

A STUDY ON THE RELATIONSHIP BETWEEN STOCK PRICES AND SOME MACROECONOMIC VARIABLES

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Many academic researchers, financial inverters and industry analysts and practitioners have tried to paid their attention to examine the dynamics and the direction of relation between macroeconomic variables and movements of stock price. They have gone through several empirical and descriptive studies to examine the extent and the direction of effect of macroeconomic variables on stock prices and the existing relationship between the two in the contemporary scenario. It is clearly explained that increasing integration of the financial markets and implementation of various stock market reformation measures in India, the activities of the stock markets and their relationships with the macro economy have assumed to be very significant. This study is an attempt to examine the causal relationships between the share price of Group A companies and some of crucial macroeconomic variables namely gold price, crude oil price, foreign exchange reserve, political turbulence and call money rate. The purpose is to find out the causal relationship that impact on the fluctuation of stock price with respect to the relationship between macro economic factors and stock market especially in terms of stock prices. The present study thus proceeds with a single point investigative agenda i.e. what type of relationship is exist between stock prices and macro economic variables.

Introduction

Indian capital market is the major indicator of growth and development of the country's economy and in fact, Indian stock market is one of the emerging markets in the world. which has developed in terms of number of listed stock exchanges, and other intermediaries who are contributed to corporate initiatives, financed to the exploration of new idea, provides facilitate management to reduce financial risk and hold out necessary implications for growth and development in their economy, through Liberalization and Globalisation policies. way right back in 1990s which leads to changes in policies and trends in the world economy. Same in the reform in shape and structure of the Indian capital market has undergone tremendous change in the recent past which resulting in radical and significant improvement in efficiency, transparency, safety in stock market which led the pace of growth of stock market from the aggregate economic point of view. Nowadays stock market has become a key driver of modern economy and is one of the major sources of raising resources for Indian corporate economy, thereby enabling financial development and economic growth in the country.

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Literature Review

Anokye M. Adam & George Tweneboah (2008) studied to examine the effects of both long-run and short-run dynamic relationships between the stock market index and macroeconomic variables including inward foreign direct investments, treasury bill rate, consumer price index, and exchange rate from 1991 to 2006 using johansen's multivariate cointegration test and innovation accounting technique. the result of the findings states that there exist a long-run co-integration between macroeconomic variables and stock prices in Ghana stock market further tests indicate that, in the short-run, inflation and exchange rates matter for share price movements in Ghana, however, interest rate and inflation prove very significant in the long-run.

Avneet Kaur Ahuja, Chandni Makan, Saakshi Chauhan, Abhishek Kumar (2012) Studied about the effect of Macroeconomic Variables on Stock Market and the analysis is based on Monthly data for a time span of 7 years (2005 – 2012) by using granger causality test and regression analysis. The result shows that three out of seven variables are relatively more significant and likely to influence Indian stock market. These variables are exchange rate, foreign institutional investment and call money rate. There is a positive relation between FII and Sensex, call money rate and Sensex whereas exchange rate and Sensex shows a negative relation. This simply concludes that in long term the Indian stock market is more driven by domestic macroeconomic factors rather than global factors.

Gurloveleen K* and Bhatia BS (2015) investigated the impact of macroeconomic variables on the functioning of Indian Stock Market, based on monthly data of ten macroeconomic variables, namely Broad Money, Call Money Rate, Crude Oil Price, Exchange Rate, Foreign Exchange Reserve, Foreign Institutional Investors, Gross Fiscal Deficit, Index of Industrial Production, Inflation Rate and Trade Balance and one stock market index ie. BSE 500. It was found that Foreign Institutional Investors became stationary at level, Call Money Rate, Crude Oil Price, Exchange Rate, Foreign Exchange Reserve, Gross Fiscal Deficit, Inflation Rate and Trade Balance at 1st difference and Broad Money and Index of Industrial Production at 2nd difference. Here the two macroeconomic variables Foreign Institutional Investors and Exchange Rate were found significant. Granger causality test was used to check the causality between these two significant variables and average closing prices of manufacturing firms of BSE 500. It has been observed that these variables have no relationship with closing prices of BSE 500 manufacturing firms. The study also revealed that the Indian Stock Market was a weak form efficient because no relationship was found amongst the variables during the study.

Kulathunga KMMCB (2015) studied to examine the impact of macroeconomic factors on stock market development in Sri Lanka using data between 2002 and 2014 through descriptive statistics and multiple regression analysis. The results of the study suggest that all macroeconomic factors influence the stock market development. More precisely, volatile inflation rate and exchange rate together with higher deposit rate have curtailed the stock market development in Sri Lanka. Moreover, positive effects is created by the economic growth and the previous periods tend of the stock market performance enhanced stock market performance.

Dr. L.K. Tripathi, Arpan Parashar And Swati Jaiswal (2014) examined the long term relationship between selected external macroeconomic variables and different sectoral indices at national stock exchange (NSE) by employing multiple regression equation model (Galton, 1877) over five macro economic variables such as exchange rate (USD), crude oil prices, foreign institutional investments, current account balance and foreign exchange reserves to magnify the impact of external macroeconomic variables on different sectors of Indian economy represented by sectoral in-dices at national stock exchange (NSE) viz. CNX auto, CNX Bank, CNX Energy, CNX FMCG And CNX it. for the period from April 2005 to march 2013. founds a high correlation among the variables and suggest that amongst all macroeconomic variables only foreign institutional investment (FII) affects all sectoral in-dices however rest of the macroeconomic variables selectively affect different sectoral in-dices in India.

Lm.C.S.Menike (2006) Investigates the effect of macro economic variables on stock price of emerging srilankan stock market using monthly data for the period from September 1991 to December 2002 by using multivariate regression model, the findings of study indicates that in the emerging market studies inflation rate and exchange rate react negatively to stock price in the Colombo stock exchange (CSE).

Mahmoud Ramadan Barakat, Sara H. Elgazzar & Khaled M. Hanafy (2016) stated and empirically presented how all the macroeconomic variables used in the study namely interest rate, exchange rate, CPI and money supply have been found to have a relationship with the stock market either a long run relationship or a causal relation in both Egypt and Tunisia. This makes it clear that there is a relationship between stock market and these macroeconomic factors play a great role in the stock market fluctuations and can be used to explain them. for example, knowing that money supply has a long run impact in Egypt and no significant impact in Tunisia will help give portfolio managers insights to manage their portfolio better, especially if they are diversifying the fund internationally.

Prof. Mohi-u-Din Sangmi, Mohd. Mubasher Hassan (2013) examine the effect of macroeconomic variables on the stock price movement in Indian Stock Market. over the period of April 2008 to June 2012. Variables of macro-economy (inflation, exchange rate, Industrial production, Money Supply, Gold price, interest rate) are used as independent variables. Sensex, Nifty and BSE 100 are indicated as dependent variable. Multiple regression analysis is applied in this paper to construct a quantitative model showing the relationship between macroeconomics and stock price. The result of this paper indicates that significant relationship is occurred between macroeconomics variable's and stock price in India.

Muazu Ibrahim & Alhassan Musah (2014) Used recent data spanning 2000 to 2010 and investigates the effect of Macro economic Variables on stock returns by employing the Johansen cointegration approach and vector error correction model (VECM) the result of the both impulse response functions and variance decomposition shows that inflation, money supply, and exchange rate do not only explain a significant proportion of the variance error of stock returns but their effects persist over a long period.

Dr. Naliniprava Tripathy (2011) investigated the market efficiency and causal relationship between selected Macroeconomic variables and the Indian stock market from 2005 to 2011 by using Ljung-Box Q test, Breusch-Godfrey LM test, Unit Root test, Granger Causality test.

The result confirms the existence of autocorrelation in the Indian stock market and macro economic variables. The analysis shows evidence of existence of bidirectional relationship and unidirectional causality between interest rate and stock market, exchange rate and stock market, international stock market and BSE volume, exchange rate and BSE volume. So it suggests that any change of exchange rate, interest rate and international market significantly influencing the stock market in the economy and vice versa.

Nopphon Tangjitprom(2014)the aim of research review is to make study on macroeconomic factors and stock returns. for which he classified it into four groups: variables reflecting general economic conditions, variables related to interest rate and monetary policy, variables concerning price level, and variables concerning international activities. Further various studies on macroeconomics factors and stock returns have employed different methodologies like vector autoregressive technique, GARCH model based on their purposes and interpretations. Although the results are mixed, 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, 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.

Pooja Singh(2014)attempted to analyses the impact of macroeconomic variables on stock market of India by using multivariate stepwise regression analysis and Granger's causality test to analyze the dynamic and causal relationship among the variables, like closing price of BSE sen-sex and s&p CNX nifty while the explanatory variables are index of industrial production (IIP), wholesale price index (WPI), money supply(m3), interest rates (IR), trade deficit (TD), foreign institutional investment (FII), exchange rate (ER), crude oil price (CP) and gold price (GP) by using data from 2011 to 2012. the gold prices are used as best alternative for investment which hampers the performance of Indian stock market granger causality test signifies that there exists unidirectional causal relationship from exchange rate to stock market, thus any movement in the value of exchange rate has influence on stock market. another unidirectional causality is from money supply to s&p CNX NIFTY which signifies the influence of variable on the stock market. the causality is running from index to the variables in case of trade deficit and foreign institutional investors.

Pramod Kumar Naik & Puja Padhi(2012) the main purpose of the research is to explore the long-run equilibrium relationship between stock market index and macroeconomic variables. The findings of analysis reveal that macroeconomic variables and the stock market index are co-integrated and, hence, a long-run equilibrium relationship exists between them. it is observed that the stock prices positively relate to the money supply and industrial production but negatively relate to inflation. The exchange rate and the short-term interest rate are found to be insignificant in determining stock prices in the granger causality sense. There is bidirectional causality exists between industrial production and stock prices whereas, unidirectional causality from money supply to stock price, stock price to inflation and interest rates to stock prices are found in the long-run but not in the short-run.

Rakesh Kumar(2013) the study covers the period 2001 to 2013, this period witnessed the phases of boom as well as recession, hence may better reflect the performance of macroeconomic variables in the movement of Indian stock market(CNX NIFTY) the study highlights that favorable macro environment in India is good for the stock market and the

stocks can trade with high price earning (PE) ratio that faith in the stock market improves considerably. Indian stock market is highly responsive to the macro environment. Industrial performance in terms of growth pattern is highly passively associated with the performance of the stock market.

Robert D. Gay, Jr.(2008) studied to investigate the time-series relationship between stock market index prices and the macroeconomic variables like exchange rate and oil price for Brazil, Russia, India, and China (BRIC) using the Box-Jenkins ARIMA model. The result suggest that there was no significant relationship found between present and past stock market returns of the markets of Brazil, Russia, India, and China and exhibit the weak-form of market efficiency.

T.Barbic,I.Condic-Jurkic(2012) proved strong relationship between stock market index and set of macroeconomic variables, including inflation rate, broad money supply, money market interest rate and foreign currency reserves,in Croatia, Czech Republic,Hungary, Poland And Slovenia, using Johansen co-integration method and ganger causality procedure in order to test for bilateral long run equilibrium relationships. It was found that (a) there is no causal linkage between any macroeconomic variable and stock market index in Croatia, Hungary And Poland. (b) money supply and foreign exchange lead stock index in Czech republic, while inflation rate and money market interest rate lead Slovene stock index. (c) none of stock market in-dices might be used as a leading indicator of inflation rate (d) stock market index leads money market interest rate in Hungary And Czech republic, foreign exchange reserves in Slovenia and money supply in Poland. they also state that in the short run investors in Croatia, Hungary And Poland are not able to gain above average profits by using information on changes in macroeconomic fundamentals.

P. Bhanu Sireesha(2013)in his study he investigates the impact of selected macroeconomic factors upon the movements of the Indian stock market index, nifty along with gold and silver prices by using linear regression technique. He studied the behavior of returns at various levels of inflation, GDP, IIP and money supply and interdependence of the returns on stock, gold and silver. From the study he found stock returns are significantly influenced by inflation, GDP, USD-INR AND JPY-INR,stock returns can be used to hedge against these variables. As gold returns are significantly influenced by money supply, all the four currencies,exchange rates, gold returns can be used to hedge against these variables.

Research Methodology:

This study is based on secondary data collected from BSE. Daily share price of group A companies , dollar price, oil price, gold price, call money rate, bank deposit interest and political turbulence on daily basis for the period from 2012 to 2017. Regression analysis is done to find out the relationship between share price and other macro economic variables. The proportionality test of the variables is done using Pearson's correlation coefficient test.

Objective of Study:

- To study the relationship between share price and other macro economic variables (gold price, crude oil price, foreign exchange reserve, political turbulence and call money rate).

Analysis:

The relationship between share price and observed variables:

| | Unstandar - dized Coefficient s | | Standardize Coefficient s | t | Sig. 95% Confidenc e Interval for B | | |
|--------------|--|---------------|---------------------------------|--------|--|----------------|----------------|
| | B | Std. Error | Beta | | Dollar | Lower Bound | Upper Bound |
| (Constant) | 2103.050 | 185.386 | | 11.344 | .000 | 1739.689 | 2466.411 |
| Dollar price | -13.148 | 2.838 | -.042 | -8.187 | .000 | -28.800 | -17.674 |

Pearson Correlation Test

| | |
|--------------------------|-------|
| Share Price | 1.000 |
| Dollar Price | -.044 |
| Foreign exchange reserve | -.035 |
| Gold Price | -.038 |
| Crude oil Price | -.032 |
| Turbulence | 0.004 |
| Call Money Rate | -.028 |

| | Dollar price | Oil price | Turbulence | Foreign exchange reserve | Call Money Rate |
|---------------------|--------------|-----------|------------|--------------------------|-----------------|
| Pearson correlation | -0.047 | -0.030 | 0.004 | -0.033 | 0.026 |
| Sig. F change (p) | 0.000 | 0.000 | 0.436 | 0.000 | 0.000 |
| R square | 0.003 | 0.001 | 0.000 | 0.001 | 0.001 |
| F | 67.024 | 33.927 | 0.607 | 41.853 | 25.922 |

From correlation analysis it is observed that dollar price, crude oil price, foreign exchange reserves and gold price are negatively related to share price changes where turbulence and call money rate has a positive relationship with share price changes. But from regression analysis it is observed that share price is negatively related with dollar price. If dollar price increases, share price decreases ($r = -.047$). Around .3% of the variation of share price is due to variation of dollar price. (R square change = 0.003). Here the value of un standardized coefficients B is -13.148. It means for 1 unit of dollar price change, share price decreases 13.148 units. But it is observed that share price is highly depends on dollar price. If dollar price increases, share price decreases significantly ($r = -.042$). Around .2% of the variation of share price is due to variation of dollar price. (R square change = 0.002). Here the value of unstandardized coefficients B is -23.237. It means for 1 unit of dollar price change, share price decreases 23.237 units. But share price is not significantly depends on turbulence. If

significance level is less than 0.05, relationship is meaningful. Here significance level is approx 0.436, so the relationship is not significant. In case of foreign exchange share price is significantly depends on foreign exchange reserve. If foreign exchange reserve increases, share price decreases significantly ($r = -0.033$). Around .1% of the variation of share price is due to variation of foreign exchange reserve. ($R^2 \text{ change} = 0.001$). It is observed that share price is having a positive relationship with call money rate ($r = 0.026$). Around 1% of the variation of share price is due to variation of call money rate. ($R^2 \text{ change} = 0.001$). Share price is significantly depends on gold price. If gold price increases, share price decreases significantly ($r = -0.036$). Around .1% of the variation of share price is due to variation of gold price. ($R^2 \text{ change} = 0.001$).

Conclusion:

In our research, we have tried our best to find out the relationship between share price and some other important economical and social factor and got some interesting results related to this. We have done the analysis on the basis of individual company, sector wise as well as on over all Group A companies of BSE. Here several efficient statistical methods are used to do the analysis based on daily basis database of different economical and social sectors. Finally we got some relationships of those factors with share price changing. In our analysis we found that dollar price is the mostly effected factor which is responsible for changes of share price. Here we saw that dollar price and share price have a negative relationship that means if dollar price or exchange rate decreases, share price increases in the same time. Some other assets like gold, bank's fixed deposit etc also have a negative relationship with share price changes. It means if gold price or fixed deposit interest increases, share price decreases simultaneously. We also checked whether turbulence and share price has any effect on relation, but we didn't find any significant relationship between them. There was another strong economical factor in our analysis which is call money rate, and we found a positive relationship between call money rate and share price changes. So we can tell if call money rate of our country increase, share price also increase at the same time. So this study will help investor to take right decision on investing specific shares.

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