CHAPTER 2:-

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

“The present chapter attempts to review the earlier literature, related to the “Impact of financial (Economic) variables such as Money Supply, Rate of Interest, Rate of Inflation, Rate of Exchange, Economic growth, Index of Industrial Production, Gross Domestic product etc., on Stock Market”. Through earlier literature researcher identified research gap and go for further research related to this area. This chapter has been categorized into four sections”.

![Diagram showing classification of earlier literature]

Fig: 2.1

Above (fig: 2.1) mentioned classification of the earlier literature has been done to understand the various issues of the impact of financial (economic) variables on stock market and whether Indian empirical result behaves differently when compared to other countries results. Basically, this classification also helps to find the model which gives conflicting results in case of developed and developing countries.
2.1 Theoretical Framework:

The objective of the present study is to find out the effects of financial (economic) variables on United State, United Kingdom and Indian stock market. For that the study selected the financial (economic) variables namely, CPI, GDP, CP, FX and IIP.

Before going to analyze the stock market and its interrelations with financial (economic) variables, it is also important on the part of the study to know the efficiency of the stock market. Because in an efficient stock market it is believed that the market takes in to account all the fundamental facts relating to the financial performance of a firm in pricing a security. So “An efficient market is one, where all information percolates down to all investors initially and all investors process the available information rationally so that no single investor has an edge over the others.” (Portfolio management, Tata McHill publication, pp – 51). So the capital market is considered to be efficient in three different forms. (1) The weak form, (2) Semi strong form and (3) Strong form.

- **The weak form** deals with the information regarding the past sequence of security price movement. That means the new price movement are completely random. They are produced by new information and have not influenced any way on the past price movements.

- **Semi strong form of market** deals with the publicly available information such as corporate annual reports, company announcement, press releases, announcements of forthcoming dividends; stock splits etc. so as soon as the information become public stock market immediately adjust with the informed information.

- **Strong form of market** deals with both public and private information. That means besides the public information, some other information which is not available in general public, is also gathered by the person, occupying management position inside the company.
To study the behavior of the stock prices it is always important to know the efficiency of the market structure because the information regarding the market (stock market) is important on the part of the investors or policymakers to operate the financial (economic) variables in a right direction for the smooth functioning of the economy. The stock market operation comes under the category of informational efficiency. Because here the price fully reflects all available information regarding the market.

2.1.1 Inflation and Stock Prices:

Inflation means a considerable and persistent rise in the general level of prices over a long period of the time. There are two common measures of inflation: (i) Percentage change in price Index Numbers (PIN), and (ii) Change in GNP Deflator.

- **Measuring Inflation through PIN:** - The following formula is used for measuring the rate of inflation through the change in the PIN.

  \[ \text{Rate of Inflation} = \frac{\text{PIN}_t - \text{PIN}_{t-1}}{\text{PIN}_{t-1}} \times 100 \]

  Where PIN\(_t\) and PIN\(_{t-1}\) are the price index numbers in the year selected for measuring inflation and in the preceding year, respectively.

  The two widely used PINs are wholesale price Index (WPI) also called Producer Price index (PPI) and Consumer Price Index (CPI). WPI is used to measure the general rate of inflation and CPI is used to measure the rise in the cost of living.

- **Measuring Inflation by GNP Deflator**

  The GNP deflator is the ratio of nominal GNP to real GNP of the same year. It is also defined as follows.

  \[ \text{GNP deflator} = \frac{\text{Nominal GNP}}{\text{Real GNP}} \]

  Where nominal GNP is GNP at current prices and Real GNP is GNP at constant prices.
2.1.1.1 Theories of Inflation:

The views of classical economists, Viz, Jean Bodin, Richard Cantillion, John Locke, David Hume, Adam Smith and William petty, are called collectively as the ‘classical theory of inflation’. This theory is based on the classical quantity theory of money. The first and the comprehensive version of the classical theory of inflation were propounded by Irving Fisher in 1911. According to his theory, Inflation occurs in direct proportion to increase in money supply, given the level of output. Another version of the classical theory of inflation, known as neo – Classical Theory of Inflation was later developed by the Cambridge economists also known as neo – classical theory of inflation. There is, however, a difference between the two versions of inflation theory. While classical school considered increase in the supply of money as the cause of inflation, the Combridge School postulated increase in demand for money as the cause of inflation.

Keynes postulated that inflation can be caused by increase in the aggregate demand. Increase in aggregate demand, aggregate supply remaining constant, creates a demand – supply gap which he called as “inflationary gap”. According to Keynes, the inflationary gap is the cause of inflation.

“The modern monetarist view is a modified version of the classical quantity theory of money. The modern monetarism is therefore sometimes called ‘modern Fisherianism’. The modern monetarists hold that the general level of price rises only due to an increase in money supply. According to Milton Friedman, “Inflation is always and everywhere a monetary phenomenon…. And can be produced only by a more rapid increase in the quantity of money than in output.” The modern approach to inflation follows the theory of price determination”.

The effect of inflation on stock price is because of a chain of macroeconomic events (Geske and Roll, 1983). When stock price declines in response to an anticipated change in economic conditions.
2.1.2 Economic Growth and Stock price

To show the relation between economic growth and the stock price the study considers the aggregate index of Industrial Production (IIP) and Gross Domestic Product (GDP) as a proxy for the economic growth.

In principle, a well-functioning stock market should affect economic development and growth through raising (a) the saving rate (b) the quantity and (c) the quality of investment. It also promotes technological progress and entrepreneurship (Levine and Zerovous, 1998). They suggests that stock market make financial assets traded in them in less risky because they allow savers to buy and sell quickly and cheaply when they wish to alter their portfolios. Companies at the same time easy asses to capital through equity issue. Less risky assests and easy asses to capital markets improves all the allocation of capital, an important channel of economic growth.

2.2 Literature related to developed countries

(Francisco Jareño and Loredana Negrut 2015) analyzed the relationship between the US stock market and US macroeconomic factors, namely, gross domestic product, the consumer price index, the industrial production index, the unemployment rate and long-term interest rates, found statistically significant relationships with the stock market except for the consumer price index.

(Sadiye Çiftçi 2014) “Investigated the influence of four macroeconomic variables, namely, crude oil, interest rate, exchange rate and gold, on stock returns of ten U.S. industries, used monthly data from January 1997 to September 2014, divided into a pre-crisis and post-crisis period along with whole. By applying the ordinary least squares approach, found, the impact of some macroeconomic variables differs between industry sectors, whereas one variable has a homogenous impact”.

(Chan Hong Zoa, Farn Wei Chet, Hum Yan Sheng, Wong Hui Lin and Yip Jia Shen 2014) “examined the dynamic relationship between macroeconomic variables namely real interest rate, industrial production index, inflation, government debt and stock market index (Nikkei 225) in
Japan, By applying Augmented Dickey Fuller test, Philip Peron Test, Johansen cointegration test, Granger Causality Test and ECM (Error Correction Model), found that all the variables are significantly impacted on Nikkei 225 in long run, during post Asian financial crisis.

(Joseph Tagne Talla 2013) investigated the impact of changes in selected macroeconomic variables (Consumer Price Index, Interest Rate, Exchange Rate and Money Supply) on stock prices of the Stockholm Stock Exchange (OMXS30). By using unit root test, Multivariate Regression Model computed on Standard Ordinary Linear Square (OLS) method and Granger causality test, all tests are conducted on monthly data (1993-2012), found a significant relationship.

(Martin Sirucek 2012) focused on the effect, implication, impact and relationship between selected macroeconomic variables, namely, inflation, interest rates, money supply, producer price index, industrial production index, oil price and unemployment and wider US indices S&P 500 and industrial Dow Jones Industrial Average (DJIA), found statistically significant relation.

(Emrah Ozbay 2009) investigated the causal relationship between stock prices and macroeconomic factors, namely, interest rate, inflation, exchange rates, money supply and the real economy. “By applying Granger causality model, this study found, that interest rate (OIR), inflation (CPI), CD/GDP, and foreign sale do Granger cause stock returns, while stock returns do Granger cause money supply (M1, M2, and M2Y), exchange rate, interest rate (OIR and TIR) inflation (PPI), foreign transactions. Industrial production is indicated as neither the result variable nor the cause variable of stock price movement”.

(Andreas Humpe and Peter Macmillan 2007) examined whether a number of macroeconomic variables (Industrial Production, Consumer Price Index, Money Supply and long term interest rate) influence stock prices in the US and Japan. By applying cointegration analysis, found data are consistent with a single cointegrating vector in case of US (means, stock prices are positively related to industrial production and negatively related to both the consumer price index and a long term interest rate and insignificant (although positive) relationship between US stock prices and
the money supply) and two cointegrating vectors in case of Japan (means, “one vector that stock prices are influenced positively by industrial production and negatively by the money supply, second cointegrating vector, means, industrial production to be negatively influenced by the consumer price index and a long term interest rate”).


(A. Beltratti, et, al 2002) investigated the relationship between the stock market volatility (S&P500) and macroeconomic variables, namely, supply, interest rate, inflation and industrial production by applying GARCH and structural breaks researcher found significant stock market volatility.

(Herriott, 2001) investigated, the connection between financial development and economic growth in Switzerland, used quarterly data from 1990-1999, used 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) and found positively impact of financial development on economic growth.

2.3 Literature related to Developing Countries

(Mahmoud Ramadan Barakat, Sara H.Elgazzar and Khaled M.Hanafy 2015) to shed light on the relationship between the stock market and macroeconomic factors, namely, Consumer Price Index, Exchange Rate, Money Supply and Interest Rate in two emerging economies (Egypt and Tunisia) for the period from January 1998 to January 2014, found that there is a causal relationship in Egypt between market index and Consumer Price Index (CPI), Exchange Rate, Money Supply, and Interest Rate and the same goes for Tunisia except for CPI.
(Wycliffe Nduga Ouma and Dr. Peter Muriu 2014) investigated the impact of the macroeconomic variables (Money Supply, exchange rates and inflation) on stock returns in Kenya during the period 2003-2013, used the Arbitrage Pricing Theory (APT) and Capital Asset Pricing Model (CAPM) framework for monthly data. By applying Ordinary Least Square (OLS) technique, found, the exception of interest rates, there exists a significant relation between stock market returns and macroeconomic variables.

(Dr. Venkatraja B 2014) “investigated the relationship between the Indian stock market performance (BSE SENSEX) and five macroeconomic variables, namely, index of industrial production, wholesale price index, gold price, foreign institutional investment and real effective exchange rate over the period April 2010- June 2014 using monthly data, By using Multiple regression technique, found a very strong combined influence of independent variables on the SENSEX”.

(Charles Barnor 2014) examined, the relationships between selected macroeconomic variables (wholesale price index, exchange rate, index of production, money supply, gold price and interest rate) and their effect on the stock market returns on the Ghana stock market, found significant relationship between stock returns and macro-economic variables.

(Ahmad Monir Abdullah and Buerhan Saiti and Abul Mansur M. Masih 2014) investigated the lead-lag relationship between stock market index (Kuala Lumpur Composite Index) and macroeconomic variables (exchange rate, inflation, government bond yield, short-term interest rate and export), employed several conventional time-series techniques and a recently introduced method – wavelet analysis - to economics and finance ,The results of the error correction model, the generalized variance decompositions as well as the wavelet cross-correlation analysis suggest that the short-term interest rate, KLCI and government bond yields are exogenous variables; especially, the short-term interest rate is the most leading variable.

(Haruna Issahaku, Yazidu Ustarz and Paul Bata Domanban 2013) examined the existence of causality between macroeconomic variables, namely, Exchange rate, Consumer Price Index, treasury-bill rate, money supply, FDI and stock returns in Ghana, used various econometrics
techniques, namely, Unit root test (ADF, PP and KPSS tests), Vector Error Correction (VECM), Granger Causality test and Impulse response functions and found statically significant relationship.

(Samveg Patel 2012) investigated, the effect of macroeconomic determinants, Namely, Interest Rate, Inflation, Exchange Rate, Index of Industrial Production, Money Supply, Gold Price, Silver Price & Oil Price, on the performance of the Indian Stock Market (two stock market indices namely SENSEX and S&P CNX Nifty). By applying Augmented Dickey Fuller Unit root test, Johansen Co-integration test, Granger Causality test and Vector Error Correction Model (VECM), the study found that the long run relationship between macroeconomic variables and stock market indices.

(Pramod Kumar Naik, Puja Padhi 2012) “Investigates the relationships between the Indian stock market index (BSE Sensex) and five macroeconomic variables, namely, industrial production index, wholesale price index, money supply, treasury bills rates and exchange rates over the period 1994:04–2011:06. For exploring the long-run equilibrium relationship between stock market index and macroeconomic variables, applied Johansen’s co-integration and vector error correction model, found that macroeconomic variables and the stock market index are co-integrated and, hence, a long-run equilibrium relationship exists between them”.

(Sezgin Acikalin, Rafet Aktas, Seyfettin Unal 2008) “Investigated the relationships between returns in Istanbul Stock Exchange (ISE) and macroeconomic variables, namely, GDP, interest rates, foreign exchange rates and current account deficits of Turkish economy. Various econometric tools, like, co-integration tests and vector error correction model (VECM) were used on a quarterly data, found unidirectional relationships between macro indicators and ISE index”.

(Olowe, Rufus Ayodeji 2007) examined the dynamic equilibrium relationship between a group of macroeconomic variables (inflation, money supply, Industrial production, exchange rates, oil
prices and interest rates) and the Nigerian Stock Exchange index, By using Johansen’s (1991) vector error correction model The study found co-integrating among macroeconomic variables.

(Sangeeta Chakravarty 2006) “Reexamined the relationship between stock price and some key macro-economic variables (money supply, exchange rate, index of industrial production, inflation and gold price) in India, used Granger non causality test procedure developed by Toda and Yamamoto (1995). And found that index of industrial production and inflation Granger cause stock price but stock price does not cause either of the two so the causation is unidirectional. The causal relation between stock price and money supply is unidirectional as stock price Granger cause money supply but money supply does not”.

(Mohsen Mehrara 2006) examined the causal relationship between stock prices and macroeconomic aggregates (money supply, value of trade balance, and industrial production) in Iran, by applying the techniques of the long-run Granger non-causality test recently proposed by Toda and Yamamoto (1995), found unidirectional long run causality from macroeconomic variables to stock market.

(In Turkey, Çil and Yavuz 2005) used Vector Autoregression (VAR), investigated the causal relations between export and economic growth (period of 1982-2002) and found no long-run equilibrium relationship between two series.

(Maghayereh 2003) “examined the long-run relationship between selected macroeconomic variables, namely, interest rate, exports, foreign reserves, inflation, and industrial production and the Jordanian stock prices (period from January 1987 to December 2000), used, multivariate cointegration analysis and vector error correction model (VECM) and found significant relationship between selected macroeconomic variables and Jordanian capital market”.

(Pethe and Karnik 2000) examined the association between macroeconomic indicators and stock price, used, Cointegration and Vector error correction model (1992-1997) and found no long run association.
2.4 Literature related to Group Countries

(San-Diego 2000) used vector autocorrelation (VAR) model and generalized autoregressive conditional heteroskedasticity model GARCH-M and examined the effects of macroeconomic variables (real gross domestic product, inflation, interest rate, and money supply) on the Southeast Asian stock market. And found positive relationship.

(Robert D. Gay, Jr., 2008) investigated, the time-series relationship between stock market index prices and the macroeconomic variables of exchange rate and oil price for Brazil, Russia, India, and China (BRIC) using the Box-Jenkins ARIMA model, Found no significant relationship between respective exchange rate and oil price on the stock market index prices of either BRIC country.

(Mahmood and Dinniah 2009) investigated, relationship between macroeconomics variables, namely, output, exchange rates and inflation and stock price of six countries in Asian-Pacific region. They applied the Engle-Granger test and Johansen, Juselius maximum likelihood procedure and found long run relationship.

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

(Alam 2013) examined, the role of macroeconomic variables, namely, 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 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, found, significant relationship.

(Sikalao-lekobane, et, al, 2014) investigated whether the selected macroeconomic variables, namely, 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 influence on domestic stock market in emerging market (quarterly data range from 1998 to 2012), by using vector error correction, found long run relationship between the stock price and macroeconomic variables.

Conclusion

Here, researcher reviewed various empirical studies, found the mixed results and conclusion, means some studies says there is a strong positive relationship between macroeconomic variables and stock market returns and some says relationship is a bit weak.