Chapter – VII

SUMMARY & CONCLUSION
This chapter is divided into three sections. The first section deals with the summary of the study. The second section is concerned with the limitations of the study and the third section covers the concluding remarks about the study.

7.1 Summary

Let us take the first section first. In the first chapter, the importance of the stock market has been discussed specially in the backdrop of the economic liberalisation. During the last twenty years or so the government has been encouraging more private participation in the industrialization of the economy. In this context the function of the stock market of accumulating the private savings and chanelising the same into productive investment got more importance.

The volatility is the characteristics of the stock market. It is understood that the human emotion is one of the very important ingredients for the stock market and should never be construed as rational one. Apart from irrationality, uncertainty about the future, noise trading and mis-pricing are the causes of the volatility. The higher inflows of money from the foreign financial institutions have even increased the volatility in recent times. The volatility in the Indian stock market is disturbing and as such hinders for arriving at any reliable decision from the statistical calculations.

There are several studies that recognise and observed that the share price swings both ways from the fundamental values to a sizeable extent. In this light, this study has attempted to analyse the stock return in the long run to check whether the stock prices of India has any growth component and whether the prices are mean reverting or not.
As to the problem of volatility, several studies have been made leading to the conclusion that the problem could be reduced if long horizon of holding period is considered. But, on the other hand, we believe that a desperate attempt to keep short investment horizon forces the investors to liquidate their investment within a short time that makes the market more volatile and hence more risky. Therefore, instead of reducing the risk, the risk increases if investors tend to reduce it by shortening its horizon. The present study tries to carry out the long-term return analysis of the Indian stock market and to check whether long-term investment in the Indian Stock Market would be beneficial for the investors.

This study has tried to sort out this problem effectively by taking a very long-term data series and taking stock index data instead of individual shares. The stock index data are representative of the stock market as well.

In the second chapter contradictory propositions have been elaborated. First Proposition states that Indian stock market should show stupendous growth due to economic liberation. There are many reasons to think that several changes have taken place during the economic liberalisation of Indian economy. The private initiative is encouraged in the industrial sector in place of government sector. The licensing system has been abolished. Many sectors reserved solely for government enterprises have been made de-reserved. An effort has been made to privatize the public sector enterprises. To boost up the productive investment in different industrial and non-industrial sectors interest rate has been reduced stepwise. The govt. feels complacent that the new economic policy has opened the floodgate of development in the economy. Some researchers like Dreman & Berry (1995) observed that fundamental
factors get reflected in the stock prices sooner or later. So, economic development should bring growth in the stock prices and stock indices at least in the long run. Moreover, the huge cash inflows from the foreign institutional investors in recent past should have driven the stock prices. So, the stock prices in general and stock indices should have demonstrated high return from Indian stock market.

Along with the rational investing, the stock market is characterised by speculative trading. The share prices and portfolios move due to emotions and overreactions. So, stock prices are irrationally volatile and follow random walk. There are several studies like Fama (1991) that found efficiencies in the stock market. Many of them concluded that it is difficult even to gain from the market because of its lack of predictable direction. There is another feature in the stock market --- called tendency for price reversal or mean reversion. Poterba & Summers (1988), Barberis (2000), Hirschey (2000) observed that there is a tendency for stock prices to revert to the mean after its primary movement. This led us to believe that the stock prices might not have any growth component with them. The above discussion is the background of our second proposition. The proposition II states that the growth of share prices is zero.

In the context of two contradictory propositions, the objective of the study has been set up to check the long-term growth and the return from Indian stock indices.

---

In the third chapter, the previous related studies have been discussed and found that there was lack of literature on long-term return word-wide. In fact, the most of the few long-term studies could be found after mid eighties. There are some studies that observed that the return is predictable. Fama & French (1988), Rechenstein & Rich (1993), Gencay (1996) and Mathew (2000) and Sen (1996) in Indian context observed that the share prices are predictable at least to some extent in some way or other.


---

In Indian context, Madhusoodanan (1997) detected bonded volatility and found the mean reversion.

There is no serious attempt to find out representative return from the market. In this context, the present study has carried out trend analysis to find out the slope of the stock indices and consequent long-term return.

There are some studies that showed the relation between the Indian market and other foreign markets [Nath (2003), Lamba (1999)]. There are several Indian studies that showed different aspects of Indian stock market. Kaur (2005) studied the volatility of Indian Market taking Nifty and BSE 30 for the period 1991-2003. She found the magnitude of the volatility using different types of Auto Regressive Conditional Heterodescicy (ARCH) model and compared with the volatility of US market. Sharma (2004) using log return data from 1996 to 2002 on three popular indices Sensex, Nifty and BSE 200 show evidences of seasonality in the Indian Market. Marisetty & Vedpurishwar (2002) studied the BSE 500 data during 1991-2001 and found asymmetry in returns distribution and observed significant positive skewness in Indian

---


Stock return. They found positive skewness in the return distribution.\textsuperscript{20} Joshi (1994) using time series regression found reliable positive and significant relation between nominal stock return and inflation during the period 1971-1991.\textsuperscript{21} Bhole & Pattnaik (2002) conducted the study for the period 1983-84 to 1999-2000 and concluded that share price behaviour cannot be explained by relevant economic fundamentals like profitability, sales, dividend of the company and the industrial output. But there is no study to find out representative return from Indian stock market.\textsuperscript{22}

There are several studies demonstrating that the movement of share prices and the value of portfolios are too random and unpredictable. Some studies demonstrated mean reversion of the share prices. On the other hand, we observed tremendous growth in the Sensex and Nifty during the recent past. This led us to enquire whether there is at all any growth in the Sensex and Nifty in the long run.

The chapter relating to data collection discussed all the thirteen stock indices of twelve countries in nutshell. The period for the study is from January 1991 to December 2004. The growth of the two Indian stock indices have been calculated and compared with the growth rates of stock indices of other countries. Along with the Indian stock indices Sensex and Nifty, collection of the most important stock index of Australia, Canada, France, Germany, Hong Kong, Japan, Singapore, Switzerland, United States and United Kingdom has been made. The volatility of stock prices was the most disturbing factor for applying any statistical tools. The inferences from the statistical


calculations would be misleading from such stochastic data. The stock index automatically averages prices of individual shares and this reduces the volatility within the data series to some extent. Again, monthly data was taken to reduce the impact of volatility further.

Two methods have been used to determine the growth rate trying to manage the stochastic behaviour of share prices. In the first method, log values of original stock indices were taken and linear trend equations were fitted. Secondly, moving average procedures were applied to the original data. According to Sawant (1983) & Sawant & Achuthan (1995) to reduce the effect of volatility of moving average data moving average procedures were applied. To remove the cyclical effect of the time series data the moving average period should be as large as a cycle. Madhusoodanan (1997) in Indian context found that there is a cycle of around $4 \frac{1}{2}$ years or 50 months in the Indian stock market. So, 50 month moving averages were taken. But, moving averages in general creates auto correlation problem. It was found through the Durbin-Watson test that all the stock index data series after the moving averages were suffering from auto correlation problem. To remove this problem Cochrane-Orcutt two stages procedures were applied as suggested by Chattopadhyay & Das (2000).

---


After removing disturbing effect of autocorrelation error it was approached to find out most suitable equation that would fit to the data series. Ten forms of equations is tested for the purpose. Those are (1) Linear Trend (2) Quadratic equation (3) Cubic equation (4) Compound equation (5) Logarithmic equation (6) Inverse equation (7) Logistic Equation (8) Power Equation (9) Growth Equation (10) Compound equation.

To know the nature of the distribution the CV, Skewness and Kurtosis were measured. An attempt has been made to ascertain the degree of mean reversion of the stock indices.

After applying all the equations to the data series it was found that all equations were statistically significant. But, R squared and adjusted R squared are highest for linear, quadratic and cubic data series. But, the ANOVA suggested that F ratio is highest, the linear trend was accepted as the most representative equation of all.

From the linear trend equation, the slope can be had and from the slope, growth can be determined. The growth under moving average method offsets the effect of cyclicality to show long-term secular trend. The growth rate under moving average method for BSE 30 Sensex was 2.41% p.a. and growth rate for Nifty was for 3.18% p.a. In comparison to other stock indices, the growth of Indian stock indices is one of the lowest.

The growth rate under log value method did not demonstrate similar result in all the cases. In case of Indian stock indices the variability is more prominent. The Sensex registered a growth rate of just above 5% and for Nifty the rate is 5.64% per annum. This method also shows that Asian countries grew at a slower rate in comparison to its other counterparts of the world.
We found that the annual dividend yield during the period of study is around 4%. So, considering both the index and both the method the return from Indian stock index is less than 10% for Indian stock index.

The Coefficient of Variation (C.V.) of both Sensex and Nifty is around 29%. It is observed that the volatility of Indian stock indices might not be considered as very high in comparison to other eleven countries. The skewness determines the level of asymmetry in the data series. The Sensex and Nifty demonstrated positive skewness. Indian stock indices are the only stock indices that demonstrated leptokurtotic distribution.

The Indian stock indices demonstrate highest mean reversion. We find statistically different growth rate in log value method and moving average method for Indian stock indices. The lower moving averages return demonstrates rate of return implying cyclicality might be one of the very important reasons for high mean reversion in the stock indices. Even being low growth story, the FIIIs are interested in Indian stock market because of its high mean reverting feature.

The study is significant from many angles. The present study is important in the sense that it determines the long-term rate of return with due sincerity. The original data is too volatile for applying any statistical applications and arriving at any conclusions. In this study, we have taken care of this problem at the time of determining long-term return from Indian stock market. The positive growth component and the total return from the stock market suggest that the market is not a 'Casino'. Again, the study does not demonstrate stupendous growth rate from the Indian stock market. So, it is advisable to the novice investor not to enter in to the stock market directly. However, they may invest in the stock market through mutual fund route or taking the expert's
opinion. The study also suggests that the 'Buy and Hold' strategy is not also very lucrative in the Indian scenario. The study, however, might be helpful for the professional investors for strategy formulation on long-term investment.

This long-term return might be accepted as representative return from Indian stock market that may act as benchmark return for the long-term investors. The study demonstrates higher return than the return observed by Jorion & Goetzmann (1999) implying probable effect of the economic liberalisation. The study discouraged the idea of investing the fund for superannuation in the stock market.

7.2 Limitations and Scope of further Research

The present study is not free from certain limitations. The limitations of the study and scope for further research are narrated in brief.

Firstly, a long-term study should require taking a very long period. But, in the present study we have taken only a period of fourteen years starting from January 1991 to December 2004. The major limitation of the study is that, the period is not long enough for a long-term study. Had we taken more years into the coverage of the study, the data could have been more dependable. There are some very long-term studies like Goetzmann (1993) and Jorion et. al. (1999) in the United States. But, there is no denying the fact that Stock market is unpredictable, too volatile and unstructured. In this case, the nature of the stock market is certainly changing. So, a very long period

---


might not be helpful for drawing realistic interpretations. However, a very long period divided into small segments could have solved the problem.

Secondly, in the study, the growth of stock index of India has been compared with that of ten countries. There is an attempt to calculate a representative return of the Indian stock market. In this context, dividend yield has been added up and brokerage has been deducted to arrive at total the return from Indian stock market. But, the dividend yield return of the other foreign stock indexes is not available; as such the total return could not be calculated for comparison with Indian stock market. Some studies could compare the total return of all the stock indices.

Thirdly, 50 month moving average was carried out to eliminate the effect of business cycle in the data series. In case of India, it might be considered as appropriate as some like Madhusoodanan (1997)\textsuperscript{30} found that there is a possibility of a business cycle existed in India that could be detected in the data series of stock indices. The business cycle might be different in different countries. In that case different moving averages would have been calculated to remove the effect of business cycle from the data series. But, that situation could have created problem of consistency. The present study could have escaped from this type of limitations.

Fourthly, the study determines the stock index growth in nominal terms. But, different countries have experienced different degree of inflation. So, the growth rate of index should have been discounted with inflation rate to arrive at the growth rate in real term. Those inflation-adjusted figures would have been more comparable. There is a scope to carry on a study to determine long-term real return from different indices.

Fifthly, in this study, thirteen indices of twelve countries have been taken into consideration. We observed that the most of the indices registered positive return during the period of fourteen years. But, the Nikkei of Japan and the Straits Times of Singapore posted negative growth. It would be an interesting research to find out why these two countries registered negative growth during the period of study.

Sixthly, the economies of United States, France and Germany are advanced and mature. These economies registered low growth rate as far as economic fundamentals are concerned. On the other hand, Asian economies are emerging and registering higher economic growth. But, the growth of stock indices is opposite. There is a scope to diagnose the cause of such incident.

Seventhly, twelve countries have been taken for the purpose of this study. Had more countries were taken in the sample, more universal inferences about the stock market could have been drawn. So, there is a scope to study the same topic with longer sample with indices of more countries.

Finally, as money flows from one country to the other, so it was expected that money would from overpriced market to the under-priced market. As a result of that, the return should have been consistent in different countries over the years. But, we observed something else. The cause of such discrepancies in the long-term return of different countries should be enquired specially in the days of globalisation.

7.3 Conclusion

The study has been carried out to have an idea about long-term return from the Indian stock market. The long-term return can be derived by summing up the stock index growth along with the dividend yield during the period. There are three methods for
determining growth rate — point-to-point growth, growth under log value method and growth under moving average method. Due to inherent limitation of point-to-point growth rate we have considered other two methods for our study. The growth rate of Sensex is 5.04% and 2.4% under log value method and moving average method respectively. On the other hand, growth rate of Nifty is 5.64% and 3.18% under log value method and moving average method respectively. All the growth rates are significantly different from zero. It is observed that the growth rate of Indian stock market is mediocre in comparison to the growth rates of other countries in the present study. It is further observed that the growth of stock indices of non-Asian countries is higher than the growth of Indian stock indices in general. However, the growth of stock indices is higher than the growth of the Nikkei and the Straits Times of Singapore under both the method.

To gauge the dependability of the growth rate the co-efficient of variation, the skewness and the kurtosis were measured. An attempt has been made to find out a tool for measuring the mean reversion. As expected the co-efficient of variation high in absolute terms but it is one of the lowest in comparison to other countries. The Sensex and Nifty demonstrated positive skewness. Only Indian stock indices demonstrated leptokurtic distribution implying high concentration of values near mode. The Indian stock indices demonstrate highest mean reversion during the period of study.

The return in the form of dividend has been found to be around 3.5% to 4% in both the Indian stock indices. Adding dividend yield and the growth in stock indices, it is observed that the long-term return from Indian stock indices is no way above 10% under both the method. As the expected value from the stock market is much higher than zero, the study further demonstrates that it is not a 'Casino'. Again, it is not a place to earn high return as well. The low long-term return suggests that 'buy and
hold' might not be very effective strategy for investment. The study observed that the Indian stock market reflects high tendency for mean reversion. This nature of high mean reversion makes the market more risky. We can understand that the risk-adjusted return would be much lower than the 10% and could be even be less than the risk-free rate of return (8%) available in the economy. So, it is advisable that the novice and non-expert investors should stay away from directly investing in the stock market. However, the expert domestic and foreign fund managers could utilize the mean reversion tendency to garner higher profit. The investors can take the advice from the efficient fund managers for their investment or they can make investment in the stock market through mutual funds. The result of study about low return and high mean reversion in the Indian stock market suggests that government should think twice over the policy of investing the fund for superannuation in the stock market.