 1323-1333.

Ratanapakorn, O., & Sharma, S. C. (2007). Dynamic analysis between the US stock returns and the macroeconomic variables. *Applied Financial Economics*, *17*(5), 369-377.

Roll, R., & Ross, S. A. (1980). An empirical investigation of the arbitrage pricing theory. *The Journal of Finance*, *35*(5), 1073-1103.

Roll, R. (1977). A critique of the asset pricing theory's tests Part I: On past and potential testability of the theory. *Journal of financial economics*, *4*(2), 129-176.

Ross, S. A. (1976). The arbitrage theory of capital asset pricing. *Journal of economic theory*, *13*(3), 341-360.

Rozeff, M. S. (1974). Money and stock prices: Market efficiency and the lag in effect of monetary policy. *Journal of financial Economics*, *1*(3), 245-302.

Ray, S. (2012). Testing granger causal relationship between macroeconomic variables and stock price behaviour: evidence from India. *Advances in Applied Economics and Finance*, *3*(1), 470-481.

Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *The journal of finance*, *19*(3), 425-442.

Sorensen, E., Salomon, R., Davenport, C., & Fiore, M. (1989). Risk analysis: The effect of key macroeconomic and market factors on portfolio returns. *Salomon Brothers, Nov*.

Talla, J. T. (2013). *Impact of Macroeconomic Variables on the Stock M arket Prices of the Stockholm Stock Exchange (OMXS30)* (Doctoral dissertation, Master Thesis Jonkoping International Business School Jonkoping Universtity).

Uddin, M. G. S., & Alam, M. M. (2007). The impacts of interest rate on stock market: Empirical evidence from Dhaka stock exchange. *South Asian J. Manage. Sci*, *1*(2), 123-132.

Capital Asset Pricing Model Retrieved from Wikipedia: http://en.wikipedia.org/wiki/Capital_asset_pricing_model.

Wooldridge, J. M. (2000). Basic regression analysis with time series data. *Wooldridge JM. Introductory econometrics: a modern approach. Cincinnati, Ohio: South-Western College Publishing*.

APPENDIX

Appendix A: Vector Error Correction Model

Vector Error Correction Estimates
Date: 01/27/16 Time: 11:33
Sample (adjusted): 2001M05 2014M12
Included observations: 164 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
DCPI(-1)	1.000000
DEXR(-1)	3.135848 (0.36481) [8.59593]
DINTR(-1)	0.764077 (0.85812) [0.89040]
DM2(-1)	1.06E-05 (2.9E-06) [3.66930]
DOP(-1)	0.287165 (0.10936) [2.62599]
DSR(-1)	0.001676 (0.00034) [4.96046]
C	-3.207111

Error Correction:	D(DCPI)	D(DEXR)	D(DINTR)	D(DM2)	D(DOP)	D(DSR)
CointEq1	-0.037350 (0.01911) [-1.95410]	-0.271638 (0.03193) [-8.50715]	-0.014796 (0.01946) [-0.76039]	-17063.03 (6059.56) [-2.81588]	0.048682 (0.12995) [0.37463]	-98.02180 (39.1301) [-2.50502]
D(DCPI(-1))	-0.419962 (0.08119) [-5.17272]	0.113596 (0.13563) [0.83755]	0.128571 (0.08265) [1.55556]	-6843.336 (25738.6) [-0.26588]	1.317544 (0.55196) [2.38704]	100.0775 (166.209) [0.60212]
D(DCPI(-2))	-0.181607 (0.08174) [-2.22166]	0.116442 (0.13656) [0.85270]	0.110576 (0.08322) [1.32875]	37781.93 (25914.8) [1.45793]	0.102572 (0.55574) [0.18457]	89.31535 (167.347) [0.53371]
D(DEXR(-1))	0.105460 (0.05104) [2.06613]	0.088747 (0.08527) [1.04079]	0.008745 (0.05196) [0.16830]	74233.51 (16181.7) [4.58749]	-0.009655 (0.34701) [-0.02782]	154.3285 (104.495) [1.47690]
D(DEXR(-2))	0.110190 (0.04417) [2.49488]	-0.046799 (0.07378) [-0.63429]	0.115919 (0.04496) [2.57808]	22491.00 (14001.9) [1.60628]	0.015737 (0.30027) [0.05241]	27.43305 (90.4185) [0.30340]
D(DINTR(-1))	0.039044 (0.07181) [0.54371]	0.137514 (0.11996) [1.14630]	-0.933411 (0.07311) [-12.7679]	8946.932 (22765.7) [0.39300]	-0.008369 (0.48820) [-0.01714]	-7.030623 (147.011) [-0.04782]
D(DINTR(-2))	0.038685 (0.07031) [0.55018]	0.063461 (0.11746) [0.54027]	-0.391356 (0.07158) [-5.46721]	-8402.522 (22291.3) [-0.37694]	-0.064647 (0.47803) [-0.13524]	24.59126 (143.948) [0.17083]
D(DM2(-1))	3.27E-07 (3.0E-07) [1.09985]	2.65E-06 (5.0E-07) [5.33000]	1.68E-07 (3.0E-07) [0.55488]	-0.536063 (0.09434) [-5.68207]	-2.55E-06 (2.0E-06) [-1.25917]	0.000787 (0.00061) [1.29159]
D(DM2(-2))	-7.84E-08 (2.8E-07) [-0.28278]	1.29E-06 (4.6E-07) [2.78575]	1.20E-07 (2.8E-07) [0.42565]	-0.403456 (0.08784) [-4.59308]	3.14E-07 (1.9E-06) [0.16648]	0.001107 (0.00057) [1.95183]
D(DOP(-1))	0.020526	0.068725	0.003409	3579.303	-0.592070	51.02558

	(0.01291)	(0.02157)	(0.01315)	(4093.94)	(0.08779)	(26.4369)
	[1.58946]	[3.18572]	[0.25931]	[0.87429]	[-6.74390]	[1.93009]
D(DOP(-2))	0.025369	0.052067	-0.003879	134.4495	-0.265003	47.46007
	(0.01175)	(0.01964)	(0.01197)	(3726.46)	(0.07991)	(24.0639)
	[2.15822]	[2.65157]	[-0.32414]	[0.03608]	[-3.31614]	[1.97225]
D(DSR(-1))	2.60E-05	0.000226	-4.67E-05	8.728481	-0.000613	-0.443646
	(4.5E-05)	(7.5E-05)	(4.6E-05)	(14.2393)	(0.00031)	(0.09195)
	[0.57797]	[3.00600]	[-1.02094]	[0.61299]	[-2.00686]	[-4.82480]
D(DSR(-2))	3.33E-05	0.000100	-6.10E-05	17.10955	-0.000126	-0.154553
	(4.1E-05)	(6.9E-05)	(4.2E-05)	(13.0880)	(0.00028)	(0.08452)
	[0.80744]	[1.45634]	[-1.45117]	[1.30727]	[-0.44912]	[-1.82867]
C	-0.006719	0.001830	-0.012317	8031.975	-0.171523	-50.71554
	(0.08720)	(0.14568)	(0.08878)	(27645.3)	(0.59285)	(178.522)
	[-0.07705]	[0.01256]	[-0.13875]	[0.29054]	[-0.28932]	[-0.28409]
R-squared	0.246356	0.463840	0.586334	0.396480	0.342002	0.295094
Adj. R-squared	0.181041	0.417373	0.550483	0.344175	0.284976	0.234002
Sum sq. resids	186.7677	521.2210	193.5676	1.88E+13	8632.418	7.83E+08
S.E. equation	1.115849	1.864083	1.135980	353752.5	7.586135	2284.386
F-statistic	3.771775	9.982113	16.35475	7.580134	5.997261	4.830336
Log likelihood	-243.3658	-327.5232	-246.2983	-2320.711	-557.7058	-1493.741
Akaike AIC	3.138608	4.164917	3.174369	28.47208	6.972022	18.38708
Schwarz SC	3.403231	4.429539	3.438992	28.73671	7.236645	18.65171
Mean dependent	-0.005488	-0.002866	-0.005061	13512.16	-0.126768	-34.02152
S.D. dependent	1.233031	2.442138	1.694329	436822.9	8.971402	2610.092

Determinant resid covariance (dof adj.)	1.76E+20
Determinant resid covariance	1.03E+20
Log likelihood	-5174.976
Akaike information criterion	64.20702
Schwarz criterion	65.90817