

## The Review of Stock Returns and Macroeconomic Variables

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### Abstract

This study aims to review a number of studies on stock market returns and macroeconomic variables. The reviewed literature are categorised into three groups: literature related to developed countries, literature related to developing countries, and literature related to group countries. Moreover, the various empirical studies reviewed 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.

**Keywords:** Stock returns, macroeconomic variables.

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)

In the capital market, both foreign and local investors offer long-term funds in exchange for long-term monetary assets obtainable by fund clients. Ologunde (2006) believes that the market embraces both primary market and secondary market. Capital markets are essential in every economy and their ability to react instantaneously to fundamental problems replicates in all countries. It also encourages savings and real investment in any healthy economic environment. Aggregate savings are diverted into real investment that enhance the capital stock and, therefore, economic growth of the country. These attributes of the capital market make it possible for the discerning minds to assess the pulse of such an economy.

The main objectives of the present study is review researches that investigate the relationship between stock returns and macroeconomic variables in terms of the methodology and variables used in those studies.

This paper is organized in the following sections. First-section introduction of the study; Second-section empirical reviews of some selected literature; In the last section, the summary, conclusion and recommendation of the study is provided.

### **Review of Empirical Studies**

#### *Empirical Studies on Developed countries*

Asai & Shiba (1995) employed a vector auto-regressions (VAR) model in their time- series study to determine the existence of a relationship between the stock market and macro-economic variables in Japan. The study utilised a multivariate specification using the variables inflation rate, interest rate, industrial production index and stock market development proxy. The result of the study indicates that there is a relationship between the stock market and the macro-economic variables. It, however, shows that the direction of the causal relationship is from the macro-economic variables to the stock market, indicating that it is economic growth which drives the stock market for Japan. The causal effect found of the stock market on economic growth was, however, inconclusive.

Similarly, Asteriou and Price (2000) employed a vector autoregressions (VAR) model in their time-series study to determine the existence of a relationship between financial development and economic growth in the UK. They also utilised real GDP per capita as a measure of growth. They found evidence that supported the existence of a relationship between financial development and economic growth, with the direction being from financial development to economic growth. The result indicates that, contrary to what happens in the Japanese economy, financial development drives economic growth in the UK.

Park and Ratti (2000) also examined the dynamic interdependencies for inflation, real economic activity, monetary policy and stock returns, by adopting VAR model using monthly U.S. data from 1955 to 1998 and concluded that shocks due to the monetary contraction raise statistically significant changes in expected real stock returns and inflation, and that these movements are not found in opposite directions.

Herriott (2001) undertook a fascinating empirical investigation of the connection between financial development and economic growth in Switzerland, using quarterly time-series data from 1990 to 1999. He used a vector auto-regressive (VAR) estimation framework to specify the model. Herriott (2001) also used the variable real GDP as proxy for economic growth and

three measures of stock market development (market capitalisation, stock market volume divided by market value and stock market volume divided by GDP) and one measure of banking sector development (M1). The results of the study showed that financial development positively impacts on economic growth in line with economic growth theory. However, the use of real GDP as proxy for growth in the study is criticised, as it is seen as a poor measure of economic growth.

A. Beltratti, et, al (2002) investigated the relationship between the stock market volatility and macroeconomic variables using S&P500 data for the period from 1970 to 2001. Macroeconomic fundamentals were money supply, interest rate, inflation and industrial production. They employed GARCH and structural breaks and found a weak evidence of long memory in volatility once structural change is accounted for and a dual relationship between stock market and macroeconomic instability: macroeconomic volatility explains the persistent dynamics in stock market volatility, while stock market volatility has significant but short lived effects on output and inflation volatility.

Hondroyannis et al (2004) employed a vector auto-regressions (VAR) model in their time series study to investigate the financial development/economic growth relationship for Greece and found the existence of a relationship. Their study utilised monthly time-series data from 1986 to 1999. Their results indicate the existence of a two-way causal relationship between the financial development proxies and growth in the long run. It, however, shows that the effect from the stock market measure was smaller than the effect from the bank measure on economic growth.

In another study, Chaudhuri and Smiles (2004) investigated the empirical relationship between real aggregate economic activity and real stock prices for the Australian market applying Johansen's multivariate cointegration methodology. They confirmed that real stock return in Australia was correlated to short-term departures from the long-run relationship and vary in real macroeconomic activity. The results also document that the information provided by the cointegration contains some additional information that was not already present in other sources of return variations such as future GDP growth, term spread, or impacts on term covered. In contrast, the effect of other markets, particularly stock return variation in the New Zealand markets and US, have significantly been influenced by Australian stock returns movements.

Thangavelu and Ang (2004) obtain contrasting results after employing a vector auto-regressions (VAR) model in examining the financial development and economic growth relationship for Australia. Their results reveal that, while for the banking measures of financial development the causal relationship runs from economic growth to financial development, indicating that Australian banks do not drive economic growth, when stock market measures of financial development are utilised, the reverse is the case, that is the causal relationship runs from the stock market to economic growth, indicating that stock markets in Australia impact on economic growth positively.

Similar results were obtained by Van Nieuwerburgh et al (2005) after an extensive empirical investigation of the long-term relationship between stock market development and economic growth in Belgium using annual time-series data for 1830 to 2000. The study used real per capita gross domestic product (GDP) to proxy growth and used five measures of stock market

development, based on different groups of stocks. The results provide evidence that the stock market development caused economic growth in Belgium in the 1873 to 1935 period.

Gan, et, al (2006) examined the relationships between New Zealand Stock market Index and seven macroeconomic indicators such as CPI, real GDP figures, and domestic retail oil price (ROIL), from January 1990 to January 2003 employing Cointegration tests and Granger-causality test. The analysis showed a long run relationship between the macroeconomic variables tested and New Zealand's stock market index. However, the Granger causality test results indicated that the New Zealand's the stock market index was not a leading indicator for changes in macroeconomic variables.

Yang and Yi (2008), using annual Korean data from 1971 to 2002, examined the financial development/economic growth relationship in the Korean economy. The findings of the study provide evidence that financial development causes economic growth and that there is a one-directional relationship between the stock market and economic growth, running from the stock market to growth.

Kuang-Liang Chang (2009) employed GJR-GARCH model and analysed the effect of macroeconomic variables on stock return movements in U.S stock market using monthly data from January 1965 to July 2007. His macroeconomic variables were interest rate, dividend yield, and default premium. There result indicates that macroeconomic variables can affect the stock return dynamics through two different channels, and the magnitude of their influences on returns and volatility is not constant. However, the effects of the three macroeconomic variables on returns are not time-invariants but are closely related to stock market fluctuations. It is also found that interest rate and dividend yield seem to play an important role in predicting conditional variance. In addition, the three macroeconomic variables do not play any role in predicting transition probabilities.

Antonios (2010) also obtained similar results applying the Johansen cointegration and Granger causality tests within the Vector Error Correction Model (VECM), which examined the relationship between stock market development and economic growth for Germany. His analysis covered the period 1965 to 2007 using the variables stock market overall price index, gross domestic product (GDP) and bank lending rate. The results indicate that there is a onedirectional relationship between the stock market and economic growth, running from the stock market to growth. The results are realistic, as theory tells us that, in the short run, the stock market takes the lead until the feedback mechanism take effect. However, his use of GDP as proxy for growth can be criticised, as GDP is not a good proxy for economic growth. Sariannidis, et, al, (2010) investigate the impact of several macroeconomic variables on the Dow Jones Wilshire 5000 indexes and Dow Jones Sustainability, using a GARCH model and monthly data from January, 2000 to January, 2008. The results revealed that changes in returns of crude oil prices inversely affect the U.S. stock market, divergent to the changes in returns to the 10-year bond price that affect it positively. Both economic factors control the DJSI with a month delay. Moreover, the exchange rate instability affects negatively the returns of the U.S. non-farm payroll and the stock market can be exemplified as a stabilising aspect for the DJSI.

Yue Xu (2011) employed vector autoregressive (VAR) model and investigated the relationship between stock prices and exchange rate in Sweden using monthly data from March 2001 to

March 2011. He found that there is no co-integrating relationship between stock price and exchange rate, and also shows a negative correlation between the two variables.

### **Empirical Studies on Developing countries**

Pethe and Karnik (2000) used Cointegration and Vector error correction model and examined the association between macroeconomic indicators and stock price using monthly data for the period started from April 1992 to December 1997. Their result showed that the condition of the economy and the prices on the stock market do not show a long-run association.

Maghayereh (2003) examine the long-run relationship between selected macroeconomic variables and the Jordanian stock prices by using monthly data for the period from January 1987 to December 2000. He used multivariate cointegration analysis and vector error correction model (VECM) and found that macroeconomic variables that is, foreign reserves, exports, inflation, industrial production and interest rates are reflected in stock prices in the Jordanian capital market. His macroeconomic variables were interest rate, exports, foreign reserves, inflation, and industrial production.

Similar study was carried out by Ray and Vani (2003) whose applied an artificial neural network (ANN) and Vector autoregressive (VAR) model and examined the relations between real economic factors and the stock market movements in the Indian stock market. They used monthly data ranging from April 1994 to March 2003. Their analysis showed that, money supply, industrial production, exchange rate, interest rate, and inflation rate have a significant effect on equity prices, but no significant effects were discovered for foreign investment and fiscal deficit in explaining stock market movement.

Mayasmi et al, (2004) examined the relationship between macroeconomic factors and the Sector Stock Indices represented by the Singapore's composite stock index, SES All-S Equities Hotel Index, and SES All-S Equities Finance Index, as well as SES All-S Equities Property Index, using Johansen's cointegration VECM, a full information maximum likelihood estimation model. Monthly macroeconomic variables interest rate, inflation, exchange rate, industrial production and money supply from January 1989 to December 2001 were used. They found that the Singapore stock market and the SES All-S Equities Property Index formed significant relationships with all macroeconomic variables identified, while SES All-S Equities Hotel Index and the SES All-S Equities Finance Index form significant relationships only with selected variables.

Esen, et al., (2005) analysed the effects of macroeconomic variables dynamics on the Turkish stock exchange market using GARCH Model. Macroeconomic variables were foreign exchange rate, money supply, industrial production, and interest rate. They used weekly data between 28/06/1991 to 24/03/2000. Their study showed that dynamics changed dramatically over time. The financial, economic meltdown experienced in 1994, and the following recovery period seem to contribute to the structural changes in the dynamics.

In Turkey, Çil and Yavuz (2005) investigated the causal relations between export and economic growth during the period of 1982-2002 and made two discoveries. Firstly, the results of the cointegration test showed that there was no long-run equilibrium relationship between two series. Secondly, Granger causality tests in the framework of Vector

Autoregression (VAR) model indicated no causal relationship between GDP and export for Turkish economy.

Bhattacharya and Mukherjee (2006) studied the relationship between seven macroeconomic variables and the Indian stock market by applying Toda and Yamamoto, non-Granger causality technique, and the VAR framework for the sample period from April 1992 to March 2001. Their results also showed that there was no causal linkage between money supply, GNP, real effective exchange rate, index of industrial production foreign exchange reserve, trade balance and stock returns. Nevertheless, they found a bi-directional causality between rate of inflation and stock return.

Ologunde, Elumilade and Asaolu (2006) examine the relationships between interest rate and stock market capitalization rate. They reveal that prevailing interest rate has a positive influence on the stock market capitalization rate. They also indicate that government development stock rate has a negative effect on the stock market capitalization rate also prevailing interest rate has a negative influence on government development stock rate.

Another work by Padhan (2007) investigate the relationship between real economic activities and common stock market in India covering the period 1991-2005 and using cointegration and causality method. The result of analyzed data shows that there has been a long run and mutually causality between stock returns and real economic activities.

Ahmed (2008), employed Toda – Yamamoto Granger causality test and the Johansen's approach of co-integration to study the relationship between the macroeconomic variables and stock prices in india. He used quarterly data for the period from March, 1995 to March 2007. He found a long-run association between stock price and index of industrial production, money supply, FDI. His results also showed that movement in stock price caused change in industrial production.

Kyereboah-Coleman & Agyire-Tettey (2008) examined the relationship between macroeconomic indicators and economic growth and stock market performance in Ghana between the first quarters of 1991 to the last quarters of 2005 (1991;-2005:4). All shares index represented the stock market performance. Inflation, real exchange rate, Treasury bill rate and interest rate represent macroeconomic variables. The result showed that lending rate and the rate of inflation have a negative impact on the stock performance. However, the exchange rate has a positive influence on the stock market performance. This shows that the market will benefit with the depreciation of the Cedi through receiving the proceeds from their sale on the international market. The ECM result shows 54 percent speed of adjustment.

Rashid (2008) examines the dynamic interactions between stock prices and four macroeconomic variables in Pakistan, using Granger causality and cointegration tests that are robust to structural breaks. Variables were consumer prices, industrial production, exchange rate and the market rate of interest. It was discovered that there is long-run bi-directional causation between the stock prices and all the macroeconomic variables with the exclusion of consumer prices that only lead to stock prices. The results also revealed that the stock prices Granger caused by changes in interest rates in the short run. However, the analysis is unable to discover any short-run causation between the remaining three macroeconomic variables and the stock prices.

Kishor et al. (2009) explored changing explanatory power of selected macroeconomic variables over aggregate stock returns as the timeframe changes from over-the-month to over-the-year. Using the same set of monthly observations from January 1970 to December 2004, they found that the explanatory power has changed dramatically from less than 1 percent of variance in stock returns calculated on monthly basis to more than 84 percent of variance when point-to-point change is measured over one-year period. Further, the results of their study also provided an alternative to using high-frequency data in order to improve explanatory power. Finally, the forecasting power of the model using only the lagged values of the regressors and the sample period from January 1970 to December 2003 to make unconditional out-of-sample forecast for the twelve months of 2004 has been tested. All tests showed enough significant out-of-sample forecasting power of the model used.

Rahman, et al., (2009) studied the association between stock prices and selected macroeconomic variables in Malaysia using monthly data from January 1986 to March 2008. They employed VECM/VAR framework. They showed that changes in Malaysia stock market index do perform a cointegrating relationship between changes in interest rate, money supply, reserves, industrial production index and exchange rate. The findings stressed that industrial production index, interest rates, and reserves were positively related while exchange rate and money supply were negatively related to Malaysian stock market return in the long-run. Their causality test signifies a bi-directional relationship between interest rates and stock market return.

SOHAIL, et, al (2009) employed vector autoregressive (VAR) model and examined long-run and short-run relationships between Lahore Stock Exchange and macroeconomic variables such as real effective exchange rate, consumer price index, three-month Treasury bills rate, money supply (M2), industrial production index, in Pakistan, using monthly data from December 2002 to June 2008. The results indicated that there was a negative shock of consumer price index on stock returns, but, money supply, real effective exchange rate, industrial production index, had a significant positive shock on the stock returns in the long-run. The results of variance decompositions also showed that out of five macroeconomic factors consumer price index revealed greater forecast error for LSE25 Index.

Maku and Atanda (2010) examined the long-run and short-run macroeconomic shocks effect on the Nigerian capital market between 1984 and 2007. They studied the properties of the time series variables using the Augmented Dickey-Fuller (ADF) test and Error Correction Model (ECM). The empirical analysis indicated that the NSE all -share index is more responsive to changes in the inflation rate, exchange rate, and money supply and real output. Therefore, all the incorporated variables that serve as proxies for external shock and other macroeconomic indicators have simultaneous significant shock in the Nigerian capital market both in the long-run and short-run.

Chinzara (2010) further studies macroeconomic uncertainty and stock market volatility for South Africa using Vector Autoregression models and augmented autoregressive GARCH (AR-GARCH). He finds out that stock market volatility is significantly affected by macroeconomic uncertainty, that financial crises increase the stock market volatility, and that fluctuations in exchange rates are and short-term interest rates are the mainly influential variables in

affecting stock market instability, whereas volatilities in gold prices, inflation and oil prices play insignificant roles in affecting stock market volatility.

Xiufang Wang (2010) examine the time-series relationship between macroeconomic variable volatility and stock market volatility for China using lag-augmented VAR (LA-VAR) models and exponential generalized autoregressive conditional heteroskedasticity (EGARCH). He found out that there is a bilateral relationship between stock prices and inflation, whereas a unidirectional relationship exists between the interest rate and stock prices, through the direction from stock prices to the interest rate. Conversely, a significant relationship between real GDP and stock prices was not found. This study, however, is a prototype of our study, but the structure of Nigerian economy is quite different from theirs. Even China today is known to be one of the fast growing countries in terms of economic activities and also classified as an emerging country in the world whereas Nigeria is still a developing nation.

Similarly, Asaolu and Ogunmuyiwa (2011) examined the impact of macroeconomic factors on Average Share Price for Nigeria from 1986 to 2007. They employed Augmented Dickey-Fuller (ADF) test, Johansen Co-integration procedure, Granger Causality test and Error Correction model (ECM). Their macroeconomic variables were industrial output, the inflation rate, the fiscal deficit, foreign capital inflow, investment, external debt and exchange rate. The results of their causality test showed that average share price does not Granger cause any of the nine macroeconomic variables in Nigeria in the sample period. Only exchange rate Granger caused average share price. However, the Johansen Co-integration test asserted that a long run relationship exists between the macroeconomic variables and average share price.

Adaramola (2011) investigates the impact of macroeconomic indicators on stock price in Nigeria by employing general ordinary least square technique. Using quarterly data range from 1985:1-2009:4. The macroeconomic variables selected were broad money, interest rates, exchange rates, the inflation rate, oil price, and gross domestic product. His finding revealed that macroeconomic variables have changing significant shock on stock prices of individual firms in Nigeria. Inflation and money supply have insignificant effects on stock price while all the other variables have significant impacts on stock price in Nigeria.

İskenderoğlu et al., (2011) investigated the relationship between the stock market and industrial production. In this sense, the relationship between industrial production index and ISE Industrials National Index was researched by Johansen using co-integration and error correction models. The sample period included January 1991 and December 2009. Empirical findings revealed that there was a long-run relationship between industrial production index and ISE Industrials National Index. Furthermore, Johansen Error Correction Model stated out that ISE Industrials National Index appeared to cause industrial production index.

Izodonmi and Abdullahi (2011) examine the effect of macroeconomic factors such as the inflation rate, market capitalization, and exchange rate on the Nigerian stock returns for the period of 2000-2004. They chose the three macroeconomic variables for 20 sectors of the Nigerian stock exchange. They employ ordinary least square technique and found that there are no significant effects of those variables on the stock return in Nigeria.

Ibrahim, M. H. (2011) employed cointegration and vector autoregressive (VAR) model and examined the stock market development and macroeconomic performance in Thailand using quarterly data from 1993 to 2007. The macroeconomic variables were real gross domestic product, market capitalization ratio, the investment ratio, and the aggregate price level. He found that the relationship between development and stock market development is structurally invariant to policy shifts.

Oseni, et al, (2011) investigates the stock market volatility and macroeconomic variables volatility in Nigeria using exponential generalised autoregressive conditional heteroskedasticity (EGARCH) and lag-augmented VAR (LA-VAR) models and found bi-causal relationship between stock market volatility and real gross domestic product, and causal relationship between stock market volatility and the volatility of interest rate and exchange rate. The macroeconomic variables used were real gross domestic product, consumer price index, the inflation rate, short-term interest rate and the stock market for the period 1986 to 2010.

Srinivasan (2011) uses Johansen and Juselius (1990) multivariate cointegration technique to determine the long-run relationships between NSE-Nifty share price index and macroeconomic variables. Namely, index of industrial production, consumer price index, interest rate, money supply, exchange rate, and the US stock price index. In addition, the multivariate Vector Error Correction Model (VECM) was also applied to examine the short-run causality between NSE-Nifty share price index and the selected macroeconomic variables in India. The empirical findings reveal that the NSE-Nifty share price index has a significantly positive long-run relationship between the money supply, interest rate, index of industrial production, and the US stock market index. Further, there exists a significant negative correlation between the NSE-Nifty share price index and exchange rate, in the long run. Furthermore, the empirical results indicate that there is a strong unidirectional causation running from interest rate to NSE stock market return and the US stock market return to NSE stock market return. Other than this, there is significant short-run causality between a few monetary variables like money supply and interest rate, inflation, and money supply, and the US stock market and exchange rate.

Rad (2011) Examines the relationship between a set of three macroeconomic variables and Tehran Stock Exchange (TSE) price index from 2001 to 2007 applying Unrestricted Vector Autoregressive (VAR) model. Macroeconomic variables were TSE price index (TSI), consumer prices index (CPI), free market exchange rate (FER) and liquidity (M2). They found that Impulse Response Function (IRF), show that the response of TSE price index to shocks in macroeconomic variables such as free market exchange rate, liquidity (M2) and consumer price index (CPI) is weak. Additionally, universal Forecast Error Variance Decomposition (FEVD) reveals that the share of macroeconomic factors in variations of TSE price index is about 12 percent.

Shoil et al., (2011) explored long run and short-run dynamic relationships between KSE100 index and five macroeconomic variables. They applied Johansen cointegration technique and VECM in order to investigate the long-run and short-run relationships. The study used monthly data for analyzing KSE100 index. The results revealed that in the long-run, there was a positive impact of inflation, GDP growth and exchange rate on KSE100 index, while money

supply and three months treasury bills rate had negative impact on the stock returns. The VECM demonstrated that it took more than four months to adjust disequilibrium of the previous period. The results of variance decompositions exposed that inflation, among the macroeconomic variables, explained more variance of forecast error.

HERVE, et, al, (2011) investigates the role of macroeconomic variables on stock prices movement in Cote d'Ivoire using quarterly data covering the period of 1999:1 to 2007:4. They employed Johansen's multivariate cointegration test techniques and Vector autoregressive model (VAR). Macroeconomic variables were industrial production index (IPI), consumer price index (CPI), domestic interest rate (IR), real exchange rate (EXR) and real money supply (M2). The study discovered that there is cointegration between macroeconomic variables and Stock prices in Cote d'Ivoire indicating long-run relationship. The results of Impulse Response Function (IRF) and Forecast Error Variance Decomposition (FEVD) demonstrate that out of five macroeconomic variables selected, only consumer price index (CPI) and domestic interest rate (IR) are the key determinants of the stock price movements in Cote d'Ivoire.

HSING, Y. (2011) Employed generalized autoregressive conditional heteroskedasticity and examined the effect of macroeconomic variables on the stock market for Czech Republic using quarterly data range from 2002Q1 to 2010Q2. The macroeconomic variables were real gross domestic product, government borrowing, money supply, the inflation rate, CZK/USD exchange rate, and government deficit. Stock market index is positively related to real GDP and the German and US stock market index is negatively influenced by government borrowing, GDP, the domestic real interest rate, the CZK/USD exchange rate, the expected inflation rate and the euro area government bond yield and exhibits, a quadratic relationship with the ratio of money supply and GDP.

Khan, et, al (2011) employed vector autoregressive (VAR) model and investigated the impact of macroeconomic variables on stock returns, using monthly data range from June 2004 to December 2009. Independent variables were exchange rate, inflation, Treasury bills rate, Money Supply and Interest rate, and dependent variable was Stock returns. They found that all the variables except money supply have a significant impact on stock return.

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.

Anayochukwu (2012) investigate the shock of the stock market returns on foreign portfolio investment in Nigerian employing Granger causality test and multiple linear regression analysis. He revealed that foreign portfolio investment has a positive and significant shock on the stock market returns whereas inflation rate has positive but insignificant shock on stock returns. The case of causality test result confirmed that there is a unidirectional causality running from stock returns to foreign portfolio investment in the economy, which in turn will promote stock returns in Nigeria.

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.

Ochieng & oriwo (2012) examined the relationship between macroeconomic variables (such as Treasury bill rate, inflation rate, lending interest rate) and stock market performance using regression model for the period of 2008 to 2012. Their findings showed a negative relationship between TBR and NASI while inflation has a weak positive relationship with the NASI.

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.

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.

Shah, et, al (2012) employed Auto Regressive Distributed Lag technique, Ordinary Least Square and Vector Error Correction techniques for the analysis of the long and short-run relationship between the Macroeconomic variables that is inflation, exchange rate and interest rates and Karachi Stock Market, using the data from January 2003 to April 2009. They prove the long-run and short-run interaction between them. They also confirm the existence of long-run relationship. The overall macroeconomic environment does not affect the movement in the stock market.

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.

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.

Ibrahim and Agbaje (2013) also study the long-run relationships and dynamic interactions between inflation and stock returns in Nigeria using monthly data from January 1997 to 2010. The analytical method of Autoregressive Distributed Lag (ARDL) bound test as proposed by Pesaran (1997); and Pesaran et. al. (2001) discloses that there is the subsistence of a long-run relationship between inflation and stock returns.

Issahaku, et, al (2013) study the existence of causality between stock returns and macroeconomic factors in Ghana using monthly data from 1995 to 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.

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.

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.

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 1<sup>st</sup> January, 2001 to 31<sup>st</sup> 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. 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 1<sup>st</sup> January, 2004 to 31<sup>st</sup> 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.

#### **Empirical Studies on Group countries**

San-Diego (2000), which examined the effects of macroeconomic variables on the southeast Asian stock market by using vector autocorrelation (VAR) model and generalized autoregressive conditional heteroskedasticity model (GARCH-M) for the period 1988-1998. The macroeconomic variables used were real gross domestic product, inflation, interest rate, and money supply. The results showed positive relationships between stock returns in the four studied countries. Nevertheless, the study indicated that although Indonesia's monthly stock return apparently was affected by Malaysia's previous monthly stock return, for the remaining countries there was no effect of the previous monthly stock return of one country on the other countries' monthly stock returns or on its own subsequent monthly stock return. In addition, the study found that in terms of volatility, the macroeconomic variables contributed to the stock return only in Indonesia

In Wongbampo and Sharma (2002) explored the association between stock market behaviour and macroeconomic fundamentals in five Asian nations (Malaysia, Philippines, Thailand, Singapore and Indonesia). These macroeconomic variables were GNP, inflation, money supply, interest rates, and exchange rates. Their analysis revealed that, in the long-run, all the five nations the stock price indexes were positively related to growth in output and negatively related to the total price level. Conversely, they also found a negative relationship between interest rates and stock prices for Singapore, Thailand, and Philippines, but positively related to Malaysia and Indonesia.

Similarly, Abugri (2008) investigated the link between the stock return and macroeconomic fundamentals from Brazil, Argentina, Mexico and Chile. He used monthly data from January 1986 to August 2001. His results revealed that U.S and MSCI world index treasury bills rate were constantly significant for all the four markets he analysed. Exchange rates and Interest

rates were significant in three out of the four markets in explaining stock returns. Nevertheless, it can be discovered from his analysis that, the association between stock return and macroeconomic variables differed from nation to nation. For example from his analysis, it is evident that, for Argentina, money supply and interest rate were negatively and significantly influencing stock performance but IIP and exchange rate were insignificant. For Brazil, interest rate and exchange rate were found to be negative and significant while the IIP was positive and significantly influenced the stock performance. For Chile, IIP was positively and significantly affect the stock performance but money supply and exchange rate were insignificant. But for Mexico, the exchange rate was negative and significantly related to stock performance but IIP, interest rates, money supply were insignificant. These results entail that the response of the market performance of a shock in macroeconomic variables cannot determine a priori since it tends to differ from country to country.

Beer and Hebein (2008) employed an Exponential General Autoregressive Conditional Heteroskedasticity (EGARCH) framework to investigate the relationship between exchange rates and stock prices for two groups of countries: developed and emerging economies. Results explained that positive significant price spillovers of the stock market from the foreign exchange market exist for India, Canada, Japan and the U.S. Results also revealed that for the developed countries, there was no persistence of instability in the exchange rate markets and the stock markets. For the emerging economies, results point to the contrary: instability was enduring and pronounced.

Nikkinemi, et, al (2008) examined whether the United States (US) macroeconomic news announcements affect volatilities of emerging stock markets in the Asia-Pacific region, using monthly data from July 1995 to December 2003. They employed generalized autoregressive conditional heteroskedasticity model (GARCH-M) and found that all the emerging stock markets were affected by US macroeconomic news announcements.

Mahmood and Dinniah (2009) applied the Engle-Granger test and Johansen, Juselius maximum likelihood procedure to test the relationship between three macroeconomics variables and stock price of six countries in Asian-Pacific region. Macroeconomic variables consist of output, exchange rates and inflation. The study revealed that long-run relationship between these variables in all countries exists, thus supporting the cointegration hypothesis with exception of Malaysia. Analysis also showed non-existence of short-run relationship between all variables in all the particular countries except between stock price and foreign exchange rates in Hong Kong and stock price and real output in Thailand.

Hosseini, et, al, (2011) investigated the relationships between stock market indices and four macroeconomics variables, namely crude oil price (COP), money supply (M2), industrial production (IP) and inflation rate (IR) in China and India, using January 1999 to January 2009. They employed the vector autoregressive (VAR) model and showed that in both long-run and short-run there are linkages between four selected macroeconomic variables and the stock market index in China and India.

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).

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.

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.

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.

## **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. Nevertheless, most studies show evidence to support the notion that there is a relationship between stock returns and macroeconomic variables from both short-term and long-term perspectives. However, this interpretation needs to be made with caution, as most of studies have shown that only little variation in stock returns can be explained by those macroeconomic variables. Another issue in the interpretation of this relationship is whether it is a contemporaneous or

lead-lag relationship. Many studies on the factors that affect stock returns would like to examine stock return predictability. In other words, the change in macroeconomic variables can be used to explain future stock returns.

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