IOSR Journal Of Humanities And Social Science (IOSR-JHSS)
Volume 20, Issue 5, Ver. II (May. 2015), PP 74-96
e-ISSN: 2279-0837, p-ISSN: 2279-0845.
www.iosrjournals.org

Causal Relationship between Stock Market Returns and Macroeconomic Variables in Nigeria

*Ali Umar Ahmad[1], Adam Abdullah[2], Zunaidah Sulong[3], Ahmad Tijjani Abdullahi[4]
Faculty of Economics & Management Sciences, University Sultan Zainal Abidin 21300 Kuala Terengganu, Malaysia
[4]Department of Economics Bayero University Kano, Nigeria

Abstract: *In Nigeria, the fundamental problems associated with the stock exchange market are associated with changes in macroeconomic variables as a result of macroeconomic shocks. Accordingly, this thesis provides an empirical investigation of the causal relationship between stock market returns and macroeconomic variables in order to enhance the ability of economic agents in the analysis of stock market performance in Nigeria using Autoregressive Distributive Lag (ARDL) and Vector Autoregressive Model (VAR). Annual time series data of six variables namely; broad money supply, nominal effective exchange rate, short term treasury bills rate, foreign direct investment, gross domestic per capita income, and gross domestic saving from 1984-2013 were employed to analysed the causal relationship between stock market returns and macroeconomic variables. The results from the Augmented Dickey-Fuller and Phillips-Perron tests of stationarity indicated that all the variables were non-stationary at level I (o) but stationary at first difference I (1). The Bound test procedure also revealed that the stock market returns and the macroeconomic variables were cointegrated and, thus, a long-run equilibrium relationship exists between them. Likewise, the Granger causality tests showed that some of the macroeconomic variables were having bidirectional causality with the stock market returns; while others have unidirectional causality. Furthermore, the impulse response function indicated that the impact of shocks in broad money supply, nominal effective exchange rate, gross domestic per capita income and short-term treasury bill rate on the stock market returns in this study was consistent with other stock market empirical results. The variance decomposition test indicated that the stock market returns can be explained by gross domestic saving and nominal effective exchange rate. As a result, Policy makers, financial institutions and private investors need to take the macroeconomic indicators into consideration when formulating financial and economic policies, diversification strategies, portfolio allocation and rebalancing.*

Keywords: *Stock market returns, macroeconomic variables, Autoregressive Distributive Lag (ARDL) and Vector Autoregressive Model (VAR).*

I. Introduction

Capital markets play a crucial function in the monetary intermediation of any economy of the world. A competent capital market can encourage economic growth and prosperity by stabilising the financial sector and providing an essential investment channel that contributes to attracting domestic and foreign capital. The stock market serves as a valuable tool for the mobilisation and allocation of savings among competing uses that are critical to the growth and efficiency of the economy (Unkoro and Uko, 2013). In addition, investors carefully assess the performance of stock markets by watching the composite market index, before investing funds. The market index gives a historical stock market performance, the yardstick for evaluating the performance of individual portfolios, and also gives investors the ability to forecast future trends in the market (Naik and Phadi, 2012).

Even though there are various empirical studies on the impact of macroeconomic fundamentals on stock market indices, most of these studies typically focused on industrialised economies and the impact of these macroeconomic variables on the stock market indices in less developed countries is less obvious. Specifically, how do these less-industrialised markets react to changes in its fundamental macroeconomic variables such as money supply, industrial production and inflation rate and crude oil price, is still a virgin area (Hosseini, 2011)

Over the past years, the Nigerian economy has been subjected to a chain of economic, political and social reforms and policies. Prior to a decade after independence, the country was agrarian, and the various regional governments then mainly accomplished food security. In 1961, the foundation of the Nigerian Stock Exchange (formally called Lagos Stock Exchange) advanced private capital investment for growth and development so as to expand the capital markets. Present and past scholars believed that the investment that

advanced economic growth and development require long-term funding, far longer than the period for which most savers are willing to give their funds (Ali, et,al (2015).

The Nigerian Stock Exchange (NSE) which began operation in 1961 with 19 securities has grown eventually. As at 1998, there are 264 securities recorded on the NSE, made up of 186 value securities and 78 debt/obligation securities. By 2008, the quantity of recorded securities has expanded to 301 securities made up of 213 value securities and 88 debts/obligation securities. Table 1 highlights the trends and patterns in the quantity of recorded securities on the Nigerian Stock exchange market. Table 2 shows the trends and pattern in the trading transaction in the Nigerian stock exchange. Between 1980 and 1987, there was barely any trading transaction on the equity market. Government and industrial loan stocks ruled the exchanges on the Nigerian stock exchange market Central Bank of Nigeria (2012). Table 2 demonstrates that the estimation of equity exchanged as an extent of aggregate estimation of all securities exchanged, equity exchanged as an extent of aggregate market capitalisation and equity exchanged as a proportion of GDP are all zero between 1971 and 1987. Nonetheless, since 1988 the estimation of value traded transaction has been expanding in the Nigerian stock exchange Central Bank of Nigeria (2012). The equity exchanged as an extent of aggregate estimation of all securities exchanged developed from 0.7348 in 1988 to 0.9988 in 1998 and to 0.9998 in 2013. Somewhere around 1988 and 2005, the equity market is still little in respect to the extent of the stock exchange market. The estimation of equity exchanged as an extent of aggregate market capitalization was 1.2923 in 1988 yet stumbled to 0.04371 in 1989. Since 1989, the estimation of equity exchanged as an extent of aggregate market capitalization has been fluctuating rising slightly to 1.6092 in 1998, expanding to 1.8371 in 2004 and rising to 4.0071 in 2005. On July 4, 2004, Central Bank of Nigeria proposed banking reforms is expanding the capitalization of Nigerian banks to N25 billion. At present consenting to the base capital necessity, N406.4 billion was raised by banks from the capital market, out of which N360 billion was confirmed and acknowledged by the CBN (Central Bank of Nigeria, 2005). The introduction of the 2004 bank capital prerequisites could have influenced quoted securities on the Nigerian stock exchange. The recapitalisation of the Nigerian banking industry and convergence of banking stocks into the Nigerian stock exchange market made the estimation of equity exchanged as an extent of aggregate markets capitalization to increment to 17.0 in 2013 (Olowe, 2009).

The main objectives of the present study are; to examine the causality between the macroeconomic variables and the stock market returns in Nigeria and to examine the extent of responsiveness of stock market returns to changes in macroeconomic variables in Nigeria. The study uses annual data from 1984 to 2013.

It is understood that the Understanding of this relationship by investors, as well as traders, will help them to allocate their portfolio and choose the best way for investment to enhance their return on getting the same risk that they previously had. Also, to make government/ policy makers to understand the significance of economic potential in the capital market so that to reform the market that will attract more foreign investors. Therefore, the findings of this study would increase the stock of knowledge in the field that hence, provide some meaningful insight to the practitioners and the policy makers in Nigerian stock exchange market.

This paper is organized in the following sections. First-section introduction of the study; Second-section empirical reviews of some selected literature; Third-section gives the theoretical justification and selection of variables and hence the model. In fourth step, the source of data and sample, and methodology used in the study are discussed.In The fifth section the empirical results and discussion will be reported. In the last step, the summary, conclusion and recommendations of the study is provided.

II. Review Of Empirical Studies

Considerable economic researches have been conducted in examining the relationship between the stock market and macroeconomic variables. Some of the more recent, major studies have been reviewed over the past 2-5 years, commencing with Hasanzadah and Kiavand (2012) examined the impact of macroeconomic variables such as gross domestic product, nominal effective exchange rate, money supply, gold coin price, and investment in housing sector on stock market index in Iran using quarterly data range from 1996:1 to 2008:1. They employed cointegration and vector error correction model (VECM) and found that Iran's stock market index is positively influenced by the growth rate of GDP, the money supply, and negatively affected by the gold price, the private sector investment in housing sector and the nominal effective exchange rate. Our study is an improvement on this research as we take a different study area and theoretical approach.

Berk and Aydogen (2012) examined the shocks of crude oil price variations on the Turkish stock market returns. They employed vector autoregression (VAR) model using Daily observations of Istanbul Stock Exchange National Index (ISE-100) returns and Brent crude oil prices for the period between 02/01/ 1990 and 1/11/ 2011. They also analysed the relationship between stock market returns and oil prices under global liquidity Conditions by incorporating a Chicago Board of Exchange's (CBOE) S&P 500 market volatility index (VIX), liquidity proxy variable, into the model. Their analysis found that Variance decomposition test results propose a little empirical evidence that crude oil price shocks have been reasonably estimated in the Turkish

stock market. Relatively, it was global liquidity forms that were found to report for the maximum amount of variation in the stock market returns.

Osisanwa and Atanda (2012) examined the determinants of the stock market returns in Nigeria by employing the OLS techniques using annual data for the period between 1984 and 2010. Their variables were consumer price index, exchange rate, broad money, interest rate and real per capital income. The findings showed that exchange rate, interest rate, money supply and previous stock return levels are the primary determinants of stock returns in Nigeria. Critical analysis of this study shows that the method used for the analysis is not popular and widely used. In time series analysis, the ordinary least squares regression results might provide a spurious regression if the time series are non-stationary. Again, consumer price index is not accurate index for inflation; this is because the index takes the price of fixed representative basket and does not consider the price of investment.

Shoil et al, (2012) employed Johansen co-integration technique to examine the response of stock prices to macroeconomic variables i.e. consumer price index, money supply, industrial production index, real effective three months treasury bills rate, and exchange rate on three stock indices i.e. ISE10 index, LSE25 index, and KSE100 index relating three stock exchanges namely Lahore Stock Exchange, Islamabad Stock Exchange, and Karachi Stock Exchange respectively, using Monthly data range from November 1991 to June 2008. They showed that IP has long run impact on stock prices in all the three market. EX rate is positively affecting all indices except ISE10 index. CPI also is positively related to stock return at Karachi stock market, while it is negatively related to the rest of the two markets. The M2 affects stock return negatively while TBR had a mixed effect.

Hussin, et, al (2012) employed vector autoregressive (VAR) model and examined the relationship between the development of Islamic stock market and macroeconomic variables, using monthly data from April 1999 to October 2007. The variables involved in this study were Consumer Production Index (CPI), Industrial Production Index (IPI), Aggregate Money Supply (M3), Kuala Lumpur Syariah Index (KLSI), and Islamic Inter Bank Rate. Their findings confirmed that Islamic stock prices are co-integrated with the chosen macroeconomic variables in which stock price is correlated positively and significantly with CPI & IPI but correlated negatively and significantly with MYR & M2, IIR and Exchange Rate of Malaysian Ringgit-United States Dollar.

Hussain, et, al, (2012) employed augmented dickey-fuller (ADF) and Kwiatkowski-Phillips-shin (KPSS) unit root test, Johanson co-integration test, vector correction model (VECM) and Granger causality test to investigate the impact of macroeconomic variables such as exchange rate, foreign exchange reserve, industrial production index, interest rate, import, money supply, wholesale price index and export on stock price using monthly data range from January 2001 to December 2010. FER, IR, M, and WPI showed a positive and significance relationship between stock prices while ER and X indicated a negative and significant relationship with stock prices. The first error correction term was significant and showed short term adjustments towards the equilibrium path. The result of Granger causality showed the WPI and MS have bi-directional relation, while FER, ER, and M have unidirectional relationship with the stock price but IR, IPI, and X showed not any causal relationship. The major drawback of this study is that no theoretical bases have been put to show a link between stock price index/return and macroeconomic variables. This issue will be addressed by our study.

Osamwonyi, et al. (2012) examine the relationship between macroeconomic variables and the stock market index in Nigeria using vector error correction model (VECM) for the period 1975-2005. The macroeconomic variables were interest rates, inflation rates, exchange rates, fiscal deposit, gross domestic product, and money supply. They found that macroeconomic variables influence the stock market in Nigeria. This research has the shortcoming of having a year of analysis not up-to-date. They were supposed to extend their data from 2005 to 2010 or 2011, to take financial crises into consideration so as to be able to predict fully what would happen in the stock market in 2012 or so.

Kuwornu (2012) examines the effect of macroeconomic fundamentals on the Ghanaian stock market returns using monthly data from January 1992 to December, 2008. Macroeconomic variables used in this study are 91 day Treasury bill rate (proxy for interest rate), crude oil price, consumer price index (proxy for inflation) and exchange rate. The study used the Johansen Multivariate Cointegration Procedure. He found that cointegration exists between them and indicating long run relationship.

Aduda et al., (2012) examine the determinants of development in the Nairobi Stock Exchange for the period 2005-2009. Their variables were private capital flows, banking sector development, stock market liquidity, income level, investment and savings, macroeconomic stability, institutional quality. The regression analysis accounted no relationship between macroeconomic stability and stock market development, private capital flows and inflation. The results also show that bureaucratic quality, Institutional quality represented by law and order, corruption index and democratic accountability are important determinants of the stock market development because they improve the viability of external finance.

Naik and Phadi (2012) investigated the relationships between five macroeconomic variables and Indian stock market Index (BSE Sensex), namely, wholesale price index, industrial production index, exchange rates,

money supply, and treasury bills rates over the period 1994:04–2011:06. They used Johansen's cointegration and vector error correction model (VECM). The analysis showed that the stock market index and macroeconomic variables are cointegrated and, therefore, a long-run equilibrium association exists between them. It is further examined that the stock prices was positively related to the industrial production and money supply but negatively related to the inflation. The short-term interest rate and exchange rate were found to be insignificant in influencing the stock prices. In the sense of Granger causality, macroeconomic indicators cause the stock prices in the long-run but not in the short-run. Bi-directional causality existed among stock prices and industrial production whereas, uni-directional causality from stock price to inflation, money supply to stock price, and interest rates to stock prices were found.

Zakaria, et al. (2012) examined the relationship between selected macroeconomic volatilities, and stock market returns volatility in Malaysia. The variables were inflation, GDP, money supply and exchange rate, interest rates using monthly data from January 2000 to June 2012. They employed generalised autoregressive conditional heteroskedasticity (GARCH) and vector autoregressive (VAR) model and found little support on the subsistence of the relationship between macroeconomic volatilities and stock market volatility. Only volatility in inflation was shown to be Granger caused the stock market volatility, whereas out of five macroeconomic factors, only volatility in interest rates was shown Granger caused the stock market volatility. The volatilities of macroeconomic factors as a group as well does not Granger cause volatility in the stock market returns. The result from regression analysis confirms that only money supply volatility is significantly correlated with stock market volatility. The volatilities of macroeconomic factors as a group are also insignificantly correlated to stock market volatility.

Babayemi, et, al, (2013) examined the empirical relationship between macroeconomic variables and the stock market using Panel Data Analysis Approach based on evidence from African stock markets for the period of 1988-2011. Their independent variables were external debt, money supply, and foreign direct investment. Their result showed that in the long-run FDI and EX debt exerted a positive impact on the African stock markets but the negative impact on money supply. Our research will improve on this study by employing autoregressive distributed lag (ARDL) model, variance decomposition (VDCs) and impulse response functions (IRFs) and covering period from 1984-2013 and the country(Nigeria).

Basci & Karaca (2013) examined the relationship between a set of four macroeconomic variables and the stock market index using vector autoregressive (VAR) model for the period from January 1996 to October 2011. The variables were exchange rate, gold, import, and ISE 100 index. They found that shares response firstly decreased and after the third period increase and then again increased. The variance decomposition shows that especially the second default of exchange was explained 31% by share indices. This research will be different in terms of study area as it is going to be conducted in Nigeria, and also variables such as gross domestic savings, foreign direct investment, short-term Treasury bills, money supply, and nominal exchange rate. It will also differ from the methodology, timeframe and theoretical approach.

Bhanu (2013) examined the impact of selected macroeconomic variables on stock, gold, silver returns by using linear regression technique and monthly data from January 1993 to December 2012. His variables were inflation, gross domestic product, IIP, and money supply. He found that an average 55% to 64% of the sub-period show positive returns for stocks, gold, and silver. Stock returns are significantly influenced by inflation, GDP, USS-INR and JPY-INR. Gold returns are significantly affected by money supply, and lastly silver returns are significantly influenced by money and EUR-INR. The shortcoming of this research is in the methodology and will be taken care of in our study by using an autoregressive distributed lag (ARDL) model, variance decomposition (VDCs) and impulse response functions (IRFs) to show the shocks of stock market returns on macroeconomic variables, and covering period from 1984-2013.

Dos Santos et al. (2013) proposed to investigate the relation between the Brazilian stock market and macroeconomic variables from January of 2001 to December of 2011, by using a Vector Error Correction model (VEC).variables were exchange rate, interest rate, industrial production, and consumer price index. They revealed that Ibovespa responds negatively to impulses in the interest rate differential, the variations in the Selic rate and the exchange rate, and positively to the price index IPCA. In addition, an important result archived from the decomposition analysis of the variance proved that the interest rate differential, which reflects the perception of risk by the foreign investor, explains a significant variation in the Ibovespa index in the period.

Issahaku, et, al (2013) study the existence of causality between stock returns and macroeconomic factors in Ghana using monthly data from 1995 t0 2010. Their variables were interest rate, money supply, exchange rate, foreign direct investment, consumer price index. They employ Vector error correction model (VECM) and study shows that a significant long-run relationship exists between stock returns, money supply, Foreign Direct Investment (FDI) and inflation. In the short-run, a significant relationship exists between the stock market returns and macroeconomic factors such as inflation, interest rate and money supply. In the short-run, the relationship between FDI and stock returns is only invented. Lastly, a causal link running from

exchange rate, inflation to stock returns has been established. Then also, a causal link running from interest rate and FDI, stock returns to the money supply, has also been disclosed.

Attari and Saffar (2013) investigate the relationship between economic factors and the stock market by employing the Exponential Generalized Autoregressive Conditional Heteroskedasticity (EGARCH). The macroeconomic factors include gross domestic product, inflation, and interest rate. The monthly data of the indicators for the period is from December 1991 to August 2012 is used for analysis. They found that macroeconomic variables have significant influence on the stock prices. The stock prices have much shock on the economy of the country and are regarded as the greatest indicators for future forecast of the market and economy as well.

Haroon, et, al, (2013) investigated the impact of macroeconomic variables on share price behaviour of Karachi stock exchange from July 2001 to June 2010 using correlation and regression technique. The macroeconomic variables were Treasury bill rate, sensitive price index (proxy for inflation), wholesale price index, consumer price index. Their analysis showed that there was a significant relationship between macroeconomic variables and KSE 100 price index. The gap created by this study is in the use of CPI as a measure of inflation and the method of analysis. And these weaknesses are handled in our research by our methodology and choice of variables.

Rafique, et, al (2013) employed multiple regression models and examined the impact of macroeconomic variables on the stock market index in Pakistan for the period of 1991-2010. These macroeconomic variables include GDP per capita, gross domestic savings, inflation, and discount rate. Their analysis revealed that GDP per capita and gross domestic savings have a significant positive impact on KSE index while discount rate and inflation causes a significant but negative shock on KSE index. The explanatory variables under their study accounted 98% variation in KSE index. A limitation of this study is in the method used for the analysis that is not popular and widely used because of the threat of a spurious regression. Again, the study has no theoretical basis to underpin its finding. Hence, our research will fill those gaps.

Alam (2013) examines the role of macroeconomic variables and features of firm in explaining stock market return in four large South East Asian (SEA) countries, namely Indonesia, Malaysia, Singapore and Thailand, using monthly time series data from July 2003 to June 2011. The seven macroeconomic variables were changes in money supply (M1 and M2), growth rate of industrial production, change in exchange rate, change in consumer price index as the proxy for inflation, short-term and long-term interest rates, change in term structure, and growth rate of crude oil price for the analysis. Their empirical findings reveal that the significance relationship between portfolio stock returns and macroeconomic variables were not reliable for both sub-periods. The result is highly dependent on country, sub-period and portfolio.

Naseri and Masih (2013) employed Vector Error Correction, Long-run Structural Modelling and Variance Decomposition technique to explore the causality between Macroeconomic Variables and Islamic Stock Market in Malaysia, using Monthly data starting from November 2006 to September 2013. Their variables used under study were exchange rate, consumer price and money supply. They found that cointegration exists between the macroeconomic variables and the Islamic stock market, and the chosen Macroeconomic Variables had influences on the Islamic Stock Market in Malaysia.

Nkoro, et, al, (2013) employed GARCH-Model and examined the impact of domestic macroeconomic variables on the Nigerian stock market returns. The macroeconomic variables were inflation rate, government expenditure, and foreign exchange rate, index of manufacturing output, broad money supply and minimum rediscount rate between 1985 and 2007. They found that the inflation rate, index of manufacturing output, and interest rate exerted strong significance influence on stock return. Inflation and government expenditure have a positive significance impact while industrial manufacturing output and interest rate have negative significance influence on stock return in Nigeria. Money supply and foreign exchange rate exerted no significant influence. Critically looking at this research, we can see that the year of analysis is not up-to-date; they were supposed to extend their data to 2011 or 2012, to take financial crises into consideration. This was because the 2007 data cannot fully predict what would happen in the stock market in 2013. Again, the GARCH-Model is not reliable model for analysing time series data because it fails to show how the variables influence one another.

Naik (2013) investigated the shock of macroeconomic variables on the stock market behaviour considering Indian data. The five (5) macroeconomic variables were industrial production index, inflation, money supply, short-term interest rates and the stock market index over the period 1994:4-2011:04. Vector error correction model and Johansen cointegration were applied to discover the long-run equilibrium association among the stock market index and macroeconomic variables. He revealed that macroeconomic indicators and the stock market index were cointegrated and also long-run association exists among them. It also shows that the stock price is positively related to the money supply and industrial production index, but negatively related to inflation. The interest rate and exchange rate were found to be insignificant. Critical analysis of this study shows that they took short periods in their study that is very difficult to predict and explain the situation of the market. They were supposed to use at least 12 to 20 years since they used quarterly data.

Şükrüoğlu, et, al, (2013) examined the impacts of macroeconomic variables on the stock market development in certain European countries using Dynamic Panel for the period 1995-2011. Their independent variables were Liquid liabilities (LL), Gross Domestic product (GDP), Stocks traded % of GDP (ST) as liquidity ratio, Stocks traded % of market capitalization (SMT) as turnover ratio, Cash surplus (CS) as budget balance, Gross domestic saving (GDS) as savings rate and Inflation consumer prices (CPI). They found that the macroeconomic variables have an effect on the stock market development. INF and SMR have negative effects while GDS and GDP have positive effects on stock development.

Abdullah, et al. (2014) applied numerous time-series techniques and a new method Wavelet analysis to Investigates the causality between Stock Market Index and Macroeconomic Variables in Malaysia. Variables were consumer price index, exchange rate, short-term interest rate, export, government bond yield and Kuala Lumpur Composite Index for the period from January 1996 to September 2013. Their findings showed that government bond, short-term interest rate and KLC are exogenous variables; in particular, the short-term interest rate is the most leading variables.

Hunjra, et, al (2014) applied Cointegration and Granger Causality to examine the impact of Macroeconomic factors namely; exchange rate, inflation rate, GDP, and interest rate on Stock price in Pakistan, using monthly data from 1st January, 2001 to 31st December, 2011. Their findings revealed that in the short-run there is no relationship between the stock price and the macroeconomic variables. While, in the long-run findings showed a strong relationship between the stock prices and the macroeconomic variables.

Kalyanaraman and Al Tuwajri (2014) investigated the Stock Prices and Macroeconomic forces such as industrial output, exchange rate, money supply, oil prices, and consumer price index in Saudi Arabia, using monthly data from January 1994 to June 2013. They applied Johansen cointegration test and Vector error correction model for the analysis. The cointegration test indicated the existence of long-run relationship between the stock prices and the macroeconomic variables. Vector error correction model indicated the long-run causality from the independent variables to the dependent variables. Impulse response functions showed that industrial output shocks push up stock prices while consumer price index shocks pull it down.

Kibria, et, al (2014) examine the impact of Macroeconomic variables such as GDP per capita, inflation, GDP savings, exchange rate, and money supply on the stock market returns in Pakistan. They used Correlation Analysis, Descriptive Analysis, Regression analysis and Granger causality Test for the period from 1991 to 2013. They revealed that the exchange rate and GDP savings does the unidirectional cause Money supply and GDP savings unidirectional Granger cause the stock market returns in Pakistan. The findings also revealed that exchange rate, inflation, GDP savings, money supply, and GDP per capita have a significant positive impact on the stock market returns.

Khan, S. M. (2014) study the relationships between KSE-100 and the macroeconomic factors namely; gross domestic product, exchange rate, interest rate and inflation in Pakistan over the sampling period from 1992 to 2011. They used Multiple Regression and Pearson's correlation and found that gross domestic product, exchange rate, and inflation were positively related to the stock prices. While negative impact found on the stock prices index of the interest rate. They also showed that 80% variations in the independent variables were explained the stock prices in Pakistan.

Ibrahim and Musah (2014) examined the impact of macroeconomic variables namely; exchange rate, inflation, broad money supply, index of industrial production and interest rate on the Stock Market Returns in Ghana by employing the Vector error correction model and the Johansen multivariate cointegration approach. They used monthly data ranging from September, 2000 to September, 2010. The findings showed that long-run relationship exists between the stock market returns and the selected macroeconomic fundamentals. They also found that inflation and money supply has significant positive relations between the stock prices but negatively related to the interest rate, exchange rate and industrial production.

Mohanamani and Sivagnanasithi (2014) examine the shock of macroeconomic factors on the behaviour of Indian Stock market. Monthly data for six macroeconomic factors, that is, money supply, Call Money Rate, Foreign Institutional Investment, Exchange rate between Indian Rupees and US dollar, Industrial productivity, wholesale price index, and BSE Sensex over the period 2006:04 to 2013:07 has been taken for the study. Unit root test, Pearson's correlation matrix, and Granger Causality tests have been applied to test the relationship. The analysis disclosed that Indian stock market is positively related to the money supply, wholesale price index, and industrial productivity. The inflow of foreign institutional investment and exchange rate is found to be insignificant to Indian Stock market. In the Granger Causality sense, industrial productivity and wholesale price index influence the stock market to a large extent.

Sikalao-lekobane, et, al, (2014) investigate a set of macroeconomic fundamentals influence on domestic stock market in emerging market using quarterly data range from 1998 to 2012. The selected macroeconomic variables were 10 years US government bond yield, long and short term interest rates, gross domestic product, money supply, diamond price index, inflation, exchange rate, and foreign reserves, and US share price index. They used vector error correction and disclosed that the stock price and macroeconomic

variables are cointegrated; thus long run equilibrium relationships existed between them. When we critically look at this work, we observe that they took short periods in their study that is very difficult to predict and explain the situation of the market. They were supposed to use at least 10 to 15 years since they used quarterly data. It is clear that our research is an improvement in this respect.

Ray and Sarkar (2014) examined the dynamic relation between the Indian stock market and the macroeconomic factors namely; money supply, 91-day Treasury bills, long-term Government bonds, exchange rate, industrial production, and wholesale price index using quarterly data over the period from 1991:01 to 2008:04. They employed the Johansen cointegration test, Vector error correction model and the innovation analysis. Their findings revealed that the long-run stock market is positively related to exchange rate and output, and negatively related to short-term and long-term interest rate, inflation and money supply. The results of the innovation analysis and causality explain that the Indian stock market influences the industrial activities and the market are expected to be more sensitive to the shocks of itself over the projected period of the study.

Samontaray, et, al, (2014) examine the shock of different macroeconomic factors on the returns of the Saudi stock market using monthly data from December 2003 to December 2013. The variables taken were Price Earnings Ratio, Saudi export and oil WTI. They used Correlation and regression model for the analysis. Correlation analysis revealed that the PE Ratio and Saudi Exports were found to be highly correlated with TASI at 1% level of significance, but TASI and Oil WTI are significantly correlated at 5% level. Step-wise regression analysis of the data disclosed that the multiple regression models are significant at 1% level, and the PE Ratio was the most key determinant of TASI followed by Saudi Exports and Oil WTI. Additionally, the three independent indicators explain about 93% of the variation in the TASI previous Price.

Subburayan and Srinivasan (2014) used monthly data for the period from 1st January, 2004 to 31st December, 2013 to investigate the effects of macroeconomic indicators on CNX Bankex return in the Indian stock market. They key indicators used in the study were interest rate, inflation and exchange rate. They employed Augmented Dickey-Fuller, Cointegration test, Granger causality test and Regression. They found that interest rate and exchange has significant positive influence on the bank stock returns. They also found that there is no causal relationship between interest rate and CNX Bankex, inflation and CNX Bankex. But, Bank stock exerts unidirectional causal relations on the exchange rate.

Mutuku and Ng'eny (2015) investigated the dynamic relationship between macroeconomic variables and the stock prices in Kenya using quarterly data ranging from 1997Q1 to 2010Q4. They used Vector Autoregressive Model and Vector error correction Model. The variables used were consumer price index, nominal gross domestic product, and nominal exchange rate and Treasury bond rate. They found positive relationships between the stock price and the nominal gross domestic product, nominal exchange rate, and the Treasury bill rate. However, negative relationships were found in the study between the stock prices and consumer price index.

In conclusion, the various empirical studies reviewed here show mixed results and conclusions. In some studies, strong positive relationships are found to exist between stock returns and macroeconomic fundamentals and in some the relationship is a bit weak. Other researches report different results. This mixture of findings and conclusions emanates from differences in methodology, variables used and the period of study. There is also disparity in study area that fundamentally affects the behaviour of the macroeconomic variables. The magnum opus of our research, therefore, will be on these four fronts. It will bridge the gap created by some of the reviewed studies by employing a different methodology and study area. This is because where study areas liken, methodology and variables used differ. Again, the use of 1984-2013 study periods is a great improvement in the literature. Finally, the choice of the variables and the use of their nominal values will prove to be significant stride in the literature of the stock market and macroeconomic variables relationship.

III. Financial Economic Theory

One method of relating stock market returns and macroeconomics variables is through arbitrage pricing theory (APT) (Ross, 1976), where various risk factors can explain asset returns. Although previous studies on arbitrage pricing (APT) focused on entity security returns, it can also be adopted in a cumulative stock market framework, where a transform in a given macroeconomic variable might be seen as reflecting a change in a fundamental general risk factor influencing the future returns. Most of the observed studies on APT theory, concerning the condition of the macro economy to stock market returns, are categorized by modeling a short run association between the stock price and macroeconomic variables in terms of first diversity, assuming trend stationarity.

Another, but not consistent approach is the present-value model (PVM) or discounted cash flow. Given the macroeconomic factors, this model discounts the stock price to future expected cash flows at an applicable discount rate for these cash flows. The development of the present value model implies that it can be used to focus on the long run relationship between the macroeconomic variables and stock market, the association between stock prices, earnings and expected dividends. Campbell and Shiller (1988) discovered that

a long term moving average of earnings assessment forecast dividends and the ratio of this earning variable to existing stock price is dominant in predicting stock returns over a number of years. They concluded that this evidence made stock prices and returns altogether too unstable to reply on a simple present value model.

Nevertheless, relating to stock price behaviour, there are five schools of thought. These are the technical school, the fundamentalist schools, the random walk hypothesis school, macroeconomic hypothesis school and the behavioural school of finance.

The Fundamentalist theory**:** The fundamentalists believe that the assessment of the corporation's stock is unwavering by expectations concerning future earnings and by the rate at which those earnings are discounted. The fundamentalists pertain present value principles to the valuation of corporate stock, by means of earnings, dividends, interest rate and asset to ascertain the price of stock.

The technical school opposes the fundamentalists' arguments and declares that stock price behaviour can be predicted by the use of financial or economic data. They yield that stock prices tend to pursue particular pattern, and each price is influenced by previous prices and that consecutive prices depend on each other. According to Smith (1990), technical analysts keep themselves in studying the transformation in market prices, the investors' attitude and volume of trading. Both the "fundamental" and "technical" analyses have been faced by scholars who pledge to the random-walk hypothesis, which perceive stock price engagements in terms of a probability allocation of different possible outcome.

The random-walk hypothesis is the foundation for efficient market assumption that investors regulate quickly determine the value of securities to reflect the effect and dissemination of new information. Advocates of the efficient capital market hypothesis disagree that stock prices are fundamentally random and, as a result, there is no possibility for profitable speculation in the stock exchange. An exciting feature of the random walk is the perseverance of random shocks. Scholars have conceded test of the random-walk hypothesis like Moore (1962) and Fama (1965). These researchers separately experienced the statistical randomness in a row changes in stock prices. Their findings explained irrelevant departures from randomness and were both insufficient and inconclusive.

The behavioural school of finance clings to the assertion that market might fail to imitate economic fundamentals under three circumstances. When all these three occur, the theory foresees that pricing prejudice in financial markets can be both persistent and significant. The first behavioural intervention is irrational behaviour. It embraces that investors behave irrationally when they don't accurately process all the available information while figuring their prospects of the company's future performance. The second is efficient patterns of behaviour, which embrace that even if individual investors determined to sell or buy without consulting economic fundamentals, the impact on share prices would be narrow. Lastly, limits to arbitrage in financial markets determine that when investors consider that the company's recent strong performance alone is a signal of expectations performance; they may start requesting for shares and oblige at the price. Several investors might expect a company that shocks the market in one-quarter to go on beyond expectations (Business Day, 2009).

The standard means of using factor analysis approach to establishing the factors affecting asset returns, some scholars have measured macroeconomic factors to describe stock performance. Sweeney and Warga (1986) believe that changes in interest rate are linked with the risk premium. They interpreted that the observations to be an indicator of changes in the inflation rate, given the result of Fama (1977) that changes in the rate of inflation are fully revealed in the interest rates (Emenuga, 1994).

The macroeconomic approach attempts to observe the sensitivity of stock returns to varies in macroeconomic variables. The approach speculates that stock prices are inclined to changes in interest rate, money supply, inflation and other macroeconomic indicators. It uses a general equilibrium approach, straining the interrelations between sectors as central to the perceptive of the determination and co-movement of macroeconomic time series, based on the economic logic, which advocates that everything does depend on everything else.

IV. Methodology

The research attempts to examine the degree of responsiveness of stock market returns to shocks in macroeconomic variables in Nigeria. The time series data used in this research is secondary data, which is sourced from statistical bulletin of Central Bank of Nigeria Annual Report, Central Bank of Nigeria (CBN), United Nation Statistical Bulletin, World Bank statistical database, Nigerian Stock Exchange (NSE), and National Bureau of Statistics. Amongst many macroeconomic variables, six variables are selected based on their theoretical importance, performance measures of the economy, and also their uses and findings in the previous empirical literature. These are: the level of real economic activity proxied by the Gross domestic per capita; gross domestic saving; foreign direct investment; Money supply measured by broad money supplyy M_2; short-term Treasury bill; and nominal effective exchange rate, using 1984-2013. The period is adopted because of the non-availability of data on All Share Index (ASI) before 1984. The share price index was first publicly available

in the Nigerian Stock Exchange Market in 1985, with the value of 1984 as a base year. The period also adopted to cover the eras of different economic programmes in Nigeria, like the Pre Structural Adjustment Programme (SAP), Structural Adjustment Programme (SAP), Post-Structural Adjustment Programme (Post-SAP). The Nigerian economy has experienced considerable changes in its macroeconomic aggregates in the recent past. The initiation of the Structural Adjustment Programme (SAP) in 1986 came with essential economic reforms [a major aspect was the far-reaching liberalization of the various sectors of the economy]. Similarly, the transition from a military to civilian rule in 1999 witnessed various programmes of privatization and commercialization, and deregulation with implications for stock market index (Ifuero & Esther, 2012).

Table 1Description of Variables

Acronym	Construction of Variables	Data Source
ASI	Natural logarithms of the index of market value weighted average of the month-end closing prices listed in the Nigerian Stock Market.	Nigerian Stock Exchange Market (NSE)
GDPI	Natural logarithm of the Gross domestic per capita income	World Bank Development Indicator Database
GDS	Natural logarithm of the Gross domestic savings	World Bank Development Indicator Database
FDI	Natural logarithm of the Foreign direct investment	World Bank Development Indicator Database
M_2	Natural logarithm of Broad Money Supply	World Bank Development Indicator Database
NEER	Natural logarithm of nominal effective exchange rate of the Nigerian Currency	United Nation statistical bulletin
STBR	Monthly average of the 91-day Government of Nigeria treasury bills	Central Bank of Nigeria (CBN)

4.1 Variables Measurement And Priory Expectations

Stock market returns (SMR): The Nigerian Stock Exchange Market All Share Index was used as a proxy for Stock Market Returns. All Share Index (ASI) it is an indicator of the stock market which measures the overall performance of the market and specified as the dependent variables.

Gross domestic per capita (PI): it is the average income of the people of the country in a particular year. Per capital refers to measure the standard of living of people in the country. It is an indicator of financial, economic condition. The expected sign of the per capita income in stock market returns is positive. The per capita income US dollars is used as a proxy for per capita income and the data sourced from the World Bank development database.

Gross Domestic Savings (GDS): Gross Domestic Savings accelerate economic growth through boosting Stock market. It also develops investment and raises the capacity of that investment (Yartey, 2008). Liu & Garcia (1999) oppose that heavy domestic savings in the country results in higher quantity of capital inflows through the stock markets. Muhammad (2013) found a positive significant relationship between Domestic Savings and stock market returns. Gross domestic savings (current US$) is used as a proxy for Gross Domestic Savings (GDS) and sourced from the World Bank Development Indicator database. We expect a positive impact on Domestic Savings (GDS) on Stock Market Returns.

Foreign Direct Investment (FDI): FDI is an important source of stock market returns (SMR).It can also play its task in raising domestic savings in the country through enhancement of technology transfer and creation job opportunities (Singh, 1997). It would be complex to acquire such a great investment through the country's domestic savings without foreign direct investment. Haruna (2013) found positive and statistically strong relationship between FDI and stock market returns. Foreign direct investment net inflows in reporting (current US$) is used as a proxy for FDI and sourced from the World Bank Development Indicator Database.

Nominal Effective Exchange Rate (NEER): The Stock prices and nominal effective exchange rate relationship (NEER) is very vital because a change in exchange rate may result in also a change in Stock Market Prices because when the currency of a country is weak then it less likely that the foreign investors will invest in that country due to currency risk. The profitability and performance of companies and industries that are the main profound or importers users of imports are significantly affected by the exchange rate of one country's currency against foremost currencies of the world (Osamwonyi, 2003). In the country, that an import dominated; depreciation of the currency will have an unfavourable shock on a domestic stock market. And if the nation's currency is depreciating against a foremost currency, the manufactured goods become more costly. Consequently, if the demand for these goods and services is elastic, the quantity of import would raise, which in

turn, causes lesser cash flows, profits and the stock price of the domestic industries and companies (Nkoro, 2013). Robert (2008), Ibrahim (2011), Pramod Kumar Naik (2013), Onneetse (2014) found a negative sign and that a devaluation of the domestic currency has an indirect impact on the stock market returns. Contrarily, Nadeem (2013), Nkoro (2013), found a positive sign and that a devaluation of the domestic currency has a direct impact on the stock market returns. Thus, in this study nominal exchange rate in the local currency per US$ is used as a proxy for Nominal Exchange Rate and sourced from the United Nation Statistical Bulletin. The research expects positive sign.

Broad money supply is a proxy for supply of money (M2): Broad money supply affects the overall economic activities in any country. It control has been the principal role of the fundamental monetary authority of a given economy (Osamwonyi 2003). As classified by Kevin (2000) the broad money supply is a leading indicator. Increase in supply of money leads to rises in liquidity that eventually results in ascendant movement of stock prices. Sohail (2009), Akbar (2012), and Maryam (2012) found a positive sign. Contrarily, oaikhenan and udegbunam (2002) observed that there are concord of analysis in this view, that monetary growth, except accompanied by growth in output of the commodities, leads to inflationary spiral in the economy, therefore as investor diversify their portfolio assets away from financial assets to real assets, this force resulted in stock price to falls. This gauge is often adopted by investors to hedge against the erosive effect of inflation on financial assets. Chancharat, Valadkhani, and Havie (2007), in their study, "impact of macroeconomic factors on stock returns in Thailand", found that money supply have no impact on stock returns. Also, Pearce and Roley (1983) and, Serletis (1993) examine the relationship between money growth and stock returns and found that monetary variables and stock returns do not cointegrate. This has led to diverse results. This study used Broad Money supply growth and was sourced from the World Bank Development Indicator Database.
Short Term Treasury Bills Rate is a proxy of interest rate in the study (TBR): Interest rate varies with default risk, time, and marginal productivity of capital (Chandra 2004). Increasing or decreasing of interest encourages substation between speculative, market instrument, and stock market. Hashemzadeh and Taylor (1988) found that an increment of interest rate motivates a potential investor to transform the structure of the portfolio in favour of bond. Beltratti and Shiller (1992) support a positive relationship by arguing that the change in interest rates could carry information about certain changes in future fundamentals such as dividend. Barsky (1989) explains the positive relationship between interest rates and stock prices in terms of a change in the risk premium. In disparity, Chen, Roll and Ross (1986), Beenstock and Chan (1988), Fifield et al. (2002) and, Chandra (2004) provide evidence on the relationship between interest rates and stock returns. The regime of high-interest rate leads to the high rate of borrowing and also reduces the economic activities. This also affects corporate profit, future cash flow of business and dividend. They agree to that an increase in interest rate lower corporate profitability and also lead to an increase in the discount rate applied to equity investors; both of which have an adverse impact on stock prices, and vice visa. They concluded that interest rates are expected to be negatively related to market returns. The data was sourced from the Statistical Bulletin of the Central Bank of Nigeria (CBN).

4.2 The Unit Root Test

Standard vector autoregressive procedures require that the underlying stochastic processes are stationary (that is, invariant with respect to time). If they are not stationary, the F-statistics on which the significance of the regression estimates is based will be biased. Two standard procedures used to test for stationarity are an augmented Dickey-Fuller test (Dickey and Fuller, 1979) and Philips-Perron (1988). Based on these tests, we estimate the model in first difference form over the entire sample period. Variables are expressed in logs, so that first differences represent percentage changes.
The test is conducted by adding the lagged values of the dependent variables ΔX_t as given in equation (1) below:

$$\Delta X_t = \beta_0 + \beta_1 t + \delta X_{t-1} + \sum_{i=0}^{k} \propto_i \Delta X_{t-1} + \varepsilon_t \dots\dots\dots\dots\dots\dots (1)$$

Where: ε_t is a pure white noise error term and $\Delta X_{t-1} = (X_{t-1} - X_{t-2})$, $\Delta X_{t-2} = (X_{t-2} - X_{t-3})$, and so on, and t is the

Time or trend variable while k is the lag length, and X in our case represents SPI, NGDP, FDI, nominal effective exchange rate, Money Supply or short-term Treasury bill as the case may be. The null hypothesis is that $\delta = 0$; that is; there is unit-root. Thus, the time series is non-stationary. The alternative hypothesis is that δ is less than zero; that is; the time series is stationary.

4.3 The Bound Test

The study analyses the long-run and short-run cointegration relationship using an ARDL testing approach to cointegration. Pesaran & Pesaran (1997), Pesaran & Shin (1999) and Pesaran et al. (2001) consecutively build up this approach and find this method to be more proficient than other techniques. There are a number of relative advantages to the ARDL that make it more useful than others. Firstly, the ARDL is very flexible in relation to a small sample size such as the current study. The method allows for the integration of the variables regardless of their order and whether they are stationary at I(0) or I(1). Secondly, the ARDL determines a dynamic unrestricted error model (UECM) through a linear transformation. The UECM integrates the short-run dynamics with the long-run equilibrium without losing any information over time. The following are the formulae for the ARDL approach to cointegration of the variables:

ASIt = f (GDPIt, GDSt, FDIt, NEERt, M_2t, TBRt)…… (2)

Where ASI is the proxied of stock returns, GDPIt is Gross Domestic Per Capita, GDSt is Gross Domestic Saving, FDIt is foreign direct investment, NEERt is the nominal effective exchange rate, M_2t is the broad money supply, and TBRt is the short term treasury bills rate.

The model can be restated as:

$$\Delta lnasi_t = \alpha_1 + \sum_{i=0}^{n} \beta_1 \Delta lnasi_{t-i} + \sum_{i=0}^{n} \beta_2 \Delta lnpi_{t-i} + \sum_{i=0}^{n} \beta_3 \Delta lngds_{t-i} + \sum_{i=o}^{n} \beta_4 \Delta lnfdi_{t-i} + \sum_{i=0}^{n} \beta_5 \Delta lnneer_{t-i} + \sum_{i=0}^{n} \beta_6 \Delta lnm2_{t-i} + \sum_{i=0}^{n} \beta_7 \Delta lntbr_{t-i} + \theta_1 lnasi_{t-1} + \theta_2 lnpi_{t-1} + \theta_3 lngds_{t-1} + \theta_4 lnfdi_{t-1} + \theta_5 Ylnneer_{t-1} + \theta_6 lnm2_{t-1} + \theta_7 lntbr_{t-1} + \varepsilon_{1t} \quad \ldots\ldots\ldots\ldots\ldots\ldots (3)$$

$$\Delta lnpi_t = \alpha_2 + \sum_{i=0}^{n} \beta_1 \Delta lnpi_{t-i} + \sum_{i=0}^{n} \beta_2 \Delta lnasi_{t-i} + \sum_{i=0}^{n} \beta_3 \Delta lngds_{t-i} + \sum_{i=0}^{n} \beta_4 \Delta lnfdi_{t-i} + \sum_{i=0}^{n} \beta_5 \Delta lnneer_{t-i} + \sum_{i=0}^{n} \beta_6 \Delta lnm2_{t-i} + \sum_{i=0}^{n} \beta_7 \Delta lntbr_{t-i} + \theta_1 lnpi_{t-1} + \theta_2 lnasi_{t-1} + \theta_3 lngds_{t-1} + \theta_4 lnfdi_{t-1} + \theta_5 lnneer_{t-1} + \theta_6 lnm2_{t-1} + \theta_7 lntbr_{t-1} + \varepsilon_{2t} \quad \ldots\ldots\ldots\ldots\ldots\ldots (4)$$

$$\Delta lngds_t = \alpha_3 + \sum_{i=0}^{n} \beta_1 \Delta lngds_{t-i} + \sum_{i=0}^{n} \beta_2 \Delta lnasi_{t-i} + \sum_{i=0}^{n} \beta_3 \Delta lnpi_{t-i} + \sum_{i=0}^{n} \beta_4 \Delta lnfdi_{t-i} + \sum_{i=0}^{n} \beta_5 \Delta lnneer_{t-i} + \sum_{i=0}^{n} \beta_6 \Delta lnm2_{t-i} + \sum_{i=0}^{n} \beta_7 \Delta lntbr_{t-i} + \theta_1 lngds_{t-1} + \theta_2 lnasi_{t-1} + \theta_3 lnpi_{t-1} + \theta_4 lnfdi_{t-1} + \theta_5 lnneer_{t-1} + \theta_6 m2_{t-1} + \theta_7 lntbr_{t-1} + \varepsilon_{3t} \quad \ldots\ldots\ldots\ldots\ldots\ldots (5)$$

$$\Delta lnfdi_t = \alpha_4 + \sum_{i=0}^{n} \beta_1 \Delta lnfdi_{t-i} + \sum_{i=0}^{n} \beta_2 \Delta lnasi_{t-i} + \sum_{i=0}^{n} \beta_3 \Delta lnpi_{t-i} + \sum_{i=0}^{n} \beta_4 \Delta lngds_{t-1} + \sum_{i=0}^{n} \beta_5 \Delta lnneer_{t-i} + \sum_{i=0}^{n} \beta_6 \Delta lnm2_{t-i} + \sum_{i=0}^{n} \beta_7 \Delta lntbr_{t-i} + \theta_1 lnfdi_{t-1} + \theta_2 lnasi_{t-1} + \theta_3 lnpi_{t-1} + \theta_4 lngds_{t-1} + \theta_5 lnneer_{t-1} + \theta_6 lnm2_{t-1} + \theta_7 lntbr_{t-1} + \varepsilon_{4t} \quad \ldots\ldots\ldots\ldots\ldots\ldots (6)$$

$$\Delta lnneer_t = \alpha_5 + \sum_{i=0}^{n} \beta_1 \Delta lnneer_{t-i} + \sum_{i=0}^{n} \beta_2 \Delta lnasi_{t-i} + \sum_{i=0}^{n} \beta_3 \Delta lnpi_{t-i} + \sum_{i=0}^{n} \beta_4 lnm2_{t-i} + \sum_{i=0}^{n} \beta_5 \Delta lngds_{t-i} + \sum_{i=0}^{n} \beta_6 \Delta lnfdi_{t-i} + \sum_{t=0}^{n} \beta_7 \Delta lntbr_{t-i} + \theta_1 lnneer_{t-1} + \theta_2 lnasi_{t-1} + \theta_3 lnpi_{t-1} + \theta_4 lnm2_{t-1} + \theta_5 lngds_{t-1} + \theta_6 lnfdi_{t-1} + \theta_7 lntbr_{t-1} + \varepsilon_{5t} \quad \ldots\ldots\ldots\ldots\ldots\ldots (7)$$

$$\Delta lnm2_t = \alpha_6 + \sum_{i=0}^{n} \beta_1 \Delta lnm2_{t-i} + \sum_{i=0}^{n} \beta_2 \Delta lnasi_{t-i} + \sum_{i=0}^{n} \beta_3 \Delta lnpi_{t-i} + \sum_{i-0}^{n} \beta_4 \Delta lngds_{-i} + \sum_{i=0}^{n} \beta_5 \Delta lnfdi_{t-i} + \sum_{i=0}^{n} \beta_6 \Delta lnneer_{t-i} + \sum_{i=0}^{n} \beta_7 \Delta lntbr_{t-i} + \theta_1 lnm2_{t-1} + \theta_2 lnasi_{t-1} + \theta_3 lnpi_{t-1} + \theta_4 lngds_{t-1} + \theta_5 lnfdi_{t-1} + \theta_6 lnneer_{t-1} + \theta_7 lntbr_{t-1} + \varepsilon_{6t} \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (8)$$

$$\Delta lntbr_t = \alpha_7 + \sum_{i=0}^{n} \beta_1 \Delta lntbr_{t-i} + \sum_{i=0}^{n} \beta_2 \Delta lnasi_{t-i} + \sum_{i=0}^{n} \beta_3 \Delta lnpi_{t-i} + \sum_{i=0}^{n} \beta_4 \Delta lngds_{t-i} + \sum_{i=0}^{n} \beta_5 \Delta lnfdi_{t-i} + \sum_{i=0}^{n} \beta_6 \Delta lnneer_{t-i} + \sum_{i=0}^{n} \beta_7 \Delta lnm2_{t-i} + \theta_1 lntbr_{t-1} + \theta_2 lnasi_{t-1} + \theta_3 lnpi_{t-1} + \theta_4 lngds_{t-1} + \theta_5 lnfdi_{t-1} + \theta_6 lnneer_{t-1} + \theta_7 lnm2_{t-1} + \varepsilon_{7t} \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (9)$$

Where: Δ is the first-difference operator, and „lnpi, lngds, lnfdi, lnneer, lnm2 and lntbr are the six macroeconomic variables selected in the study.

The constants are $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6, \; and \; \alpha_7$, the coefficients on the trends are β_1, β_2, $\beta 3$, β_4, $\beta_5, \beta_6, and \; \beta 7$. the $\theta_1, \theta_2, \theta_3, \theta_4, \theta_5, \theta_6, and \; \theta_7$ represent the lagged dependent and independent variables respectively, $\varepsilon_{1t}, \varepsilon_{2t}, \varepsilon_{3t}, \varepsilon_{4t}, \varepsilon_{5t}, \varepsilon_{6t}, and \; \varepsilon_{7t}$are error terms. And the n represents the maximum lag length that is decided by the lag selection.

There are two procedures for testing the cointegration relationship between stock market returns and macroeconomic variables. The first procedure is to estimate eq. (3), eq. (4), eq. (5), eq. (6), eq. (7), eq. (8), eq. (9) By ordinary least squares (OLS) procedure. Secondly, the existence of cointegration is traced by restricting all estimated coefficients of lagged level variables equal to zero.

The null hypothesis signifies the non-existence of a long-term relation as $\theta_1 = \theta_2 = \theta_3 = \theta_4 = \theta_5 = \theta_6 = \theta_7 = 0$ against the alternative hypothesis as

$\theta_1 \neq \theta_2 \neq \theta_3 \neq \theta_4 \neq \theta_5 \neq \theta_6 \neq \theta_7 \neq 0$ Pesaran et al. (2001) find upper and lower critical bound value in the F-test. If the calculated F-statistic is less than the lower and upper critical bound value, then we accept the null hypothesis and conclude that there is no cointegration between the variables under study. Nevertheless, if the calculated F-statistic is greater than the lower and upper critical bound value, than we reject the null hypothesis and conclude that there exists cointegration between the variables under study. Nevertheless, if the calculated F-statistic fall within upper and lower critical bound values, then we conclude that the result is inclusive.

The next procedure is to estimate the short-run and long-run equations by using the ECM. To ensure the convergence of the long-run equilibrium, the sign for the coefficient of the lagged error correction term (ECM_{t-1}) must be negative and statistically significant. Further, to conduct the diagnostic tests (Pesaran & Pesaran, 1997).

4.4 The Autoregressive Distributive Lag Granger Causality Test

Co-integration results found that causality subsists among the co-integrated variables, but it fails to explain us the direction of the causal relationship. Engel and Granger (1987), said that if the variables are found to be co-integrated afterwards there always exists an error correction representation in which the short-run dynamics of the variables can be tested that are influenced by the variance from equilibrium.

Engel and Granger recommend that if co-integration exists between the variables, in the long run, afterwards, there must be either bidirectional or unidirectional relationship between variables. The short run and long run causal relationship between the variables should be observed in an Autoregressive distributive lag (ARDL) frame work. The causal relationship between one variable and the rest of the variables will be shown in the following equations:

$$\Delta lnasi_t = \alpha_1 + \sum_{i=0}^{a}\beta_{1i}\Delta lnasi_{t-i} + \sum_{i=0}^{b}\beta_{2i}\Delta lnpi_{t-i} + \sum_{i=0}^{c}\beta_{3i}\Delta lngds_{t-i} + \sum_{i=o}^{d}\beta_{4i}\Delta lnfdi_{t-i} + \sum_{i=0}^{e}\beta_{5i}\,\Delta lnneer_{t-i} + \sum_{i=0}^{f}\beta_{6i}\Delta lnm2_{t-i} + \sum_{i=0}^{g}\beta_{7i}\Delta lntbr_{t-i} + \theta_1 \varepsilon ct_{t-1} + \mu_{1i} \ldots\ldots (10)$$

$$\Delta lnpi_t = \alpha_2 + \sum_{i=0}^{b}\beta_{1i}\Delta lnpi_{t-i} + \sum_{i=0}^{a}\beta_{2i}\Delta lnasi_{t-i} + \sum_{i=0}^{c}\beta_{3i}\Delta lngds_{t-i} + \sum_{i=0}^{d}\beta_{4i}\Delta lnfdi_{t-i} + \sum_{i=0}^{e}\beta_{5i}\Delta lnneer_{t-i} + \sum_{i=0}^{f}\beta_{6i}\Delta lnm2_{t-i} + \sum_{i=0}^{g}\beta_{7i}\Delta lntbr_{t-i} + \theta_1 \varepsilon ct_{t-1} + \mu_{2i} \ldots\ldots (11)$$

$$\Delta lngds_t = \alpha_3 + \sum_{i=0}^{c}\beta_{1i}\Delta lngds_{t-i} + \sum_{i=0}^{a}\beta_{2i}\,\Delta lnasi_{t-i} + \sum_{i=0}^{b}\beta_{3i}\Delta lnpi_{t-i} + \sum_{i=0}^{d}\beta_{4i}\Delta lnfdi_{t-i} + \sum_{i=0}^{e}\beta_{5i}\Delta lnneer_{t-i} + \sum_{i=0}^{f}\beta_{6i}\Delta lnm2_{t-i} + \sum_{i=0}^{g}\beta_{7i}\Delta lntbr_{t-i} + \theta_1 \varepsilon ct_{t-1} + \mu_{3i} \ldots\ldots (12)$$

$$\Delta lnfdi_t = \alpha_4 + \sum_{i=0}^{d}\beta_{1i}\Delta lnfdi_{t-i} + \sum_{i=0}^{a}\beta_{2i}\Delta lnasi_{t-i} + \sum_{i=0}^{b}\beta_{3i}\Delta lnpi_{t-i} + \sum_{i=0}^{c}\beta_{4i}\Delta lngds_{t-1} + \sum_{i=0}^{e}\beta_{5i}\Delta lnneer_{t-i} + \sum_{i=0}^{f}\beta_{6i}\Delta lnm2_{t-i} + \sum_{i=0}^{g}\beta_{7i}\,\Delta lntbr_{t-i} + \theta_1 \varepsilon ct_{t-1} + \mu_{4i} \ldots\ldots (13)$$

$$\Delta lnneer_t = \alpha_5 + \sum_{i=0}^{e}\beta_{1i}\,\Delta lnneer_{t-i} + \sum_{i=0}^{a}\beta_{2i}\,\Delta lnasi_{t-i} + \sum_{i=0}^{b}\beta_{3i}\,\Delta lnpi_{t-i} + \sum_{i=0}^{f}\beta_{4i}\,lnm2_{t-i} + \sum_{i=0}^{c}\beta_{5i}\,\Delta lngds_{t-i} + \sum_{i=0}^{d}\beta_{6i}\,\Delta lnfdi_{t-i} + \sum_{t=0}^{g}\beta_{7i}\,\Delta lntbr_{t-i} + \theta_1 \varepsilon ct_{t-1} + \mu_{5i} \ldots\ldots (14)$$

$$\Delta lnm2_t = \alpha_6 + \sum_{i=0}^{f}\beta_1\,\Delta lnm2_{t-i} + \sum_{i=0}^{a}\beta_2\,\Delta lnasi_{t-i} + \sum_{i=0}^{b}\beta_3\,\Delta lnpi_{t-i} + \sum_{i-0}^{c}\beta_4\,\Delta lngds_{-i} + \sum_{i=0}^{d}\beta_5\,\Delta lnfdi_{t-i} + \sum_{i=0}^{e}\beta_6\,\Delta lnneer_{t-i} + \sum_{i=0}^{g}\beta_{7i}\,\Delta lntbr_{t-i} + \theta_1 \varepsilon ct_{t-1} + \mu_{6i} \ldots\ldots (15)$$

$$\Delta lntbr_t = \alpha_7 + \sum_{i=0}^{g}\beta_{1i}\,\Delta lntbr_{t-i} + \sum_{i=0}^{a}\beta_{2i}\,\Delta lnasi_{t-i} + \sum_{i=0}^{b}\beta_{3i}\,\Delta lnpi_{t-i} + \sum_{i=0}^{c}\beta_{4i}\,\Delta lngds_{t-i} + \sum_{i=0}^{d}\beta_{5i}\Delta lnfdi_{t-i} + \sum_{i=0}^{e}\beta_{6i}\,\Delta lnneer_{t-i} + \sum_{i=0}^{f}\beta_{7i}\,\Delta lnm2_{t-i} + \theta_1 \varepsilon ct_{t-1} + \mu_{7i} \ldots\ldots (16)$$

From the equations above, Δ represent change, μ_i are residual terms, which are the same, independent and normally distributed based on assumption. The statistical important of ECT_{t-1} (that is the lagged of error correction term) is that, it further validate the established long run relationship between the variables. Further,

the coefficient of ECT_{t-1} that is θ_1 indicating the speed of adjustment at which the long run will be achieved from the short run in the model. The ARDL is also preferred in testing the causal relationship once the series are cointegrated. In addition, ARDL helps to differentiate between short-and–long run causality. Moreover, ARDL is used to identify causality in long-run, short-run and short-and-long run jointly. For examples, the statistical significance of ECT_{t-1} coefficient with negative sign indicates the existence of long-run causal relation using the t-statistic. For short run, the causality is indicated by the joint χ^2 statistical significance of the coefficients of the first difference-lagged independent variables. For instance, the significant of $\beta_{2i,} \neq 0 \forall_i$ in equation (10) implies that causality runs from Gross domestic per capita income to stock market returns. This inference goes to the rest of the equations. That is equation (11) to (16). Lastly, the joint significance of estimates of lagged terms of independent variables and error correction terms are derive from Wald test, which further confirms the existence of short-and-long run causality relations known as measure of strong Granger-causality.

4.5 Impulse Response and Variance Decomposition

Due to the difficulty in interpreting estimated reduced form VAR coefficients, these coefficients will not be reported. The analysis will concentrate instead on two standard types of experiments in the VAR framework as proposed by Sim (1980). These are the impulse response and variance decomposition analyses, which are more intuitive and robust test of the dynamic contribution of variables in the VAR system. These responses to shocks, often called impulse response functions (IRF's), can be interpreted as dynamic multipliers that represent the current and subsequent effects on each variable of an unanticipated change in one of the variables. The impulse response will be used to trace the responses of the system to the innovations in the money supply using impulse analysis. This analysis involves shocking the system's disturbances and tracing the sign and magnitude of the system's response to the shocks over time. The variance decomposition will be used to analyse the dynamic contribution of the variables or the degree of exogeneity of the variables in the system.

V. Conclusion

This chapter presented the financial, economic theory related the Stock Market Returns and Macroeconomic Variables; the variables measurement and priory expectations, estimation related methods as well as the modelling. The study constructed within time-series analysis, for which unit-root test, cointegration, Granger causality, Impulse Response and Variance Decomposition were employed and explained, the details of which is presented in chapter five.

VI. Discussion And Findings

5.1 Introduction

This chapter discusses the empirical results of the analysis of macroeconomic variables on stock market returns in Nigeria. The discussions are presented in steps, beginning with the descriptive statistics, correlation analysis, and analysis of empirical result of unit root tests using Augmented Dickey-Fuller and Phillips-perron. This is followed by cointegration tests using ARDL bounding testing approach which initially introduced by Pesaran et al. (1996). Short run and Long run relationship between stock market returns and macroeconomic variables through the Autoregressive Distributive Lag (ARDL). The next stage is the determination of causality between macroeconomic variables and stock market returns through Autoregressive Distributive Lag model (ARDL) Granger causality tests. Furthermore, the impulse response function and variance decomposition are also obtained and analysed. The study uses Vector autoregressive model (VAR) to get impulse response and variance decomposition following Sim (1980) long-run restriction framework.

5.2 Descsriptive Satatistics And Multi-Colenearity

Table 2 Descriptive statistics

	LNASI	LNPI	LNGDS	LNFDI	LNNEER	LNM2	LNTBR
Mean	10.89	1.095	23.174	1.030	3.642	3.081	2.443
Median	11.29	1.348	22.923	1.058	4.492	3.105	2.495
Maximum	13.31	3.412	25.764	2.382	5.059	4.165	3.292
Minimum	7.249	-1.729	20.188	-0.409	-0.265	0.669	1.313
Std. Dev.	1.955	1.054	1.230	0.620	1.673	0.723	0.415
Skewness	-0.577	-0.815	0.345	-0.066	-1.079	-1.048	-0.532
Kurtosis	1.980	4.206	3.213	3.184	2.833	5.377	3.509
Jarque-Bera	2.869	4.972	0.652	0.064	5.861	12.146	1.743
Probability	0.238	0.083	0.721	0.968	0.053	0.002	0.418
Sum	316.09	31.778	695.244	30.899	109.271	89.367	73.302
Sum Sq. Dev	107.03	31.116	43.940	11.17	81.200	14.668	5.001

The descriptive statistics for all seven variables under study, namely, ASI proxied for stock market returns (SMR), per capita income, gross domestic saving, foreign direct investment, broad money supply, treasury bills, and nominal effective exchange rate are signified in the above table 2. The value of kurtosis and skewness show the lack of symmetric in the distribution. In general, if the value of kurtosis and skewness are 0 and 3 respectively, the observed distribution is assumed to be normally distributed. In addition, if the skewness coefficient is in surfeit of unity it is measured fairly excessive, and a low (high) kurtosis value shows excessive platykurtic (extreme leptokurtic). From the table 2, it is observed that the frequency distributions of the seven variables are not normal. The significant coefficient of Jarque-Bera statistics of some of the variables that are per capita income, nominal effective exchange rate, and broad money supply shows that the frequency distributions are not normal. The value of standard deviation shows that the all share index, nominal effective exchange rate, gross domestic saving, and per capita income are reasonably more volatile as compare to broad money supply, foreign direct investment, and treasury bills rate. Table 3 presents the correlation coefficient of the six independent variables. It is marked that all the coefficients are less than 0.5 signifying less multicolinear problems.

Table 3Correlation Analysis Test

Variables	LNFDI	LNGDS	LNM2	LNNEER	LNPI	LNTBR
LNFDI	1					
LNGDS	-0.251	1				
LNM2	0.422	0.017	1			
LNNEER	0.248	0.445	0.270	1		
LNPI	-0.176	0.221	0.027	-0.331	1	
LNTBR	0.151	-0.379	0.281	-0.185	0.003	1

5.3 Unit Root Test

To examine the existence of stochastic non-stationary in the series, the study establishes the order of integration of individual time series through the unit root test. Two unit roots test was employed. These are Augmented Dickey-fuller (ADF) (Dickey & Fuller, 1979 and 1981) and Phillips-Perron (PP) (Phillips & Perron, 1988). The variables used in this study are: All share index (LNASI), foreign direct investment (LNFDI), Gross domestic savings (LNGDS), broad money supply (LNM2), nominal effective exchange rate (LNNEER), per capita income (LNPI) and short-term treasury bills (LNTBR). Sayed Hossen (2014) stated that in testing unit root test you must check all the three equations that are constant, trend and constant, and none before to conclude that whether the variables are cointegrated at level, first difference or second difference. The ADF and Phillip-Perron tests have both rejected the hypothesis of non-stationarity of all the seven variables at level, but accepted the hypothesis of stationarity with the first difference of all the seven variables and the study can thus conclude that the variables used are integrated in the same order that is ***I***(1). The results are presented in the following tables.

Table 4 Unit root test for stationarity

Result for unit roots tests on levels						
variables	ADF			Phillip-perron		
	Constant	Constant & trend	None	Constant	Constant & trend	None
LNASI	-1.868	-1.129	2.636	-2.059	-1.129	2.503
LNPI	-3.187**	-3.163	-2.167	-3.193**	-3.120	-2.087
LNGDS	-0.558	-3.047	0.948	-1.188	-3.047	1.517
LNFDI	-3.796***	-3.578**	-1.453	-3.745***	-3.745*	-1.284
LNNEER	-4.599***	-1.449	0.3720	-4.599***	-1.467	0.883
LNM_2	-4.817***	-4.246**	0.446	-2.878*	-2.780	-0.196
LNTBR	-2.349	-2.706	-0.254	-2.370	-2.554	-0.038

*, ** and *** Denotes rejection of the null hypothesis at 10% and 5% and 1% significance level.

Table 4 reports the results of the ADF and PP unit root test at level using constant, trend and constant and none. The seven variables, LNASI, LNFDI, LNGDS, LNM2, LNNEER, LNPI and LNTBR are found to be non-stationary at 1%, 5% and 10% levels of significance. Thus, the variables are non-stationary and not integrated of the same order.

Table 5 Unit root test for stationarity

Result for unit roots test on the first difference						
variables	ADF			Phillip-perron		
	Constant	Constant & trend	None	Constant	Constant & trend	None
LNASI	-5.110***	-4.666***	-3.980***	-5.109***	-6.180***	-3.980***
LNPI	-5.581***	-5.461***	-5.685***	-12.06***	-12.12***	-11.73***
LNGDS	-7.747***	-5.181***	-7.693***	-11.25***	-17.66***	-7.917***
LNFDI	-9.224***	-9.699***	-9.410***	-9.534***	-25.25***	-9.733***
LNNEER	-3.182**	-5.221***	-2.481**	-3.244**	-5.221***	-2.354**
LNM2	-3.512**	-3.277*	-3.627***	-7.077***	-8.170***	-7.218***
LNTBR	-3.672**	-3.946**	-5.813***	-6.038***	-6.356***	-6.199***

*, ** and *** Denotes rejection of the null hypothesis at 10% and 5% and 1% significance level.

Table 5 reports the results of the ADF and PP unit root test for first difference using intercept (constant), trend & constant, and none. All the seven variables, LNASI, LNFDI, LNGDS, LNM2, LNNEER, LNPI and LNTBR are found to be integrated and stationary in both constant, trend & constant, and none at 1% levels of significance. Thus, the variables are stationary and integrated of the same order, i.e., *I*(1).

5.4 Lag Selection

Table 6 Lag Selection Table

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-166.9876	NA	0.001532	13.38367	13.72238	13.48120
1	-51.05310	160.5248*	1.03e-05*	8.234853	10.94460*	9.015162*
2	3.965782	46.55443	1.74e-05	7.771863*	12.85264	9.234942

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

It is important to note that in analysing the time series the lag order is quite sensitive to the result, and therefore selection of lag length in an appropriate criterion is very necessary (Naik, 2013). According to Liew and Sen (2004) AIC is superior than the other criterion under study in the case of small sample size that is below 60. Therefore, the Akaike Information Criterion (AIC), (Akaike 1973), was used to select the number of lags required. The lag length that minimized the AIC at the lowest level of FPE is 2. The F-Bound, Short-run and Long-run ARDL model estimates based on the AIC criteria for the Nigeria is reported in the following tables.

5.5 F-Bound Test Cointegration

Table 7 Multivariate cointegration bound test analysis

Variables	LNASI	LNPI	LNFDI	LNGDS	LNM_2	LNNEER	LNTBR
Optimum-lags	(1,1,0,0,1,1,1)	(2,0,0,0,2,2,2)	(1,0,2,2,1,2,2)	(0,0,2,0,2,0,2)	(1,0,1,2,0,1,1)	(2,2,2,2,2,2,2)	(2,2,2,2,2,2,0)
F-statistics	5.1823**	1.7640	8.5127***	0.2233	4.3545***	0.3032	3.1582**
Critical values	1%		5%		10%		
Upper bound	3.90		3.21		2.89		
Lower bound	2.73		2.17		1.92		
Diagnostic Test:							
R^2	0.833	0.799	0.922	0.633	0.842	0.892	0.925
Adj-R^2	0.703	0.543	0.785	0.295	0.697	0.460	0.733
Durbin-Watson	2.7021	2.7025	2.2156	2.5865	2.057	2.7037	2.552
Serial correlation	0.52[0.488]						
Normality- J.Bera	1.736[0.419]						
Heteroscadasticity	0.20[0.657]						

The relevant critical value bounds are taken from Pesaran (2001) [case II with a restricted intercept and no trend and a number of regressors = 7from]. ***, ** and * denotes that F-statistics falls above the 1%, 5% and 10% upper bound, respectively. These results suggest that cointegration exists between macroeconomic variables and stock market returns in Nigeria. The diagnostic tests showed that the estimates are free from serial correlation and heteroskedasticity. Thus, the distributions are normally distributed.

5.6 Ardl Granger Causality Analyses

The ARDL can detain the long-run equilibrium relations, with the short-run dynamics among time series variables and subsequently, can differentiate between long run and short-run Granger causality. The

significant coefficient for lagged error correction term (i.e. by testing H0: $\theta_1 = 0$) gives the long run Granger causality which can be examined through the t-statistics. In contrast, the short-run Granger causality is tested by the joint significance of the coefficients of the differenced explanatory variables.

Table 8 ARDL Granger Causality Table

Variables	Short run							Long run
	ΔLNASI	ΔLNPI	ΔLNGDS	ΔLNFDI	ΔLNNEER	ΔLNM2	ΔLNTBR	ECTt-1
ΔLNASI	-	8.576*** [0.003]	0.421 [0.516]	3.592* [0.058]	0.129 [0.719]	10.848*** [0.001]	3.428* [0.064]	-0.606*** (-4.905)
ΔLNPI	11.202*** [0.001]	-	4.705** [0.030]	2.822* [0.093]	3.649 [0.161]	6.596** [0.037]	4.103 [0.128]	-1.643*** (-5.088)
ΔLNGDS	NA	NA	-	NA	NA	NA	NA	None
ΔLNFDI	4.917** [0.027]	11.449*** [0.003]	2.361 [0.307]	-	0.160 [0.689]	9.104** [0.011]	2.660 [0.264]	-1.297*** (-7.375)
ΔLNNEER	0.938 [0.625]	2.430 [0.297]	2.782 [0.249]	1.361 [0.506]	-	2.061 [0.357]	4.788* [0.091]	0.909** (-2.776)
ΔLNM2	17.595*** [0.000]	3.053* [0.081]	1.857 [0.395]	4.837** [0.028]	1.456 [0.227]	-	0.0004 [0.982]	-0.525*** (-3.675)
ΔLNTBR	3.433 [1.80]	2.684 [0.261]	8.651** [0.013]	2.643 [0.267]	5.654 [0.059]	0.555 [0.456]	-	-0.934** (-2.938)

***, ** and * show the significance at the 1%, 5% and 10% levels respectively. Figures in squared parentheses and parentheses are the p-values and t-statistics respectively.

The Granger causality analyses based on the ARDL with 2 lag are conducted between the stock market returns and six macroeconomic variables. The results are summarized in Table 8. The results indicate that, there is bi-directional causality exists between Per capita income and stock market returns, Foreign direct investment and stock market returns, broad money supply and stock market returns, both in the long-run and short-run. Thus, stock market returns (ASI) do have a feedback effect on the Per capita income, foreign direct investment, and broad money supply. From the result it can be interpreted that, increase in the Per capita income, foreign direct investment, and broad money supply inspires the state of economy, the corporate profits and that in turn lead to boost the stock market returns. At the same time, the health of the stock market, in the sense of increasing share price, turns into the health of the economy. No causal relation exists between stock market returns, gross domestic saving and Nominal effective exchange rate in the short run. However, short-run and long-run causal relationship is found in the direction of Treasury bills rate to stock market returns and Treasury bills rate to nominal effective exchange rate. It is also observed that, in both short-run and long-run there is bidirectional causality exists between Per capita income and gross domestic saving, Per capita income and foreign direct investment, per capital income and Broad money supply, foreign direct investment and broad money supply. But between gross domestic saving and Treasury bills rate reveals unidirectional causal relationship. The results also reveals that there is no causal relationship between gross domestic saving and stock market returns, gross domestic saving and foreign direct investment, gross domestic saving and nominal effective exchange rate, gross domestic saving and broad money supply, in either in long-run and in short-run, foreign direct investment and nominal effective exchange rate, foreign direct investment and broad money supply, broad money supply and nominal effective exchange rate in short-run.

5.7 Estimates For Impulse Response And Variance Decomposition

Due to the difficulty in interpreting estimated reduced form VAR coefficients, these coefficients were not reported. The analysis will concentrate instead on two standard types of experiments in the VAR framework as proposed by Sim (1980). These are the impulse response and variance decomposition analyses, which are more intuitive and robust test of the dynamic contribution of variables in the VAR system. These responses to shocks, often called impulse response functions (IRF's), can be interpreted as dynamic multipliers that represent the current and subsequent effects on each variable of an unanticipated change in one of the variables.

In this study, the impulse responses and variance decomposition of the six variables to shocks in stock market returns in the short run and long run periods were analysed. The short run period from 1^{st} to 5^{th} periods and the long run period is from year 6^{th} to 20^{th} periods. Hence, the figures in each of the last period were used in the analysis.

5.7.1 Estimates For Impulse Responses

The test results of the impulse response function of macroeconomic variables on the ASI are shown in the Appendix A. The impact of a shock to All Share Index experienced a significant positive effect in the short-run, but in the long-run it become negative. It implies that the impact of a shock to share index decreased

significantly, the All Share Index became more efficient and were less dependent on the preceding All Share Index. The effect of a shock to foreign direct investment in All Share Index was negative throughout the short-run and long-run. This negative impact reached a maximum in the sixth years and started decreasing fairly in the seventh years. This result implies that unlike the previous research the shock of foreign direct investment in the All Share Index was positive. The shock of foreign direct investment in the All Share Index was found to be fairly less effective in the Nigerian Stock Exchange Market. This happened due to the recent economic meltdown in 2007, current insecurity and expectation of changes of government. The impact of a shock to gross domestic saving, exchange rate and short term treasury bill rate on All Share Index was positive all over the short-run and long-run. The effect of a shock to broad money supply on ASI was negative in long-run. In general, the impacts of a shock on the Exchange rate, Gross domestic saving, short-term treasury bill rate on the ASI in this study are consistent with other stock market returns empirical results (see Mukherjee and Naka (1995), Maysami and Koh (2000), Gan, et, al (2006). In the short-run and long-run the shock of an appreciation of the Nominal Effective Exchange Rate in Nigeria would attract more investors to invest in the stock market. The shocks of gross domestic savings always have positive impacts on the All Share Index as identified in many other countries. For example, Rafique, et al., (2013), this supported the concept of economic that saving leads to investment. The positive impact of a shock to Per capita income on the All Share Index in the short run is consistent with the empirical results of Rafique, et al, (2013) implying that the stock index should reflect the real situation of the economy. The negative impact of a shock of Broad Money Supply (M2) on the All Share Index can be explained by the following factors: the money supply in Nigeria is influenced essentially by foreign investors. If the interest rate is high relative to other countries, the foreign investors are likely to leave their money in the bank rather than invest in the risky stock market. If the interest rate is low, the investors might prefer to invest in other markets. Hence, the shock of M2 on the All Share Index always results in a negative impact on this research-testing period. The positive impact of a shock of Short Term Treasury Bill Rate on All Share Index is to some extent consistent with Kuwornu, J. K (2012), implying that investors do not view Short Term Treasury Bill Rate with the associated interest rates as option to investment opportunities. Therefore, increases in Short Term Treasury Bills Rate rates leads to increased investment in stocks causing stock returns to rise in Nigeria.

5.7.2 Estimates For Variance Decomposition

Table 9 Variance Decompositions for restricted VEC model

LNASI							
Periods	LNASI	LNFDI	LNGDS	LNM2	LNNEER	LNPI	LNTBR
1	100.00	0.000	0.000	0.000	0.000	0.000	0.000
5	**41.24**	9.32	27.35	1.53	17.32	0.81	2.42
10	25.51	12.25	**39.18**	1.92	18.90	0.50	1.73
15	22.49	12.91	42.05	2.09	18.42	0.45	1.58
20	20.30	13.43	**43.82**	2.12	**18.40**	0.41	1.50
LNFDI							
1	2.64	97.35	0.000	0.000	0.000	0.000	0.000
5	33.81	24.42	24.20	7.22	1.96	4.12	4.27
10	38.72	20.89	22.93	6.72	3.23	3.77	3.74
15	38.26	20.69	23.49	6.60	3.61	3.66	3.68
20	**38.15**	20.65	23.66	6.59	3.63	3.64	3.67
LNGDS							
1	1.69	12.54	85.77	0.000	0.000	0.000	0.000
5	6.21	14.98	70.65	2.25	2.66	3.09	0.16
10	6.89	14.78	69.12	3.15	2.72	3.11	0.22
15	`6.25	15.40	68.78	3.13	3.40	2.76	0.27
20	5.86	15.62	68.66	3.17	3.83	2.59	0.27
LNM_2							
1	33.44	6.72	0.0001	59.84	0.000	0.000	0.000
5	45.07	4.41	1.50	45.74	0.62	2.16	0.50
10	45.91	4.47	2.24	43.65	1.04	2.12	0.58
15	45.93	4.46	2.30	43.54	1.06	2.12	0.59
20	**45.89**	4.48	2.37	43.47	1.08	2.11	0.59
LNNEER							
1	0.47	0.189	4.12	5.27	89.95	0.000	0.000
5	7.57	2.57	4.30	2.90	78.80	1.38	2.49
10	8.13	5.59	13.65	1.86	66.71	1.48	2.58
15	7.89	6.13	15.95	1.90	64.30	1.39	2.44
20	7.52	6.68	17.86	1.88	62.35	1.32	2.38
LNPI							
1	17.66	11.64	9.53	10.07	11.51	39.59	0.000
5	22.14	13.56	32.23	6.88	5.30	16.64	3.25
10	28.25	11.16	29.34	7.36	6.95	13.80	3.14

15	28.73	11.32	29.89	6.98	6.98	13.06	3.04
20	28.21	11.45	**30.76**	6.92	6.97	12.72	2.96
LNTBR							
1	37.22	5.32	0.13	0.03	17.86	1.36	38.08
5	62.74	2.74	5.78	0.70	18.78	2.17	7.08
10	59.54	3.95	8.59	0.76	18.42	1.95	6.80
15	59.53	3.93	8.78	0.86	18.20	1.95	6.75
20	59.15	4.05	9.13	0.86	18.18	1.93	6.70

The Table 5.7.2 shows the variance decomposition of Stock Market Returns and Macroeconomic Variables over the 20 years period. In the 1st year, as expected, none of the macroeconomic variables contributed to the stock market returns in Nigeria. In the 5th years, the result reveals that all share index account for 41.24% of its shock. Shock to FDI, GDS, M2, NEER, PI, TBR can cause 9.33%, 27.35%, 1.53%, 17.32%, 0.82%, 2.42% fluctuation in ASI respectively. In the 15th and 20th years, shock to ASI account for 22.49% and 20.30% variation of the fluctuation in ASI (own shock). And shock to FDI, GDS, M2, NEER, PI, TBR can cause 12.91% and 13.44%, 42.05% and 43.82%, 2.09% and 2.12%, 18.42% and 18.40%, 0.45% and 0.41%, 1.58% and 1.50% variation fluctuation in ASI respectively. Therefore, in 1st and 5th ASI is the main determinant in its variation. However, the shock of ASI on ASI slowly weakens over time. The most important macroeconomic variables that influence ASI in Nigeria are GDS and NEER though they are marginal at 27.35% and 9.32% respectively. From this analysis, it can be referred that the Nigerian Stock Market Returns can be predicted from the GDS and FDI. The result of GDS is inconsistent with the result of vector error correction. In the vector error correction, the GDS is negative and insignificant which is violating the theory. In Nigeria, the level of Government saving is very low, and most of the people are working for their basic needs. So now, the Government of Nigeria should increase their saving and encourages people to save more in order to boost the Stock Market Returns since GDS is one of the most important variables influencing the market.

The variance decomposition of FDI reveals that in the 1st year FDI is the major contribution to its shocks (that is, 97.35% variation of the fluctuation). However, as time goes on from the 5th, 10the, 15th, and 20th the ASI become the most important determinant of FDI in Nigeria. A shock of M2, GDS, NEER, PI, and STBR cannot contribute much to the FDI. This is consistent with the Granger causality result as there is bi-directional causality between the ASI and FDI.

The variance decomposition of GDS showed that shocks to GDS in 1st year, account for about 85.77% variation of the fluctuation in GDS (own shocks). However, the shock of GDS to Shock on GDS slowly fades over time, while it still continues to be the most important driver. In the 20 years period, shocks to GDS account for about 68.66% of its shocks with the other variables explaining less than of this variability.

The variance decomposition of M2 revealed that M2 account for about 59.84% of its own shocks in the 1st year period, with the other variables such as ASI, FDI, GDS, NEER, PI, and TBR explaining less than of this variation. It is also falling from 59.84% to 43.47%, in the long run, that is 20 year's period. ASI accounts for the greater percentage of the variability of M2 in the 10th, 15th, and 20th year's period. This is consistent with the Granger causality result.

The variance decomposition of NEER showed that in the 1st year period shocks to NEER contribute about 89.95% of its variation fluctuation. Shocks to ASI, FDI, GDS, M2, PI, and TBR can cause 0.47%, 0.19%, 4.12%, 5.27%, 0.00%, and 0.00% respectively. In the long run, this is a 20th year's period, shock to NEER account for about 62.35% of its shocks with the other variables explaining less than of this variability. Therefore, NEER contributes much to its variation. But GDS is the second most important variables that influence the NEER.

The variance decomposition of PI in the 1st year period showed that shocks to PI contribute about 39.59% of its variation fluctuation. Shocks to ASI, FDI, GDS, M2, NEER, and TBR can cause 17.66%, 11.64%, 9.53%, 10.07%, 11.51%, and 0.00% respectively. Therefore, in the 20th year period, shocks to PI account for about 12,72% of its own shocks, while other variables can cause 28.21%, 11.45%, 30.76%, 6.92%, 6.97%, and 2.96% of this variability. Therefore, GDS and ASI are the main determinants of PI in the long-run that is, 20 years period. This result is consistent with the Granger causality

The variance decomposition of TBR revealed that in 1st year shocks to TBR contribute 38.08% variation of the fluctuation in its shocks. Shock to ASI, FDI, GDS, M2, NEER, and PI can cause 37.22%, 5.32%, 0.13%, 0.03%, 17.86%, and 1.36% fluctuation in TBR. Therefore, in the 5th, 10th, 15th, and 20th year's period, ASI is the most important variable that influences the STBR.

VII. Conclusion

The results of the Cointegration Test based on F-bound's procedure showed the existence of the cointegration between variables. Therefore, the variables have a long-run equilibrium relationship between them, although they may be in disequilibrium in the short-run. The estimation of the autoregressive distributive lag described how the short run and long run behaviour in the variables are reconciled. It showed that the error

correction terms contribute in explaining the changes in all the variables. It also revealed the presence of short-run and long-run bi-causal causality between stock market returns and gross domestic per capita, stock market returns and foreign direct investment, stock market and broad money supply, foreign direct investment and broad money supply, gross domestic saving and short term treasury bills rate, gross domestic per capita income and gross domestic saving, foreign direct investment and gross domestic per capita income. It also shows unidirectional causal relationship between treasury bills rate and stock market returns, as well as between treasury bills rate and nominal effective exchange in Nigeria. In conclusion, the null hypothesis of no short-run and long-run relationship between the stock market returns and macroeconomics variables is rejected. Moreover, the null hypothesis of no causality between the stock market returns and macroeconomic variables may also be rejected. This study recommends that; Policy makers, financial policies and investors, need to take the macroeconomic indicators into account when formulating financial and economic policies and, diversification and structuring of the portfolio, Policy makers and government should still consider monetary policy as a useful tool for achieving the stability of the stock market due to the bi-causal relationship between broad money supply and stock market returns. The government should increase the standard of living of the people by providing essential infrastructural facilities and social amenities in order to enhance the ability of the people to save and invest in the stock market. This study confirms the belief that macroeconomic variables persist to influence the Nigerian Sock market returns. It should, however, be stressed that the results of this study are limited by the ARDL framework and only six selected macroeconomic variables. Future research should test for the robustness of these results within a larger ARDL system and including more variables with a longer period to improve the results. Enlarging the system complicates the identification procedure, however, and is beyond the scope of the current research.

References

[1]. Abdullah, A. M., Saiti, B., & Masih, A. M. M. (2014). Causality between Stock Market Index and Macroeconomic Variables: A Case Study for Malaysia. Munich Personal RePEc Archive Paper No. 56987. Online at http://mpra.ub.uni-muenchen.de/56987/

[2]. Asma, A. R., Naseem, M. A., Sultana, N. (2013) Impact of Macroeconomic Variables on Stock Market Index (A Case of Pakistan) www.elixirpublishers.com International journal. Fin. Mgmt. 57(2013) 14104

[3]. Attari, M. I. J., Safdar, L., & Student, M. B. A. (2013). The Relationship between Macroeconomic Volatility and the Stock Market Volatility: Empirical Evidence from Pakistan. Pakistan Journal of Commerce and Social Sciences,7(2), 309-320.

[4]. Babayemi, A. W., Asare, B. K., Onwuka, G. I., Singh, R. V., & James, T. O. Empirical Relationship between the Stock Markets and Macroeconomic Variables: Panel Cointegration Evidence from African Stock Markets

[5]. Berk[a] and Aydogan[b*] (2012) Crude Oil Price Shocks and Stock Returns: evidence from Turkish Stock Market under Global Liquidity Conditions. JEL classification: C58, G15, Q43, Q47. ISSN: 18623808

[6]. Başçı, E. S., & Karaca, S. S. (2012). The Determinants of Stock Market Index: VAR Approach to Turkish Stock Market. International Journal of Economics and Financial Issues, 3(1), 163-171.

[7]. Bhanu, S. P. (2013). Effect of Select Macro Economic Variables on Stock Returns in India. International Journal Of Marketing, Financial Services & Management Research, 2(6), 197-209.

[8]. Brown, R. L., Durbin, J., & Evans, M. (1975). Techniques for testing the constancy of regression relations over time. Journal of the Royal Statistical Society, 37(2), 149–192. Retrieved from http://www.jstor.org/stable/2984889

[9]. Business Day Newspaper, February 9, 2009.

[10]. Business Day Newspaper, February 2, 2009 Pg. 1.

[11]. Business Day Newspaper, February 19, 2009, Pg. 9.

[12]. Campbell, J., and Shiller, R. J. (1988) Stock Prices, Earnings and Expected Dividends Journal of Finance, Vol. 43, Pg 661-676.

[13]. CBN (2012) Central Bank of Nigeria Statistical Bulletin, Abuja, CBN

[14]. Chancharat, S., Valadkhani, A., & Harvie, C. (2007). The Influence of International Stock Markets and Macroeconomic Variables on the Thai Stock Market. Faculty of Commerce - Papers (Archive), University of Wollongong.

[15]. Dickey DA, Fuller WA. Likelihood ratio statistics for autoregressive time series with a unit root. Econometrica 1981;49(4): 1057-72.

[16]. Dos Santos, A. S., Neto, A. R., de Araujo, E. C., De Oliveira, L., & Abrita, M. B. (2013). Interaction between Macroeconomics Variables and IBOVESPA, Brazilian Stock Market Index. Transnational Corporations Review, 5(4), 81-95.

[17]. Engle, R. F., & Granger, C. W. J. (1987). Cointegration and error correction: Representation, estimation and testing. Econometria, 55, 25-276.

[18]. Fama, E. F. (1965). The Behavior of Stock-Market Prices. Journal of Business, 38, 34-105. http://dx.doi.org/10.1086/294743

[19]. Fama, E. F., & Schwert, G. W. (1977). Asset Returns and Inflation. Journal of Financial Economics, 5(2), 115-146, Elsevier. http://dx.doi.org/10.1016/0304-405X(77)90014-9

[20]. Fifield, S. G. M., Power, D. M., & Sinclair, C. D. (2002). Macroeconomic Factors and Share Returns: An Analysis using Emerging Market Data. International Journal of Finance and Economics, 33(1), 51-62. http://dx.doi.org/10.1002/ijfe.173

[21]. Gan, C., Lee, M., Yong, H. H. A., & Zhang, J. (2006). Macroeconomic variables and stock market interactions: New Zealand evidence. Investment Management and Financial Innovations, 3(4), 89-101.

[22]. Garcia, F. V. & Liu, L. (1999). Macroeconomic Determinants of Stock Market Development. Journal of Applied Economics, 2(1), 29-59.

[23]. 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).

[24]. Haroon, M. A., & Jabeen, H. (2013). Impact of Macro-economic Variables on Share Price Behavior of Karachi Stock Exchange. Pakistan Journal of Commerce and Social Sciences, 7(3), 493-504.

[25]. Hasanzadeh, A., & Kianvand, M. (2012). The impact of macroeconomic variables on stock prices: the case of Tehran Stock Exchange,". Money and Economy, 6(2).

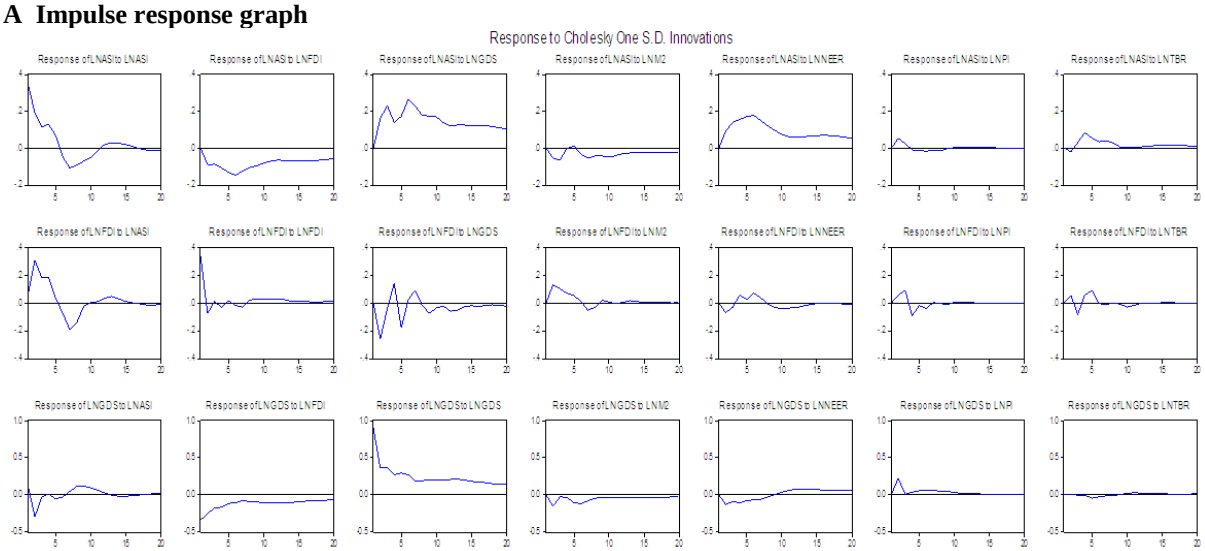
[26]. Hashemzadeh, N., & Taylor, P. (1988). Stock Prices, Money Supply, and Interest Rate: The Question of Causality. Applied Economics, 20, 1603–1611. http://dx.doi.org/10.1080/00036848800000091

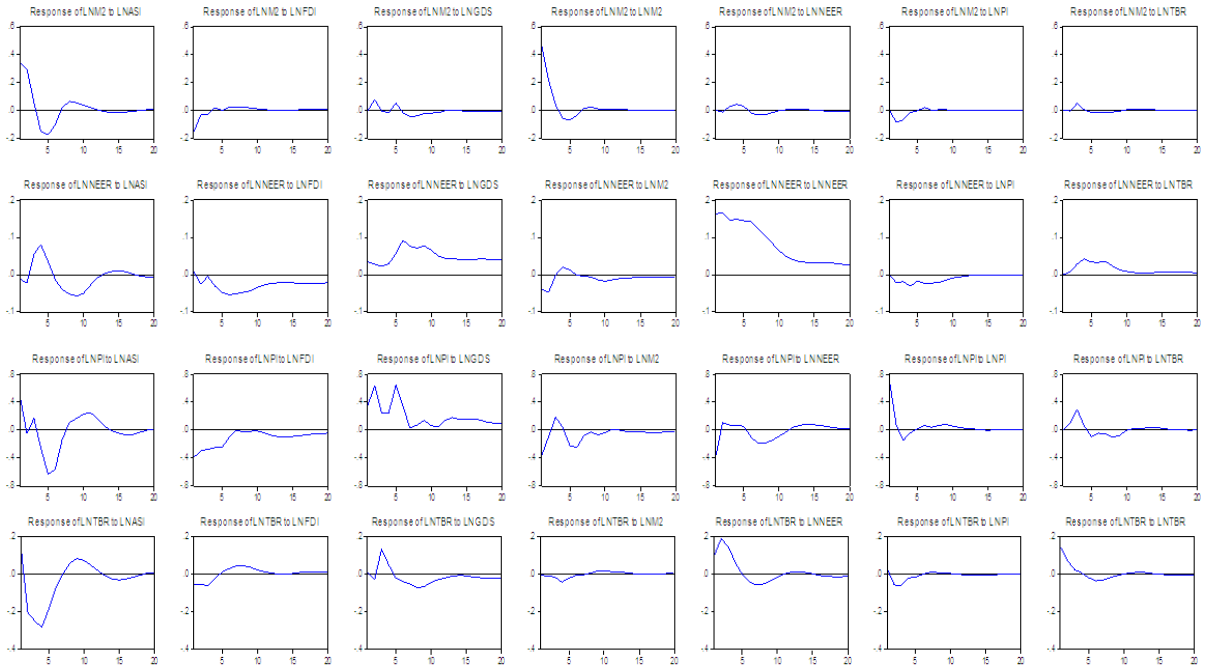
[27]. Journal of Business and Management, 6(12), p146.
[28]. Hossen, (2014)
[29]. Hosseini, S. M., Ahmad, Z., & Lai, Y. W. (2014). The role of macroeconomic variables on stock market index in China and India. International Journal of Economics and Finance, 3(6), p233.
[30]. Hunjra, A. I., Chani, M. I., Ijaz, M. S., Farooq, M., & Khan, K. (2014). The Impact of Macroeconomic Variables on Stock Prices in Pakistan. Munich Personal RePEc Archive Paper No. 60791. Online at http://mpra.ub.uni-muenchen.de/60791/
[31]. Hussin, M., Yahya, M., Muhammad, F., & Awang, S. A. (2012). Macroeconomic variables and Malaysian Islamic stock market: a time series analysis. The Journal of Business Studies Quarterly (JBSQ), 3(4), 1-13.
[32]. Hussain, M. M., Aamir, M., Rasool, N., Fayyaz, M., & Mumtaz, M. (2012). The impact of macroeconomic variables on stock prices: an empirical analysis of Karachi stock exchange. Mediterranean Journal of Social Sciences, 3(3), 295-312.
[33]. Ibrahim, T. M., & Agbaje, O. M. (2013). The Relationship between Stock Return and Inflation in Nigeria. European Scientific Journal, 9(4).
[34]. Ibrahim, M., & Musah, A. (2014). An Econometric Analysis of the Impact of Macroeconomic Fundamentals on Stock Market Returns in Ghana.Research in Applied Economics, 6(2), p47-p72.
[35]. Issahaku, H., Ustarz, Y., & Domanban, P. B. (2013). Macro-economic Variables and Stock Market Returns in Ghana: Any Causal Link. Asian Econ. Finan. Rev, 3(8), 1044-1062.
[36]. IQBAL, N., KHATTAK, S. R., & KHATTAK, M. A. (2013). Relationship between Macroeconomic Variables and KSE-100 Index: Evidence from Pakistan. Knowledge Horizons- Economics. 5(4), pp. 101-105.
[37]. Kalyanaraman, L., & Al Tuwajri, B. (2014). Macroeconomic Forces and Stock Prices: Some Empirical Evidence from Saudi Arabia. International Journal of Financial Research, 5(1), p81.
[38]. Kevin S (2000). Portfolio Management. Delhi: Prentice-Hill.
[39]. Khan, W. A., Javed, M. A., Shahzad, N., Sheikh, Q., Saddique, S., Riaz, M., & Batool, S. (2014). Impact of Macroeconomics variable on the Stock Market index; A Study from Pakistan. International Journal of Accounting and Financial Reporting, 4(2), Pages-258.
[40]. Kibria, U., Mehmood, Y., Kamran, M., Arshad, M. U., Perveen, R., & Sajid, M. (2014) The Impact of Macroeconomic Variables on Stock Market Returns: A Case of Pakistan. Research Journal of Management Sciences. ISSN, 2319, 1171.
[41]. Kuwornu, J. K. (2012). Effect of macroeconomic variables on the Ghanaian stock market returns: A Co-integration analysis. Agris on-line Papers in Economics and Informatics, 4(2), 1-12.
[42]. Lawal, N. A., & Okunola, O. E. (2012). Stock Prices, Stock Market Operations and Nigerian Economic Growth: A Granger Causality Modelling.
[43]. Liew, V. K. Sen,(2004). Which Lag Length Selection Criteria Should We Employ. Economics Bulletin, 33, 1-9.
[44]. Maysami, R.C. and T.S. Koh A. (2000) Vector Error Correction Model of the Singapore Stock Market. International Review of Economics and Finance, Vol. 9, pp. 79-96.
[45]. More, H. (1962) Stock Prices and the Business Cycle: Journal of Portfolio Management Spring 1975, Vol. 1, Pg. 5964.
[46]. Muhanamani and Sivagnanasithi (2014). Indian Stock Market and Aggregate Macroeconomic Variables: Time Series Analysis. Journal of Economics and Finance (IOSR-JEF)., e-ISSN: 2321-5933, p-ISSN: 2321-2925. 3(6), pp 68-74
[47]. Mukherjee T.K. and A. Naka. (1995) Dynamic Relations between Macroeconomic Variables and the Japanese Stock Market: An Application of a Vector Error Correction Model. Journal of Financial Research, Vol. 18, No. 2, pp. 223-237.
[48]. Mutuku, C., & Ng'eny, K. L. (2015). Macroeconomic Variables and the Kenyan Equity Market: A Time Series Analysis. Business and Economic Research, 5(1), 1-10.
[49]. Naik, P. K., & Padhi, P. (2012). The impact of Macroeconomic Fundamentals on Stock Prices revisited: An Evidence from Indian. Retrieved on, 8(1), 2014.
[50]. Naik, P. K. (2013). Does Stock Market Respond to Economic Fundamentals? Time-series Analysis from Indian Data. Journal of Applied Economics & Business Research, 3(1).
[51]. Naka, A., Mukherjee, T., & Tufte, D. (1998). Macroeconomic variables and the performance of the Indian Stock Market.
[52]. Narayan, P.K. and Narayan, S. (2010): "Testing for Capital Mobility: New Evidence from a Panel of G7 Countries." Research in International Business and Finance, Vol. 24, pp.15-23.
[53]. Naseri, M., & Masih, M. (2013). Causality between Malaysian Islamic Stock Market and Macroeconomic Variables. Munich Personal RePEc Archive Paper No. 60247. Online at http://mpra.ub.uni-muenchen.de/60247/
[54]. Nkoro, E., & Uko, A. K. (2013). A Generalized Autoregressive Conditional Heteroskedasticity Model of the Impact of Macroeconomic Factors on Stock Returns: Empirical Evidence from the Nigerian Stock Market. International Journal of Financial Research, 4(4), p38.
[55]. Ologunde, A. O., Elumilade, D. O. and Asaolu, T. O. (2006) Stock Market Capitalization and Interest Rate in Nigeria: A Time Series Analysis. International Research Journal of Finance and Economics, Issue 4.
[56]. Olowe, R. A. (2009). Stock return, volatility and the global financial crisis in an emerging market: The Nigerian case. International Review of Business Research Papers, 5(4), 426-447.
[57]. Osamwonyi, I. O., & Evbayiro-Osagie, E. I. (2012). The Relationship between Macroeconomic Variables and Stock Market Index in Nigeria. Journal of Economics, 3(1), 55-63.
[58]. OSISANWO, B. G., & ATANDA, A. A. (2012). Determinants of Stock Market Returns in Nigeria: A Time Series Analysis. African Journal of Scientific Research Vol, 9(1).
[59]. Pearce, D., & Roley, V.V. (1983). The Reaction of the Stock Prices to Unanticipated Changes in Money: a Note. The Journal of Finance, 38, 1323-1333. http://dx.doi.org/10.1111/j.1540-6261.1983.tb02303.x
[60]. Pesaran, M.H., Shin, Y.C., and Smith, R., (2001):"Bound testing approaches to the analysis of levelrelationships"Journal of Applied Econometrics, Vol. 16, pp.289–326.
[61]. Pesaran, MH., Shin, Y., Smith, RJ. 1996. Testing for the existence of a long-run relationship. DAE Working Paper N0. 9622. Department of Applied Economics, University of Cambridge.
[62]. Pesaran MH, Shin Y, Smith RJ. (1999) Bound testing approaches to the analysis of level relationship. J Appl Econom 16(3):289-326.
[63]. Pesaran, M. H., & Pesaran, B. (1997). Working with microfit 4.0: interactive econometric analysis. Oxford: Ocford University Press.
[64]. Phillips. Perron P. Testing for a unit root in time series regression. Biometrica 1988;75(2):335-46.
[65]. Quadir, M. M. (2012). The Effect of Macroeconomic Variables on Stock Returns on Dhaka Stock Exchange. International Journal of Economics and Financial Issues, 2(4), 480-487

[66]. Ray, H., & Sarkar, J. (2014). Macroeconomic Link to Indian Capital Market: A Post-Liberalization Evidence. Modern Economy, 5(04), 272.
[67]. Ross, S. A. 1976. The Arbitrage Theory of Capital Asset Pricing. Journal of Economic Theory 13, 341-360.
[68]. Samadi, S., Bayani, O., & Ghalandari, M. (2012). The Relationship between Macroeconomic Variables and Stock Returns in the Tehran Stock Exchange.International Journal of Academic Research in Business and Social Sciences,2(6), 559-573.
[69]. Samontary P. D., Nugali S., Sasidhar B. (2014) A study of the effect of macroeconomic variables on stock market: Saudi Perspective. International Journal of Financial Research 5(4)
[70]. Serletis, A. (1993). Money and Stock Prices in the United States. Applied Financial Economics, 3, 51-54. http://dx.doi.org/10.1080/758527816
[71]. Shabri Abd. Majid, M., & Yusof, R. M. (2009). Long-run relationship between Islamic stock returns and macroeconomic variables: An application of the autoregressive distributed lag model. Humanomics, 25(2), 127-141.
[72]. Shah, A. A., Aamir, M., & Saba, I. (2012). Empirical Analysis of Long and Short Run Relationship among Macroeconomic Variables and Karachi Stock Market: An Auto Regressive Distributive Lag (ARDL) Approach. Pakistan Journal of Social Sciences (PJSS), 32(2), 323-338.
[73]. Shahbaz, M., Hooi Lean, H., & Kalim, R. (2013). The impact of foreign direct investment on stock market development: evidence from Pakistan.Ekonomska istraživanja, 26(1), 17-32.
[74]. Shiller, R.J., &, Beltratti, A.E. (1992). Stock Prices and Bond Yields: Can the Comovements be Explained in Terms of Present Value Model? Journal of Monetary Economics, 30, 25-46. http://dx.doi.org/10.1016/0304-3932(92)90042-Z
[75]. Sikalao-Lekobane, O. L., & Lekobane, K. R. (2014). Do Macroeconomic Variables Influence Domestic Stock Market Price Behaviour in Emerging Markets? A Johansen Cointegration Approach to the Botswana Stock Market.Journal of Economics & Behavioral Studies, 6(5).
[76]. Sim, C.A. (1980). Macroeconomics and reality. Econometrica 48(1): 1-49.
[77]. Singh A. (1997). Financial liberalization, stock markets and economic development. Economics Journal 107:771-782.
[78]. Singh, D. (2010). Causal relationship between macro-economic variables and stock market: a case study for India. Pakistan journal of social sciences, 30(2), 263-274.
[79]. Smith, L. H. (1990) Stock Prices Behaviour in the American Economy. American Economic Review. Proceedings 71, (419430).
[80]. Sneeney. A. and Warga, R. (1986) Stock Returns, Interest Rate and the Direction of Causality. Journal of Finance, Vol.35: 1073-1103.
[81]. Sohail, N., & Hussain, Z. (2012). Macroeconomic Policies and Stock Returns in Pakistan: A Comparative Analysis of Three Stock Exchanges. Interdisciplinary Journal of Contemporary Research in Business, 3(10), 905-918.
[82]. Subburayan, B., Srinivasan, V. Dr (2014) The Effects of Macroeconomic Variables on CNX Bankex Returns: Evidence from Indian Stock Market. International Journal of Management & Business Studies 4(2)
[83]. Sukruoglu, D., & Nalin, H. T. (2014). The Macroeconomic Determinants of Stock Market Development in Selected European Countries: Dynamic Panel Data Analysis. International Journal of Economics and Finance, 6(3), p64.
[84]. Udegbunam, R.I., & Oaikhenan, H.E. (2002). Fiscal deficits, money stock Growth and the Behavior of Stock Prices in Nigeria: An Empirical Investigation. Journal of Financial Management and Analysis, 4, 10-27.
[85]. Yavuz, N.C. (2005), Türkiye'de İhracat İktısadı Arasındaki Nedensellik Analizi, Sosyal Siyaset Konferansları Dergisi, 49, 962-971.
[86]. Yertey, A. C. (2008). The Determinants of stock market development in Emerging Economies: Is South Africa Different. IMF Working Paper, WP/08/32
[87]. Zakaria, Z., & Shamsuddin, S. (2012). Empirical evidence on the relationship between stock market volatility and macroeconomics volatility in Malaysia.Journal of Business Studies Quarterly, 4(2), 61-71.

Appendix

A Impulse response graph




Response of LNM2 to LNASI
Response of LNM2 to LNFDI
Response of LNM2 to LNGDS
Response of LNM2 to LNM2
Response of LNM2 to LNNEER
Response of LNM2 to LNPI
Response of LNM2 to LNTBR
Response of LNNEER to LNASI
Response of LNNEER to LNFDI
Response of LNNEER to LNGDS
Response of LNNEER to LNM2
Response of LNNEER to LNNEER
Response of LNNEER to LNPI
Response of LNNEER to LNTBR
Response of LNPI to LNASI
Response of LNPI to LNFDI
Response of LNPI to LNGDS
Response of LNPI to LNM2
Response of LNPI to LNNEER
Response of LNPI to LNPI
Response of LNPI to LNTBR
Response of LNTBR to LNASI
Response of LNTBR to LNFDI
Response of LNTBR to LNGDS
Response of LNTBR to LNM2
Response of LNTBR to LNNEER
Response of LNTBR to LNPI
Response of LNTBR to LNTBR