2. RESEARCH DESIGN

2.1 Review of Literature

A Literature Review is not an annotated bibliography in which you summarize briefly each article that you have reviewed. While a summary of what you have read is contained within literature review, it goes well beyond merely summarizing professional literature. It focuses on a specific topic of interest to you and includes a critical analysis of the relationship among different works, and relating this research to your work. It may be written as a stand-alone paper or to provide a theoretical framework and rationale for a research study. Review of literature is a process of evaluating all related existing literature in order to find out the research problem or research gap. This will enable the researcher to avoid overlapping and replication of work which are being carried out. In the present study, books, journals, reports and web contents are considered for reviewing the existing literature.

Literature review has been done on different grounds which covers the following topics:

- Impact of Interest rate on stock market.
- Impact of Exchange rate on stock market.
- Impact of Interest rate and Exchange rate on stock market.
- Impact of Macroeconomic variables on stock market.
- Empirical results of the studies conducted on similar grounds.

[1] Muktadir-al-Mukit (2013) applies a wide range of modern econometric techniques to find the relation between stock market and interest rate for the period 1991 to 2012. It was observed that a long run and stable relationship between the interest rate and the exchange rate exist. Co-integration method is tested in the long run and observed that, for a one percent hike in interest rate there is a 13.20 % decrease in the stock market index. Estimated error correction coefficient shows 0.12% fluctuation of stock returns are corrected in the short run. Granger causality analysis evidences a unidirectional causality between interest rate and stock market index.
[2] HUSSAIN & BASHIR (2013) Using daily data investigates the linkage between stock returns and exchange rate in Pakistan, India and China from 2007 to 2012. GARCH model was applied to know the volatility, Johansen Co-integration and Granger model to know the relationship between exchange rate and stock volatility. It was found that there was some amount of co-integration and also further confirms no causal relationship between the variables for India and China but for Pakistan, the exchange rate did not granger cause the stock volatility.

[3] Caporale, Hunter, & Menla Ali, (2013) This study examines the nature of the linkages between stock market prices and exchange rates in six advanced economies, namely the US, the UK, Canada, Japan, the euro area, and Switzerland, using data on the banking crisis between 2007 and 2010. Bivariate UEDCC-GARCH models are estimated producing evidence of unidirectional Granger causality from stock returns to exchange rate changes in the US and the UK, in the opposite direction in Canada, and bidirectional causality in the euro area and Switzerland. Furthermore, causality-in-variance from stock returns to exchange rate changes was found in the US and in the opposite direction in the euro area and Japan, whilst there was evidence of bidirectional feedback in Switzerland and Canada. The results of the time-varying correlations also show that the dependence between the two variables has increased during the recent financial crisis. These findings imply limited opportunities for investors to diversify their assets during this period.

[4] Turkyılmaz and Babbey (2013) Investigated the conditional variance using the BEKK M GARCH approach on stock prices, exchange rate and the interest rate using monthly data for the period 2002 M1 to 2009 M1 for Turkey. The effects before the global crisis hit turkey and found that there was a considerable transmission of the shock and volatility seen among the financial sectors considered in the study. All the variables studied displayed a strong ARCH and GARCH effect meaning that the present and the past news had a considerable effect on the conditional volatility. It was evidenced the presence of cross market hedging along with the sharing of information by the investors in those sectors.
[5] Bekhet & Matar, (2013) Examined the short run and long run symmetric relation between the macro economic variables and the stock market index in Jordan. Annual time series data of macro-economic variables (Money supply, Industrial production, Exchange rate, and discount rate) were used. Time frame of the study was from 1978 to 2010. ADF, bound testing approach, CUSUM, and CUSUMQ tests to test the stationary of data and co-integration among the variables. There was a long run relationship between the examined macroeconomic variables and the stock price index in Jordan.

[6] Khan & Zaman, (2012) Tries to find the relation between the macroeconomic variables and Karachi Stock Exchange by using annual data for the period 1998 to 2009. Microeconomic variable considered for the study were GDP, Exports, CPI, M2, Exchange rate, FDI and Oil prices. Augmented Dickey Fuller test was used to check the stationery of data and found that the variables were stationery at zero lag and later Multiple Regression model was used and found that exchange rate and GDP affected positively, CPI showed a negative impact. It was found that the results of M2, exports, FDI and oil prices were insignificant.

[7] Tudor & Popescu-Duta (2012) Investigates the granger causality between the exchange rate movement and stock prices of 13 developed and rising financial markets for the period 1997 to 2012. It was found that equity market and exchange rate are interactive time series in Korea at 1% significance level. In case of Brazil and Russia, exchange rates impact was seen in next month stock returns but in case of United Kingdom equity market was considered as a risk factor for exchange rates.

[8] Ülkü & Demirci (2012) Speaks about the importance of studying the joint dynamics of foreign exchange market and emerging stock market of Europe due to the huge external deficits. It was observed that the residual interaction was small after controlling the global indices. Foreign capital dependency and the depth of local share markets are the main drivers for the relationship between foreign exchange market and stock markets.
[9] Malarvizhi & M.Jaya, (2012) talks about the relation between the economic developments and its relation with the share markets. The study investigate CNXNIFTY index with the exchange rate changes considering US dollars as it is used prominently and found a bidirectional causal relationship between the Nifty Index and Exchange rate.

[10] Muktadir-al-Mukit, (2012) examine the impact of interest rates and exchange rate on stock index in Dhaka. Monthly time series data was used to investigate the effect of these variables for the period 1997 to 2010. Modern econometric techniques were used to know the short and long run relationship between the variables using co-integration and Error correction model, and analysis of variance decomposition. Granger casualty test had been used to calculate the causal relationship between the variables. With the aid of co-integration technique it was noticed that in the long run, a one percent increase in interest rate and exchange rate there was a 1.71% decrease and 1.04% increase in market index correspondingly. Estimated error correction coefficient proves 7.8 % deviation of stock returns are corrected in the short run. The existence of the unidirectional causality from market index to exchange rates and from interest rates to market index was suggested by the Granger causality analysis.

[11] Hamrita, (2011) Uses Wavelet model to find the multi scale relationship between Interest rate, Exchange rate and stock market for the time period Jan 1990 to Dec 2008. Maximum overlap discrete Wavelet transform (MODWT) was used to analyze the correlation and cross correlation and to know the lead/lag relationship between the variables at different time scales. Results showed that, relation between the variables were not significantly different from zero at all scales. Contrarily the relation between interest rate differentials and stock returns was significantly different from zero only at highest scales. Exchange rate differentials and stock returns showed a bidirectional relation in the period at longer horizons.
[12] Enyaah, (2011) tests the relation between few macroeconomic variables like Interest rates and Exchange rate on stock index of Ghana using monthly data for the period 2000 to 2010. The author uses co-integration method to find the relationship and finds a long run equilibrium and causal relationship. A short run relationship between the variables was nearly imaginary.

[13] Khrawish, Siam, & Jaradat, (2010) examines the impact of interest rate and stock market of Amman for the period 1999 to 2008 using multiple regression model and simple regression model. The analysis revealed that there exist a positive relation between the government interest rates and stock market capitalization rate. It proves a negative influence on stock market capitalization rate by Government development stock rate and also shows a significant negative relationship between and Government development stock rate and government prevailing interest rate. It was suggested that the intervention of government was very important to reduce taxation rates, controlling interest rates to aid stock market growth, improve regulatory environment and to reduce red tape.

[14] Laopodis, (2010) examined the dynamic relationship between fed fund rate and the stock from 1970 to 2004 by applying VAR model. It was observed that a disconnected market response from Federal actions to market behavior in 1990s when compared to 1970s and 80s. Further observed an asymmetric impact of monetary policy on stock index which was observed more unstable during bear markets than bull. Comprehensively the results appeared to suggest that there was a relationship between stock markets and monetary policy actions for the 3 decades selected for the study.

[15] Agarwal, Srivastav, & Srivastava, (2010) Studied the relation between the exchange rate and Nifty stock index from 2007 to 2009. By using the Unit root test to check the data for stationarity at level form. The correlations between the variables were
negative and by applying granger causality test it was observed that there was a unidirectional relationship between the nifty stock returns and exchange rate.

[16] Ozun and Cifter (2010) aims at analyzing the impact of exchange rate on interest rates with the help of Wavelet network methodology (combination of both Wavelet model and neural networks). An attempt was made to find the impact of foreign exchange rate on interest rate of the Turkish markets by using USD/TRY rates on Turkish Lira (TRY) and found that Wavelet model was one of the best methodology when compared to other models like Hodrick – Prescott filter, Wavelet causality, Feed – Forward neural network, wavelet correlation analysis in finding the non-linear dynamics among the time series selected for the study. The findings of the study have both theoretical and practical effect. The wavelet model was superior in finding the causal relationship of the selected time series and the practical goal aims at finding the level of these effects one variable on the other with the varied time scale. The model exhibits a strong causal relationship in the short run with a decreased effect in the mid run.

[17] Pilinkus, (2010) investigates the short and long run relationship with the macroeconomic variables and the stock prices. The study investigates the relationship between 10 macroeconomic variables and stock market indices by taking monthly data for the period 2000 to 2008. Empirical research was conducted with Baltic States (Lithuania, Latvia & Estonia). Results concluded that there existed relationship between macroeconomic variables and stock indices from a viewpoint of investor. There existed Granger causality between the variables, indices of Baltic States. The monetary and fiscal policies of the countries explained the causality relationship of the variables with the stock indices. Vector auto-regression was used to know the short run relationship. The total impact of these variables on indices was explained by 37% for Lithuania, 39.9% for Latvia and 36.4% for Estonia. Johansen multiple co-integration was used to find the long term relationship and was found that a 99% relationship between the macroeconomic indicators and stock market indices.
[18] **Rjoub, Türsoy, & Günsel, (2009)** investigates the performance of Istanbul stock Exchange using Arbitrage Pricing Theory on a monthly basis for the period Jan 2001 to Sep 2005. The study analyses the impact of six macroeconomic variables like Interest rate, Inflation, Risk premium, Exchange rate, Money supple and Unemployment rate. The researchers applied OLS, Durbin-Watson Statistics to find the correlation problems. Critical values ranged between 1.33 and 1.81 (T=57, K=6). Test results confirmed no serial correlation in ten out of the 13. The results show that there are big differences among market portfolios against macroeconomic variables through the variation of R2. In the remaining portfolios; there was no evidence to suggest.

[19] **Hasan and Tarij (2009)** explored the relationship between equity prices of Pakistan stock market with the money supply, foreign exchange rate, Treasury bill rate, and the CPI. It was noted that the relationship of the interest rate and the exchange rate with equity market returns was negative.

[20] **Thang, (2009)** Studies the impact of interest rate and exchange rate on Malaysian stock index by using ADF Unit root test and co-integration and found that the variables were stationery at first difference. A Johansen Juselius co-integration test, Vector Error Correction Model and Granger Causality model was used to test the causality in long run and short run and noted that both the variables had a negative impact on stock index.

[21] **Banerjee & Adhikary (2009)** Studied the effect of interest rate and Taka – US Dollar exchange rate on Bangladesh stock returns for the period Jan 1983 to Dec 2006 using monthly data. Cointegration test was applied and found that there was a long run equilibrium and causal relationship between the independent variables and the dependent variable considered for the study. Any short run relationship between the interest rate and exchange rate on stock returns was not recorded.
[22] Oguzhan Aydemir and Erdal Demirhan (2009) study the causal relationship between stock prices and exchange rates, using data from 23 February 2001 to 11 January 2008 about Turkey. The reason for selecting this period was that exchange rate regime was determined as floating in this period. In this study, national 100, services, financials, industrials, and technology indices are taken as stock price indices. The results of empirical study indicate that there was a bidirectional causal relationship between exchange rate and all stock market indices. While the negative causality exists from national 100, services, financials and industrials indices to exchange rate, there was a positive causal relationship from technology indices to exchange rate. On the other hand, negative causal relationship from exchange rate to all stock market indices was determined.

[23] Mahmudul and Gazi (2009) studied the empirical relationship between interest rate and stock market returns of 15 countries (developed and developing) from 1988 to 2003 using time series and panel data. The stationery of data was tested on the variables to test the randomness of the market. It was found that there was a negative relationship between interest rate and stock prices for all the countries considered for the study. A strong negative relationship for 6 countries was evidenced. It was concluded that if interest rate was controlled for a considerable extent, it will be a benefit for these countries to pull demand for more investors and supply push more extensional investments by companies.

[24] Adam and Tweneboah (2008) observes that there exists a long run co-integration relationship between the macroeconomic variables and the stock index of Ghana by using quarterly data from 1991 to 2007 using co-integration and VECM model. The Vector Error Correction Model (VECM) analysis proves that the lagged values of inflation and interest rate had influences stock prices. The exchange rate, inward foreign direct investments and the oil prices has a weak impact on the price changes.
[25] **Liu and Shrestha (2008)** examine the long term relationship between some macro-economic variables and stock market indices in China. Their study shows that industrial production and money supply are positively related to the stock market indices. However, interest rate and exchange rate have negative impact on the stock market indices in China. It was suggested that investor should be prepared to invest for long term since in the short-run, China stock market was volatile and risky.

[26] **Coleman & Tettey, (2008)** studies the impact of macroeconomic variables on Ghana stock exchange for the time frame 1991-2005 by using Co-integration and the error correction model techniques in short and long run. An adverse relation between the interest rates and also a negative effect of inflation on stock market performance was evidenced. It was observed that due to the lag period, it took time for an investor to benefit from exchange rate loss due to domestic currency depreciation.

[27] **Kandir, (2008)** investigated the role of seven macroeconomic variable on the Turkish stock market for the period 1997 till 2005 by taking monthly data. The variables considered for the purpose were Industrial production Index, Consumer Price Index, Money supply, Exchange rate, Interest rate, International Crude Oil prices and MSCI world equity index. Multiple Regressions was designed to find the relationship between the above mentioned macroeconomic variables and stock returns. The researcher found that, interest rate, exchange rate and world market index affected all the portfolio returns, inflation was significant only on three out of twelve portfolios, industrial production, oil prices and money supply did not appear to have any effect on the returns of the portfolios selected for the study. Empirical analysis showed that there was a positive relation between the ISE and Global stock returns because of the global integration. Alternative investment opportunities made interest rate to have a negative effect on stock returns. Oil prices also did not impact because; cost of production played an important role. Inflation and industrial Production neither influenced stock returns in Turkey.
[28] Robert D. Gay, (2008) Investigates the relationship between exchange rate and oil prices for Brazil, Russia, India and China using Box-Jenkins ARIMA model by taking monthly averages of respective indices for the period 1999 to 2006. It is found that there was no significant relation between oil prices and exchange rates on any of the countries stock indices due to impact of other international macroeconomic factors. An insignificant relation between past and present stock market returns was noted, suggesting weak form efficiency of Brazil, Russia, India and Chinese markets.

[29] Uddin and Alam (2007) Investigated the market efficiency of DSE (Dhaka Stock Exchange) with reference to a general index from 1992 to 2004 using monthly data. It was found that the markets were stationery and also found that DSE did not follow a random walk evidencing the inefficiency in weak form. The relationship between the stock price and the interest rate, stock price and the growth rate of interest rate, growth rate of stock price and the interest rate and also the growth of both the time series were tested through OLS (Ordinary Least Square). In all the above case of included and excluded outliers it evidenced a significant negative relationship between the growth of interest rate and stock prices and also evidenced a negatively significant relationship with growth of stock prices. The study concluded that if interest rates are controlled then it would be an advantage for the Bangladesh stock market by the way of demand pull (attracting more investors) and supply pull (huge investments by companies).

[30] Horobet & Ilie, (2007) The theoretical linkages between exchange rates and stock prices are microeconomic as well as macroeconomic in nature and may be observed on the short- and long-run. The paper examines the interactions between the exchange rates and stock prices in Romania, after 1997, taking into account the change in the monetary regime occurred in 2005 – the shift towards inflation targeting. The analysis uses bivariate cointegration and Granger causality tests, applied on daily and monthly exchange rates and stock prices data collected over the 1999 to 2007 period. Three types of exchange rates are used: the nominal effective exchange rates of the Romanian leu, the bilateral nominal exchange rates of the leu against the US dollar and the euro, and the
real effective exchange rates of the leu. In terms of stock prices, the BET and BET-C indices of the Bucharest Stock Exchange are used, denominated in the local currency.

[31] Pan, Fok, & Liu, (2007) Investigated the linkage between the exchange rate and stock price index of 7 East Asian markets for the period 1988 to 1998 and found the existence of significant causal relationship between the variable for 4 countries before Asian economic crisis. It was observed that even though there was no causality between the variables, there existed a causal relationship during the Asian crisis except for Malaysia. Finally with the use of robust testing methods like Granger model, variance decomposition analysis etc., it was found that the link between the variables selected varied from economy to economy with respect to trade size, exchange rate regime, size of equity market, degree of capital control etc.

[32] Erbaykal and Okuyan (2007) examined exchange rates-stock price relations for 13 developing economies using different time period for each country. The findings provide evidence to indicate causality relations for eight economies. While there was a unidirectional causality from stock price to exchange rates in the five of them, bidirectional causality exist for remaining three economies. No causality was evidenced for these financial variables in Turkey and the finding was not consistent with the results. The reason of difference may be the time period used.

[33] Vygodna (2006) empirically searches the exchange rates and stock prices nexus for large-cap and small-cap stocks for the period 1987-2005 in the USA and used Granger causality methodology. The result of study reveals that there was Granger causality from large-cap stocks to the exchange rate. However there was no causality for small-cap stocks. Stock prices and exchange rates are affected by the same macroeconomic variables and changes in federal monetary policy in the USA have an important effect on the nature of these relationship. In other words, the nature of the relationship between stock prices and exchange rate was changing over time.
[34] Kurihara and Nezu (2006) using VECM model observes that the domestic interest rate has not impacted Japanese Stock market. The study observes that even exchange rate had no impact on the share prices of Japan index. It was observed that US stock prices had tremendous effect on Japanese stock prices. Japanese quantitative monetary easing was not yet fully determined, so the effect of that policy was not discussed. Due to this interest rate was almost reduced to zero, so it hardly affects stock prices.

[35] Dimitrova, (2005) study shows that when exchange rate declines by one percent, the stock market will react with less than one percent decline. Dimitrova proposed that US should implement policy to strengthen the US dollar. Since there was a negative relationship between exchange rate and stock market index, the policy will help the stock market. However, Dimitrova also found insignificant results in his attempt to show that exchange rate will depreciate during the booming of the stock market. Thus, multinational companies which use exchange rate forecasting can consider to use stock market as a forecasting indicator as a proxy. The currency was expected to depreciate during periods of bullish sentiments in the stock market.

[36] Liow and Huang (2004) observed that due to the Asian financial crisis from 1987 till 1997, there was a significant long run negative relationship between the monthly excess real estate stocks and interest rate for Hong Kong, United Kingdom and Japan. The study advised that this type of negative relationship between the variables to be carefully considered in the construction and management of their portfolios by the investors in order to avoid Interest rate exposure.

[37] Mark J. Flannery and Christopher M. James (1984) examines the relation between the interest rate sensitivity of common stock returns and the maturity composition of the firm's nominal contracts. Using a sample of actively traded commercial banks and stock savings and loan associations, common stock returns are found to be correlated with interest rate changes. The co-movement of stock returns and
interest rate changes was positively related to the size of the maturity difference between the firm's nominal assets and liabilities.

[38] Doong et al. (2005) investigate the dynamic relationship between stocks and exchange rates for six Asian countries (Indonesia, Malaysia, Philippines, South Korea, Thailand, and Taiwan) over the period 1989-2003. According to the study, these financial variables were not cointegrated. The result of Granger causality test shows that bidirectional causality could be detected in Indonesia, Korea, Malaysia, and Thailand. Also, there was a significantly negative relation between the stock returns and the contemporaneous change in the exchange rates for all countries except Thailand.

[39] Phylaktis & Ravazzolo, (2005) Study the long and short run relation between exchange rate and stock prices along with the exogenous shocks impacting the markets using co-integration and multivariate Granger causality on pacific basin countries for the period 1080 to 1998. It was found that there was a positive relation between the stock market and foreign exchange market and also observe that US stock market acts as a conduit. Financial crisis had a temporary effect on the long run co-movement of the markets considered for the study.

[40] Mishra (2004) Analyzed the relation between stock and foreign exchange market using Granger test and VAR technique using monthly data and found the existence of unidirectional causality between the interest rate and exchange rate and between the demand for money and exchange rate return. It was also observed that there was no causality between exchange rate return and stock market return. With the help of VAR model, it was observed that there was no consistent relationship between the variables. Further evidence of the forecast error variance decomposition shows that, the exchange rate affects demand for money, interest rate affects exchange rate return to change, exchange rate affect the stock return, demand for money impacts stock market returns, interest rate affects stock returns, and demand for money affecting interest rate.
[41] Muhammad and Rasheed (2003) examined the relationship between stock prices and exchange rates of four South Asian countries named as Bangladesh, India, Pakistan and Sri-lanka and found that there was no significant relationship between the variables either in short-run or long-run in Pakistan and India. But a bidirectional relationship in case of Bangladesh and Sri-lanka was evidenced.

[42] Kim (2003) investigates the long-run relationship among the macroeconomic variables like interest rate, real exchange rate, inflation, industrial production and stock prices in US. They used monthly data applying Johansen’s cointegration for the time frame 1974:01-1998:12 and found that the index was positively related to industrial production and negatively related to exchange rate, inflation and interest rate. Parameters of cointegration system and correction term were found stationary by structural stability tests. Mechanism of Error correction explain the stock price, inflation and industrial production adjust to correct disequilibrium within the 5 variables, at the same time variance decomposition shows stock price driven to a considerable extent by variations in interest rate.

[43] Rim and Mohdin (2002) examined relations between industry indices and exchange rates using monthly data before and during the Asian financial crisis. Results show that industry indices had long-run positive effects on exchange rates, and exchange rates also had long-run positive effects on most indices. The short-run effects proved to be generally negative in both directions.

[44] Ramasamy and Yeung (2001) considered causalities between the two markets in nine East Asian economies and realized that the direction of causalities can vary according to the period of study. For the period of the entire four years of the crisis (1997–2000) all countries, apart from Hong Kong, showed that stock prices cause movements in the exchange rates. Results on Hong Kong indicate bidirectional causality.
[45] **Nieh and Lee (2001)** examine the relationship between stock prices and exchange rates for G-7 countries and take the daily closing stock market indices and foreign exchange rates for the period from October 1, 1993 to February 15, 1996. They find that there was no long-run equilibrium relationship between stock prices and exchange rates for each G-7 countries. While one day’s short-run significant relationship has been found in certain G-7 countries, there was no significant correlation in the United States. These results might be explained by each country’s differences in economic stage, government policy, expectation pattern, etc.

[46] **Hondroyiannis and Papapetrou (2001)** investigate whether movements in the indicators of economic activity affect the performance of the stock market for Greece. The study performs a VAR analysis to analyse the dynamic interactions among indicators of economic activity. It uses the monthly data for the period 1984:1 to 1999:9 for Greece. Industrial production, Interest rate, exchange rate and domestic real stock returns. The major finding of the study is that the domestic market economic activity affects the performance of domestic stock market. Impulse response analysis carried out in the study shows that all the macroeconomic variables are important in explaining stock price movements. Growth in industrial production responds negatively to a real stock return shock, implying that an increase in real stock returns does not necessarily lead to a higher level of industrial production. The empirical results suggest that the Greek stock market returns do not rationally signal changes in the overall macroeconomic activity. Real stock returns respond negatively to interest rate shocks, while a depreciation of the currency leads to higher real stock market returns.

[47] **Pethe and Karnik (2000)** using Indian data for April 1992 to December 1997, attempts to find the way in which stock price indices are affected by and affect other crucial macroeconomic variables in India. But this study runs causality tests in an error correction framework on non-cointegrated variables, which is inappropriate and not econometrically sound and correct. The study of course avers that in the absence of cointegration it is not legitimate to test for causality between a pair of variables and it
does so in view of the importance attached to the relation between the state of economy and stock markets. The study reports weak causality running from IIP to share price index (Sensex and Nifty) but not the other way round. In other words, it holds the view that the state of economy affects stock prices.

[48] Gupta, Chevalier, & Sayekt, (2000) Investigates the relation between the interest rate and exchange rate with Jakarta stock returns when Indonesian economy was in difficult times and also because of the conflicting reports on effect of these variables on stock returns. The impact was studied on three periods from 1993 to 1997. It was found that irregular unidirectional causality was found between interest rate to closing stock prices and vice versa. A weak unidirectional causality from exchange rate to stock prices was also documented. Over all, they could not find any consistent causality between the variables as stock market had incorporated much of the information on exchange rate and interest rate in its closing price.

[49] Abdalla and Murinde (1997) investigate stock prices-exchange rate relationships in the emerging financial markets of India, Korea, Pakistan and the Philippines using monthly data from 1985 to 1994. The empirical results show unidirectional causality from exchange rates to stock prices in India, Korea and Pakistan. On the contrary, the reverse causation was found for the Philippines.

[50] Bahmanl-Oskooee and Sohrablan (1992) used monthly values of S&P 500 index and US dollar effective exchange rate for the period of 1973-88 and used cointegration and Granger causality test to detect the relationship between the variables. Bidirectional causality in the short run and no long-run relationship between the variables were evidenced.
2.2 Research Gap:

Many researchers have studies the impact between Interest rate and Stock prices, Exchange rates and Stock prices, Both Interest rates and Stock prices, Macroeconomic variables and stock prices and have got different results in various countries. Few conclude that there was a short run relationship with a unidirectional causal relationship; many other research papers prove a bidirectional causal relationship, few studies prove a long run relationship between stock markets and the independent variables. Methods and tools used by different researchers also vary. From all this literature it was found that that the earlier statistical methods have not yielded concrete evidence about the relationship between Interest rate, Exchange rates and stock markets. Further it was found that homogeneity was not achieved between Interest rates and Exchange rates on Stock Markets. Hence in this study, e-views is used as a tool by applying unit root test, Linear Regression and Grangers Causality test to establish evidence of relationship between the Independent variables and Dependent variables considered for the study especially in Indian context

2.3 Need for the Study

A number of macroeconomic and financial variables that influence stock markets have been documented in the recent empirical literature without a consensus on their appropriateness as regressors. Frequently cited macroeconomic variables are GDP, price level, industrial production rate, interest rate, exchange rate, current account balance, unemployment rate, fiscal balance, etc. To date, only very few studies have been conducted examining the direct effects of some of the above variables on the stock market returns of India. This empirical paper narrows down its focus on the dynamic effects of interest rate and exchange rate changes on the overall stock market in India.

The need to study this in Indian context arises from the fact that international equity investment is becoming increasingly important, for both the actual investments and the signaling impact they have. International equity investment in India has shown a rising
trend since they were first allowed. An understanding of the nature of the impact these flows have on stock markets is important for stock market participants as it facilitates the formulation of their investment strategies. From the viewpoint of policy makers and regulators, a better understanding of the nature and magnitude of these effects facilitates better monitoring and regulation of markets as well as the design of appropriate policies/regulations to future policy objectives.

The study differs from others in the fact that the methods employed by these earlier studies suggest that only macroeconomic variables affect or impact on stock market variables but evidences from countries such as America, Gulf, Japan and many other countries reveals a dynamic relationship between these two sets of variable making the reexamination of the relationship important. Strengthening this argument further is the fact that empirical literature is not conclusive as to the relationship that exists between changes in the real sector of an economy and the movement of stock prices and also on whether stock price movements lead or lag changes in the real sector of an economy. Another important idea behind doing such research is mainly due to the fact that majority of the normal Indian population are hesitant towards investing in stock markets. So studies like these would help them to come out of their mindsets and encourage them to invest in stock markets which is a more profitable opportunity compared to other investment opportunities. Hence the relationship in India is a case to study.

2.4 Objectives of the Study:

- To determine the integration between the stock indices to exchange rate and interest rate.
- To examine the link between stock market and Foreign Exchange Markets.
- To analyze the short run causal relationship between stock prices with interest rates and exchange rates.
- To analyze the long run relationship between stock prices with interest rates and exchange rates.
2.5 Research Process:

To find the impact of economic variables such as Interest rate and Exchange Rate on The Stock market which would help Traders and investors to manage and diversify their portfolios.

Research Type: Analytical Research

Sampling: Nifty 50 as stock market indices is studied. Select Sector wise indices listed in NSE are studied separately. SENSEX is also studied for comparing the results in long run and short run. All together Select Major Indian Stock market Indices are studied and compared as it represents the behavior of Indian stock markets.

Sources of Data: Secondary data was collected from various published sources like journals, books, websites etc.

- Data on stock prices are collected from NSE and BSE
- Data on interest rates are collected from RBI, IMF and SBI
- Data on Exchange rate are collected from monthly issues of International Financial Statistics published by IMF.
- Data on macroeconomic variables namely industrial production and Inflation rates are collected from www.indiastat.com

Time Frame:

Nifty 50 and SENSEX are studied from 1999 to 2014

CNX AUTO, CNX BANK, CNX IT, CNX FMCG and CNX REALTY are studied from 2004 to 2014 as data of trading in sectoral indices are available from 2000 and later.
2.6 Plan of Analysis:

Data collected is classified and tabulated for statistical analysis and interpretation. The study being quantitative in nature makes use of certain statistical tools for analyzing the data. Some of the tools and models which are used for this study are Unit root test, Linear Regression, Granger’s Causality test. Diagrams, Tables and Graphs are used wherever necessary to illustrate the theory and findings.

Testing for Unit Roots: The ADF Test

This section will describe the ADF test for unit roots, which tests for the null of a unit-root against the alternative that the series are stationary. The normal procedure used by many empirical studies is to test for the first difference of a variable and if one can reject the null of unit roots, it is an indication that the series in first difference is I(0). This is important since it is first necessary to verify if non stationarity exists and then if the series is (1) or (2). An ADF test is performed to check for stationarity. The ADF is the most used test for non-stationarity along the literature on long-run, which was a key aspect in terms of reporting the ADF tests.

Linear Regression or Multiple Regressions

Linear Regression as an approach for modeling the relationship between a scalar dependent variable $y$ and one or more explanatory variables (or independent variables) denoted $X$ is used to find the long run relationship between macroeconomic variables and stock indices.

Granger Causality Test

The idea behind the Granger causality test (GC) is to examine the question of whether $X$ causes $Y$ in terms of analyzing how much of the current $Y$ can be explained by the past values of $Y$ and then to see whether adding lagged values of $X$ can improve the
explanation. If the coefficients on the lagged X’s are statistically significant, then it can be said that Y is Granger-caused by X. It is important to mention that in many time series evidence of two way causation is found, where Y Granger causes X and X Granger causes Y. The tests are whether the coefficients of the lagged X’s are all zero. Therefore the null hypothesis is the X does not Granger cause Y. Rejecting the null is evidence that X has an important role in explaining the behavior of Y, and vice versa if testing Y does not Granger Cause X. The test will provide us with an F-statistic and the correspondent probability so can make inference about whether X does not Granger cause Y and if Y does not Granger cause X.

2.7 Limitations of the Study:

- There are numerous other Macroeconomic variables which also have an influence on the Stock market returns, so pinpoint accurate results cannot be achieved.
- Availability of data in the same interval also limits the study

2.8 Layout of the Thesis

Every thesis will have its own structure and pattern by which the thesis is set comprising of different chapters. The final report of this study is outlined as mentioned below

**Chapter 1: Introduction** gives a brief account of outline of the thrust area of the study. It covers the Financial markets, Interest Rate, Exchange Rate and its impact, other Macroeconomic variables considered for knowing the impact other than Interest rate and Exchange rate.

**Chapter 2: Research Design** covers the Review of Literature, Research Gap, Need for the Study, Objectives of the study, Research process, Plan of analysis, Limitations and Operational Definitions.
Chapter 3: Indian Stock Markets covers the participants of Indian Stock Markets, Stock Indices and need, Trading Mechanism, Stock Market Regulation, intro on NSE and BSE and select sector based indices.

Chapter 4: Analysis and Interpretation of data – here the data collected through secondary sources have been systematically analyses and the results have been included in this chapter in the form of tables and graphs.

Chapter 5: Findings and Conclusion – this chapter presents the major finding of the investigation and brings out the relationship between stock prices with Interest Rate and Exchange rate. A brief conclusion of the study along with scope for further research is presented.

2.9 Operational Definitions:

- **Interest rate**: An Interest rate is the rate at which interest is paid by a borrower for the use of money that they borrow from a lender.
- **Exchange Rate**: An exchange rate (also known as the foreign-exchange rate, forex rate or FX rate) between two currencies is the rate at which one currency will be exchanged for another.
- **Stock Price**: A share price is the price of a single share of a number of saleable stocks of a company.
- **Industrial production**: It is a measure of output of the industrial sector of the economy. The industrial sector includes manufacturing, mining, and utilities. Although these sectors contribute only a small portion of gross domestic product (GDP), they are highly sensitive to interest rates and consumer demand.
- **Inflation**: It is a general increase in prices and fall in the purchasing value of money.
- **ADF Unit Root Test**: An augmented Dickey–Fuller test (ADF) tests the null hypothesis of a unit root is present in a time series sample. The alternative
hypothesis is different depending on which version of the test is used, but is usually stationarity or trend-stationarity.

- **Least Square Regression:** A statistical method used to determine a line of best fit by minimizing the sum of squares created by a mathematical function. A "square" is determined by squaring the distance between a data point and the regression line.

- **Granger causality:** It is a statistical concept of causality that is based on prediction. The Granger causality test is a statistical hypothesis test for determining whether one time series is useful in forecasting another.

- **BSE SENSEX:** The S&P BSE SENSEX (S&P Bombay Stock Exchange Sensitive Index), also-called the BSE 30 or simply the SENSEX, is a free-float market-weighted stock market index of 30 well-established and financially sound companies listed on Bombay Stock Exchange.

- **NIFTY 50:** The NIFTY 50 index is National Stock Exchange of India's benchmark stock market index for Indian equity market. Nifty is owned and managed by India Index Services and Products (IISL), which is a wholly owned subsidiary of the NSE Strategic Investment Corporation Limited.

- **CNX AUTO:** The CNX Auto Index is designed to reflect the behavior and performance of the Automobiles sector which includes manufacturers of cars & motorcycles, heavy vehicles, auto ancillaries, tyres, etc. The CNX Auto Index comprises of 15 stocks that are listed on the National Stock Exchange.

- **CNX BANK:** Bank Nifty represents the 12 most liquid and large capitalised stocks from the banking sector which trade on the National Stock Exchange (NSE). It provides investors and market intermediaries a benchmark that captures the capital market performance of Indian banking sector.

- **CNX FMCG:** FMCGs (Fast Moving Consumer Goods) are those goods and products, which are non-durable, mass consumption products and available off the shelf. The Nifty FMCG Index comprises of maximum of 15 companies who manufacture such products which are listed on the National Stock Exchange (NSE).
- **CNX IT**: Information Technology (IT) industry has played a major role in the Indian economy during the last few years. A number of large, profitable Indian companies today belong to the IT sector and a great deal of investment interest is now focused on the IT sector.

- **CNX REALTY**: Real estate sector in India is witnessing significant growth. Recent dynamics of the market reflected the opportunity of creating wealth across real estate companies, as proven by recent listings of real estate companies resulting into prominent growth in public funds and private equity.
References:


39. Phylaktis, K. And F. Ravazzolo, Stock Prices And Exchange Rate Dynamics. Journal Of International Money And Finance, 20(7)24.05


