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Abstract of Doctoral Dissertation[1]

Momentum and Contrarian Strategies in the Indian Stock Market - An Evaluative Study

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I. Introduction

Indian Stock Market is one of the oldest in Asia. Its history dates back to nearly 200 years ago. Over the period, the Indian securities market has become more dynamic, modern, and efficient securities market in Asia. It now conforms to some of the best international practices and standards, both in terms of structure and operating efficiency. The profile of the investors, issuers and intermediaries approaching Indian markets also has changed significantly.

Technological upgradation and online trading have modernized our stock exchanges. The bullish run of Indian stock market can very well be associated with a steady growth of country's GDP by around 6 per cent and the escalation of many Indian companies as MNCs.

The Indian markets have been duly accessible and by the end of 4th quarter of FY2010 the Sensex is expected to become the third best performing index amongst the major global indices, registering annual returns of 80.5 per cent, behind only Russia and Indonesia and much better than the 67.8 per cent logged by Brazil and 31.6 per cent by China.

Among all investing options, securities are considered to be the most challenging as well as rewarding. Investing in stock markets is a major challenge even for seasoned professionals. It carries the risk of heavy loss if the choice of securities is wrong or if they are not bought /sold at the right time.

Investors take into account several factors while taking an investment decision. They consider fundamentals of the economy, industry

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and company to decide whether the stock is worth buying at the prevailing price. Many investors also consider the moods of other investors and buy only when others buy. Such interdependency leads many market participants to behave in a similar manner. Internet boom is a recent example of herd mentality of human beings. It is being observed that large stock market trends often begin and end with periods of frenzied bubbles or selling. Followers of technical analysis school of investing consider this herding behavior of investors as an example of extreme market sentiment. They often say that this irrationality is driven by emotions i.e. greed in bubbles and fear in crashes.

The academic study of behavioural finance has also identified this collective irrationality of investors. There were several such instances like tulip and bulb craze, ‘South - sea bubble, the great depression of 1929, the crash of 1987, the Asian crisis and the Dotcom crash, in the history.

Investment in securities is faced with the greatest problem of choosing from among a large number of securities. Decision always depends on the risk-return characteristics of securities. The basic strategy to be followed in these investments are buying the under priced securities and selling the overpriced ones. There are mainly two schools of thought in finding out these ‘mispriced’ securities and this process is otherwise called security analysis. Technical analysis and fundamental analysis are the two main approaches to security analysis in the financial markets. Technical analysis looks at the price movement of a security and uses this data to predict its future price movements. Fundamental analysis, on the other hand, looks at economic factors, known as fundamentals.

By looking at the balance sheet, cash flow statement and income statement, a fundamental analyst tries to determine a company’s value, also known as company’s intrinsic value. In fundamental analysis, if the price of a stock trades below its intrinsic value it is good for investment. Technical analysts, on the other hand, believe that there is no reason to analyze a company’s fundamentals because all these are accounted in the stock price itself. They believe that all the information they need about a stock can be found by concentrating the price movements.

Technical analysis is the study of past or historical price and volume movements so as to predict the future stock price behaviour. Whether technical analysis actually works is a matter of controversy all through these years. Many investors claim that they have experienced positive returns by practicing technical analysis. But many academic appraisals often find this method as one having very little predictive power.

Fundamental analysts make their decisions by relying on accurate information about companies and markets before it becomes available to general public. However, as technical analysts do not believe that it is possible to receive and process all these information quickly enough, many of the advantages related to technical analysis correspond directly with the disadvantages of fundamental analysis.

II. The Problem in Brief

Stock market is a volatile place to invest money. Still a large number of people around the world try their luck in it .There are many reasons for people investing their money in stock market. The first and foremost reason is that they do not prefer to rely on a single source of income. People like to diversify their portfolio of investments to mitigate the risk factors. Rising cost of living and inflation is yet another driver for stock market investments. People go for stock

market investments in order to earn some extra income.

In India also, the percentage of people who invest their money with stock market has increased considerably over the last few years. At present, the daily turnover of the country's most prominent stock exchange NSE is more than 10000 crores. Considering country's current growth rate and the economic scenario, it is very evident that the number of people who are involved in stock market operations will only increase in near future.

To invest in stock market, one must know the right time to purchase and sell a security. The fundamentals will help the investor to identify the right security to be purchased but it will seldom indicate the right time to purchase it or sell it. For this purpose the investors can use technical analysis tools.

Technical analysis, despite of all fancy and exotic tools, it employs just studies on the supply and demand in a market, in an attempt to determine the direction or trend to be continued in future. In other words, such analysis attempts to understand the emotions in the market by studying the market itself. Technical traders take a short-term approach in analyzing the market.

The importance of technical analysis is world renowned and admitted by even the strongest advocate of fundamental analysis. The reason is simple: technical analysis tries to do away with the complexity by basing everything on price action, which includes all the economic analysis.

In this context, it would be highly rewarding to examine the efficiency of various technical analysis tools in helping the investors to gain superior returns. Research is conducted to evaluate the efficiency of two popular technical analysis tools i.e. Momentum and Contrarian strategies in predicting the share price movements in the market. The study also analyses the possibility of making excess returns in the market using these tools of technical analysts.

Market efficiency of Indian stock market was tested because if market is efficient none of these strategies work. Interdependency of Indian stock market with other emerging countries stock markets were also studied to analyze the possibility of making superior returns by doing effective portfolio diversification.

III. Significance of the Study

Unlike in past, stock markets have now become more dynamic, more volatile and more unpredictable due to further global integration of economy. During the past few years, Stock market investors had overreaction to the economic or political events. Markets always had a move much ahead of real economy. If real economy suffered in early 2009, stocks fell by October, 2008. If economic conditions will improve by early 2010, stocks will rise by late 2009.

One should take into consideration this psychological aspect along with business fundamentals before arriving at a conclusion regarding the investment strategy to be adopted in Indian Stock Market. It has become very difficult to time the stock market investments. In India, it is said that 80per cent of the price variations occur in just 20per cent of the total days which is the time of maximum profits and losses.

Contrarian Strategy essentially means doing reverse of what market does. Hence under contrarian investment strategy past losers are bought and past winners are shorted or sold. This strategy requires an active intervention of

a portfolio manager in the form of portfolio rebalancing.

On the other hand Momentum Strategy believes that markets are slow to react and if a stock is strengthening, it would increase further. It reckons that the market is cautious and the price does not adjust to information instantaneously. If a stock is weakening it will go down further because market takes time to readjust to the information. In other words, it takes time for the crowd to form and intensify the action. Momentum strategy wants to exploit, such slow movements in the trend. Under this strategy, past winners are bought and past losers are shorted or sold. If the markets are efficient, then both the strategies will fail.

The present study is conducted primarily to assist the investors in Indian Stock Market to make wise investment decisions in the securities market .The study also aims at testing the interdependency of Indian stock market with other leading stock markets in emerging nations and there by evaluating the possibility of maximizing returns through portfolio diversification in these markets.

IV. Objectives of the Study

Following are the important objectives of the study

1. To examine whether Indian Stock Market is efficient or not
2. To study and evaluate the existing theories in technical analysis
3. To analyze the effectiveness of Momentum strategy in giving superior returns in the Indian Stock Market
4. To analyze the effectiveness of Contrarian strategy in giving superior returns in the Indian Stock Market
5. To select the best strategy among the two suitable for Indian stock market.
6. To examine the interdependency of Indian Stock market with other emerging markets.
7. To make recommendations on the basis of the study

V. Hypotheses

The following hypotheses have been proposed for the study

1. Indian Stock Market is efficient and hence there is no scope for technical analysis
2. Momentum Strategy does not give superior returns to the investor in the Indian Capital Market
3. Contrarian Strategy does not give superior returns to the investor in the Indian Capital Market
4. No significant difference is noticed between Contrarian and Momentum Strategies in making superior returns from Indian Capital Market.
5. Nifty Index movements does not have any correlation with Shanghai Composite Index movements
6. Nifty Index movements does not have any correlation with Hangseng Index movements
7. Nifty Index movements does not have any correlation with Nikkei Index movements
8. There is no interdependency of Indian Stock market with other emerging stock markets
9. The possibility of making superior returns in Indian stock market by studying the movements of other emerging markets is nil.
10. Investors cannot depend on technical analysis tools for making superior returns.

VI. Database and Methodology

VI. (A) Market Efficiency

Statistical tools like Autocorrelation, and Run Test were used to test the weak form market efficiency. One-Sample Kolmogorov-Smirnov Test was used to find out how well a data series fits a particular distribution. Semi-strong form market efficiency was tested by taking daily returns of companies included in the formation of NIFTY Index and compared with the daily index returns.

Beta value for the stocks was calculated to arrive at the residual return. Residual return is the difference between the actual return and the expected return. If the difference between the actual return and the expected return is zero or near to zero the market is said to be efficient. The formula used for calculating expected return was,

Expected Return = ± + ² (m_r), where m_r is market return. The entire study period was divided in to different segments of three months each and the process was repeated for better results.

VI. (B) Momentum and Contrarian Strategies

The steps involved in the formation and evaluation of portfolios for studying Momentum and Contrarian strategies are as follows:

1. Mean of daily returns of stocks for the formation period was taken and then ranked them in the descending order. For this study, the formation period was one month. Based on the ranking, two equal weight portfolios were formed - one comprising of top seven stocks referred to as the winner portfolio and the other comprising of bottom seven stocks referred to as the loser portfolio.
2. The daily returns of these two portfolios over the next H-week holding period were computed. 'H' takes the value of 2 to 8 weeks.
3. Momentum returns are calculated as the mean of the daily returns arising from the winner portfolio for the holding period i.e. 'H' value
4. Contrarian returns are calculated as the mean of the daily returns arising from the loser portfolio for the holding period i.e. 'H' value
5. The performance of momentum and contrarian portfolios is evaluated by comparing their daily index returns during the respective periods.
6. The portfolio formation and evaluation process is repeated for the years 2004-2009 with formation period of one month and holding period of 2,3,4,5,6,7 and 8 weeks.
7. To study the profitability of momentum and contrarian strategies for various formations and holding periods, the t-test was used. It was used to find out whether momentum and contrarian strategies yield significant positive returns when compared with the bench mark, i.e. index return

VI. (C) Impact of Recession

In order to bring more validity to the result, the period in which Indian markets were severely affected by global crisis was studied separately. The period under study was 2007 October to 2008 April.

VI. (D) Interdependency of Indian Stock Market with Other Emerging Markets

Researcher tested interdependency of NIFTY Index movements with Shanghai Composite Index, Hangseng index and Nikkei Index from 2006-2009 using simple correlation technique.

VI. (E) Collection and Analysis of Data

The collected data were edited, compiled and then entered in a master chart by the investigator. Microsoft Excel programme was applied for achieving the same. Each item in the database was strictly checked before it was entered in the master chart. Tables were prepared and by using these as the guidepost the data were analyzed by referring to the objectives and hypothesis of the study. Utmost care was taken while employing the analytical tools. Tools were employed by considering the type of data. Statistical Programme in Social Sciences (S.P.S.S.) has also been used for the study.

VI. (F) Sources of Data

The study was conducted with wide scope both in terms of depth of analysis and breadth of coverage. It has taken a period of 6 years (2004-2009) and daily prices of shares included in the formation of NIFTY index. The data required for the study were collected from various secondary sources such as publications of Reserve Bank of India, Bombay Stock exchange, National Stock Exchange and Securities Exchange Board of India, Journals such as Finance India, Economic and Political weekly, Journal of Finance, Company Reports and many websites like Yahoo Finance, RBI.org ,Bloomberg.com and so on.

VI. (G) Resume of the Work Done

a) Analysis of data to test the weak form efficiency of Indian stock market.

b) Semi-strong form market efficiency of Indian stock market was tested by taking daily returns of companies included in the formation of NIFTY Index and compared with the daily index returns

c) Testing the efficiency of momentum strategy in gaining superior returns over index returns

d) Testing the efficiency of Contrarian strategies in gaining superior returns over index returns

e) Comparison between momentum and contrarian strategies

f) Interdependency of Indian stock market with Shanghai Composite Index

g) Interdependency of Indian stock market with Hangseng index

h) Interdependency of Indian stock market with Nikkei Index

i) Indian stock market efficiency during global financial crisis

j) Effectiveness of momentum strategy in gaining superior returns during acute recession

k) Effectiveness of contrarian strategy in gaining superior returns during acute recession.

VI. (H) Reference Period

The reference period of the study was from 2004 to 2009 is i.e. for a period of 6 years and considered daily prices of shares included in the formation of NIFTY index.

VII. Limitations of the Study

a) The present study covers only the price movements of shares included in the formation of NSE Index due to the voluminous nature of the topic. However data on a daily basis had been taken to achieve the best possible result.

b) Conclusions and recommendations are based on the results got during the study period. Investors will have to incorporate further changes in the market conditions before taking decisions on the basis of the recommendations of the study.

c) Global financial crisis which occurred during the study period could have affected the results of the study. However, the researcher had tried to overcome this difficulty by conducting a separate study during the time period of 2007 October to 2008 April, i.e. the time period in which Indian markets were severely hit by the said financial crisis.

d) All the inherent limitations and drawbacks of a study based on secondary data are applicable to the present study also even though the researcher has tried to minimize such errors as far as possible.

Despite of these limitations, the study would be very useful to investors of Indian stock market and to other practitioners and academicians interested in studying about capital markets in India and those in other emerging nations.

VIII. Presentations of the Study

The content of the research work is summarized under seven chapters.

Chapter I- Introduces the subject of the study and outlines the general framework of the study.

Chapter II- Reviews and discusses literature and related research studies in the context of market efficiency, technical analysis, and momentum and contrarian strategies both in India as well as in other major markets across the world.

Chapter III - The chapter gives a clear picture of the Indian Stock market in its present scenario.

Chapter IV - This chapter contains theoretical concepts on technical analysis, various tools for technical analysis, different principles of technical analysis and also the importance of technical analysis in share price prediction.

Chapter V- The efficiency of Indian stock market both in the weak form as well as in the semi strong form had been studied, analysed, interpreted and presented in this chapter.

Chapter VI- Discusses and analyses the effectiveness of momentum and contrarian strategies in the Indian stock market. Interdependency of Indian stock market with other emerging markets is also discussed and analysed in this chapter.

Chapter VII- Gives the summary of findings, suggestions based on findings, some practical recommendations and some definite indications for

IX. Findings and Conclusions

Economic growth of a country greatly depends on capital market. More efficient is the capital market, the greater is the promotion effect on economic growth. It is, therefore, necessary to ensure that our capital market is efficient, transparent and safe.

Government of India along with SEBI has been continuously trying to improve market design in order to bring in further efficiency and transparency to market. Newer and newer products were introduced to meet the varying needs of market participants, while protecting interests of the investors. Some of the recent measures adopted in Indian capital market includes setting up a central listing authority to pace and systematise the listing requirements and facilitating demutualization of stock exchanges, operationalising T+1 rolling settlement, consolidation of exchanges and other market participants and rationalising margin trading, securities lending and short selling.

Three main sets of entities depend on India's securities market. They are corporates and government bodies who raise resources from the securities market for their expansion and development activities and the investors both institutional and retail category who invest

funds to getter better returns. As per 2001-02 statistics there were about 20 million investors who have invested in securities market, when Rs. 226,911 crores was raised by corporate sectors and government bodies.

This underlines the need for further improvement in the working of Indian securities market. Such measures should bring more transparency and further efficiency with the aim of protecting the interests of the Indian investors.

IX. (A) Indian Stock Market Efficiency

Market efficiency is often studied under three broad headings: allocation efficiency, operational efficiency and informational efficiency. While allocation efficiency ensures the highest risk-adjusted returns for capital inflows, operational efficiency ensures that transactions in a financial market are completed on timely basis with the maximum possible accuracy and at the lowest possible cost.

Efficient market hypothesis (EMH) mainly states the informational market efficiency. In an efficient market the prices of securities fully reflect all available information. As per this theory the possibility of making superior returns from efficient market using information is absent.

The EMH have again categorised the informational efficiency in to weak-form, semi-strong form and strong form. Efficient market hypothesis (EMH) in the weak form claims that all past prices of a stock are reflected in today's stock price. Therefore, technical analysis cannot be used to predict or beat the market. Semi strong efficiency as per EMH (Efficient Market Hypothesis) implies that all public information is calculated into a stock's current share price. So neither fundamental nor technical analysis can be used to achieve superior gains from the market. The strongest version of market efficiency is the so called strong form of market efficiency. It states that all information in a market, whether public or private, is accounted for in a stock price. Not even insider information could give an investor the advantage of gaining superior returns.

The study had investigated in to the weak-form and semi strong form of informational efficiency of Indian stock market. The sample includes the daily closing price of all the shares included in the formation of Nifty Index. The study period was from 2004-2009. The results of both non-parametric (Kolmogrov –Smirnov goodness of fit test and run test) and parametric test (Auto-correlation test)provide evidence that majority of the share prices of companies included in the study do not follow random walk model .The significant autocorrelation co-efficient at different lags reject the null hypothesis of weak-form efficiency. So the researcher had to reject the null hypothesis that Indian Stock Market is weak form efficient. The empirical evidence suggests that Indian stock market is weak form inefficient.

These results were consistent in different sub-sample observations and for individual securities. The issues are important to security analysts, investors and to security exchange regulatory bodies in their policy making decisions to improve the market condition. The results also highlight the importance of considering market ecology and of adopting appropriate modelling procedures and investment strategies to fully exploit information contained in market prices.

The rejection of null hypothesis that the market is not Weak form efficient can be interpreted as that price forming information in Indian market may not be disseminated rapidly because of sophisticated communication technology, and lack of intensive market regulations .Indian markets can reduce the

exploitation of the profitable trading rules by increasing the number of listed securities, by increasing the trading volume and also by attracting more and more investors in to the capital market.

In the second part of this study researcher presents the results of the test of Semi-strong form efficiency of Indian Stock market. If the results give evidence that share prices do not react adequately and quickly to the various information, it means that the market offers opportunities for earning superior returns. However, results of the study gives evidence for Semi-strong form efficiency of Indian stock market. Residual returns of all the companies during the study period had a value near to zero. The results indicate that though the market is providing scope for high returns in the recent times due increased participations of foreign investors and through reduction of transactional cost, the opportunity to make abnormal profits is very limited. The results of this study are in line with many other previous studies conducted in the Indian market.

The reason for such observation could be that most of the companies included in the present study are large firms which are included in the construction of Nifty Index. These firms are automatically subjected to greater attention by the investors in the market. So the publicly available information or fundamental information gets incorporated in to the share prices very quickly. The results could be different for smaller or non popular companies.

The study period of this research was from 2004 to 2009 which included a time span in which Indian Stock market was severely affected by Global Financial Crisis. So the researcher had taken an effort to test the market efficiency of Indian markets during this recession period. Period of study was from October 2007 to April 2008 i.e. the time span in which Indian markets were rigorously hit by global financial crisis. Daily closing prices of these shares were considered for the analysis.

The results of the study indicate that the Indian stock market was Weak form inefficient during the study period. So the chances to earn abnormal returns by studying the past share price behaviour existed in Indian market even during the crisis. However the test results supported Semi-strong form efficiency of Indian stock market during the period of extreme financial crisis in India.

There was no evidence of gaining significant abnormal returns from Indian market. Hence the researcher accepted the null hypothesis (H_0) that Indian markets were efficient in the Semi-strong form during the study period.

The answer to the question whether stock market is efficient or not is very important from the viewpoint of policy makers and other regulators. The reason is only an efficient market can have potentially significant contributions to the country's economic development. Such efficiency only can promote higher savings, more efficient allocation of surplus funds and better utilisation of available resources.

An efficient market reduces uncertainties and enables appropriate investment choices, whereas in an inefficient market information will be limited, in many cases unreliable and does not adjust instantly to share prices. This makes sound investment decisions much complicated.

Uncertainty in the market will also reduce capital supply in the country which will trigger future growth. Broadly it can be said that if market is efficient, the amount of government intervention required is very less.

For investors in Indian stock market, stock market efficiency is important because it is the

deciding factor for the use of various security analysis tools like technical analysis or fundamental analysis in making abnormal returns from the market. If the market is efficient, all what an investor can do is to buy the security and hold it for a long time. Basics of technical analysis or fundamental analysis will never help him in making excess returns, rather than incurring additional transaction cost and cost of obtaining information.

IX. (B) Momentum and Contrarian Strategies in the Indian Stock Market

Momentum and contrarian are two traditional investment strategies that have captured tremendous interest of academicians as well as in vestment professional. These strategies are motivated by behavioral theory of under reaction and overreaction to news passed on to the financial market. The attractiveness of these two strategies is because of their simple trading rules. Momentum strategy is based on price continuation and contrarian is based on price reversals.

Investors following momentum strategy buy past winners and sell past losers whereas those following contrarian strategy sell past winners and buy the past losers. Generally speaking, in developed countries, many studies have confirmed the existence of momentum strategy and found contrarian strategy to be more efficient during long-term period. However, no consistent evidence about momentum strategy and contrarian strategy has been found in emerging markets.

A test of return predictability has important implications in security pricing in an inefficient capital market. According to the efficient market theory, investors cannot earn extra returns without bearing extra risk and using historical stock prices does not help investors to earn extra returns, as stock prices move at random.

The special characteristics of emerging capital markets like thin trading volume, low liquidity, less informational efficiency, rational investors, and also having low correlation with other emerging markets and developed market, one can expect more return predictability or inefficiency in these markets.

As a first step researcher had tested the market efficiency of Indian stock market and found that Indian stock markets were weak-form inefficient during the study period. It means there is scope for investors in India to predict future prices based on historical prices.

Next step was to test the efficiency of two technical analysis tools in predicting future returns. The aim of this study was to demonstrate the contrarian and momentum investment strategies, their profitability in Indian stock market and reasons explaining their existence.

For testing the effectiveness of the two investment strategies namely momentum and contrarian, entire study period was divided in to various formation periods of one month each for forming the momentum portfolio and contrarian portfolio. Daily returns of the shares included in the construction of Nifty index and whose data which was available for the whole 6 years were taken for the study .So the sample size was 29 companies shares

The study results revealed that there does not appear any merits to the momentum and contrarian strategies as technical analysis tools in Indian Stock Market. These results were different from many other developed markets. Empirical studies had revealed the possibility of making superior returns using these two strategies in those markets.

Stock prices contain some predictability. Results of this study also support the Weak-form inefficiency of Indian stock-market. So

Investors are left with opportunity to make excess return by studying the historical prices, However, this has to be done in a way that it compensates for the transactions costs of trading.

Researcher had also analysed the efficiency of momentum and contrarian investment strategies in predicting future returns during the time period in which Indian markets were severely affected by the global financial crisis. The period under study was 2007 October to 2008 April.

Empirical results gave evidence that there does not appear any merits to the momentum and contrarian strategies as technical analysis tools in Indian Stock Market even during recession period. So the researcher had to accept the null hypothesis (H_0) that momentum and contrarian strategies do not give superior returns over the bench mark.

Both these strategies i.e. momentum and contrarian strategies unfortunately involved high degree of turnover because the portfolios have to be reconstituted frequently. These strategies also incur substantial transaction costs. So it remains to be seen whether they would be profitable in Indian market after such costs are fully accounted for.

IX. (C) Interdependency of Indian Stock Market with Other Emerging Markets

Globalisation and liberalisation have stimulated the concept of integrated financial markets between countries and thereby integrated stock market movements also. This increased interdependency will have impacts on global investors also. It is this degree of correlation among returns of securities as well as those of stock markets which decide whether an investor is going to have any gains by diversification of securities and markets.

In integrated stock markets identical stocks will trade at almost equal prices both in domestic and foreign markets. In such case portfolio diversification would not generate required gains. Hence, interdependency of Indian stock market with other world markets would be important for investors in India. They would be interested to know whether portfolio diversification across global stock markets would generate desired gains.

So an empirical study had been conducted by the researcher with the objective of analysing the interdependency of Indian equity market with that of the rest of the world, especially among different Asian markets.

Researcher tested interdependency of Nifty Index movements with Shanghai Composite Index, Hangseng index and Nikkei Index from 2006-2009 using simple correlation technique.

Results provide evidence for correlation among market movements of Nifty Index with the other three markets studied. The study had to reject the null hypothesis (H_0) that there is no interdependency of Indian Stock market with other emerging stock markets.

So from the portfolio diversification objective, investors cannot benefit from arbitrage activities in the long run. If the results of this study, regarding the influence of the other three stock markets are extended and contrasted with the previous studies included in literature, it can be concluded that the interdependencies among the stock markets in the emerging countries have increased over the years. This could be because of liberal foreign policies in the recent years and lowering of barriers for foreign institutional investors. It also accounts for the recent de-regulation measures adopted by the government in the domestic market.

The benefits which Indian capital market can expect because of this growing interdependency with other world markets is that the market would become more efficient in allocating resources and mis-pricing prevailing in the market will come down. This would lead to better informational and operational efficiency of Indian Stock markets.

At the same time these developments in the international markets will pose severe challenges before the policy makers and regulators of the country. These interdependencies can inculcate financial distress or crisis in the domestic economy from other economies as it had happened in the recent global financial crisis. So it would be desirable if further policy measures are taken in India towards controlling the level of stock market integration by tightening or lessening the factors affected by the impediments. However such measures should be considered with the expected cost benefit for Indian economy. This requires a better understanding about the degree of consequences of stock market integration.

X. Recommendations and Policy Implications

1. The inefficiency of Indian stock market in the weak form also implies financial and institutional imperfections. It also pinpoint towards the fact that countries liberalisation, deregulation and privitisation policies have generated some level of instability in the market. Weak-form market inefficiency in India is most likely to be caused by inappropriate policy choices. Regulators have to take in a long run vision while formulating and implementing policies and programmes for Indian capital market.
2. Indian markets can reduce exploitation of the profitable trading rules by increasing the number of listed stocks and trading volume.
3. Opening up of markets to more foreign investors can bring more efficiency in the market. It can also bring down the cost of capital.
4. Considering the current growth of Indian stock market, the country would need larger and specialised investment institutions to handle and organize complex financial information.
5. Indian market requires more financial products to attract investments in to stock markets.
6. Investor educational programmes have to be given more importance in order to attract potential investors in to stock market. Currently less than 5 percent of Indian population is only engaged in capital market activities.
7. India's regulators have been active in seeking ways to develop the country's financial markets, and a in introducing greater risk management. However persistent reforms in the sector only can support India's already impressive growth trend in the coming years.
8. An important objective of reforms in India has to be integrating the various segments of the financial market for bringing about a transformation in the structure of markets, reducing arbitrage opportunities, achieving higher level of efficiency in market operations.
9. Regulators should ensure stability and integrity in the market. Prompt actions have to be taken in cases of severe volatility in the market. This would boost the investor confidence in the Indian stock market.
10. Market should have better operational and informational transparency.
11. Investors are recommended to make systematic study before going for

investments in stock market. They should never let greed control their investment decisions.

12. Credit rating has to be made mandatory for all capital market instruments.

XI. Areas for Further Research

1. Market efficiency as a research topic deserves a continuous study to reach an ultimate conclusion about the level of efficiency of emerging markets like India market. The sample selected for this study was those companies involved in the construction of Nifty index. These firms are automatically subjected to greater attention by the investors in the market. So the chances of publicly available information or fundamental information getting incorporated in to these share prices very quickly are high. The results could be different for smaller or non popular companies. Separate studies on market efficiency by considering characteristics of each industry and taking care of market capitalisation of different companies under study (like classifying them in to large cap, mid cap, small cap) would be advancement in the current topic under discussion.

2. The present study finds no evidence of gaining superior returns by using momentum and contrarian strategies in the Indian Market. However there are many questions still remained to be answered for India. These include "Is there any difference in momentum return patterns for different sectors in the country", "Is there any difference in contrarian return patterns for different sectors in the country". Studies conducted in similar area can give further evidence to the efficiency of these two technical analysis tools in the Indian market. NSE sectoral indices can be used for such studies.

3. There are many studies which were conducted in different markets for analysing the factors which can improve market efficiency. However attempts made in Indian context are very few in number. Separate studies taking in to account the economic and financial conditions of the respective country only can give constructive suggestions and recommendations for the policy formulators of the country. So the present study identifies this area as a future endeavor for researchers interested in this field.

4. Growing globalization and liberalization in the country, would promote greater integration between world markets in the coming yeas. So further research can be taken up for evolving policy prescriptions needed to protect the country from external crisis being inculcated in to the domestic market.