Chapter – VI

FINDINGS & OBSERVATIONS
In the previous chapter the growth rate of Indian stock indices has been determined along with the growth rate of stock indices of some other countries of the world. The frequency distribution of the stock indices has been determined. An attempt has been made to gauge the tendency of mean reversion of the stock indices. The dividend earning has also been calculated.

The present chapter has three sections. The first section covers the findings of the study and different aspects related to that. The second section takes care of the observations related to the implications of the findings. The third section offers some suggestions based on the findings.

6.1 Growth Analysis of Different Stock Indices

The stock indices all over the world have some similar characteristics. Two sets of growth data have been considered here. One growth data under log value method and another growth data under moving average method. Under the moving average method and subsequent measurement of Durbin-Watson statistic d statistic it has been found that the d–statistic is similar and in some cases same for the 50 month moving average of all the indices including that of India. After removing the autocorrelation problem with the help of Cochrane-Orcutt two stage procedures from the indices data series, it is found that all ten forms of equations are statistically significant for the stock index data for the long-term. The R squared for Inverse equation, S-curve and Power equations varies from 0.184 to 0.278. It has also found that apart from Inverse equation and Power equation R squared is 0.796 or above for all other equations. Moreover, it is also found that linear equation, quadratic equation and cubic equation are highly significant. The R squared and adjusted R squared is more than 0.99 in all cases. It is found again from the ANOVA that the F Ratio is the
highest in case of linear trend equation. The analysis of the study can be interpreted to understand the whole picture more clearly. For the purpose let us first discuss about the stock indices of India.

6.1.1 Growth of Stock Indices in India

Two methods have been applied on the stock indices of India and stock indices of other countries.

6.1.1.1 Growth rate taking log values

We have taken two very important stock indices, BSE 30 Sensex and Nifty, to determine the stock market growth of India. The linear trend is applied to log values of Indian stock indices along with the stock indices of other ten countries. All the linear trend equations are statistically significant and hence the equations might be considered as acceptable.

From the slope of the trend line we do arrive at the growth rate per annum. The growth of stock indices demonstrates more than 5% growth per annum. The growth of BSE Sensex is around 5% p.a. where as the growth of S&P CNX Nifty is found more than 5.6%. R squared is moderate and the return data might be accepted as dependable. The standard error of growth is 0.58721 and 0.06504 for Sensex and Nifty respectively. From the test statistics it is observed that both the growth rates are significantly different from zero [Appendix XXVII].

6.1.1.2 Growth Rate Taking Moving Averages

The average of Sensex during the period of studies i.e. Jan.1991 – Dec. 2004 is 3626.04. On an average, monthly increase in Sensex is 7.30. On the other hand, average of Nifty is 1067.54 and monthly increment of Nifty is 2.83 points. In
percentage wise, Sensex registers 0.2% growth per month. The corresponding figure for Nifty is 0.265%. The annual growth figure for Sensex and Nifty are 2.41% and 3.18% respectively. So, it might be concluded that the stock market of India has grown at around 2.5-3% per annum. The standard error of growth rate under this method is 0.005273 for Sensex and 0.016106 for Nifty. From the test statistics it is observed that the growth rates are significantly different from zero in this case also [Appendix XXVII].

6.1.2 Growth of Stock Indices in Other Countries

The growth rates of ten stock indices of ten different countries have been considered for the purpose.

6.1.2.1 Growth rate taking log values

The return from stock indices of other countries exhibits varying return. The Swiss Market Index of Switzerland demonstrates the highest return at 10.4% p.a. followed by US S&P 500 (9.6%) and DAX of Germany (9.12%). The R squared of all these three stock indices are high enough (above 0.55) those return can be considered as dependable. The Nikkei of Japan and the Straits Times of Singapore demonstrate the negative growth during the period of study. The Japanese stock index has declined by over 6% p.a. and Singaporean index declined only marginally. The R squared of Nikkei is as high as 0.7 and hence dependable. The R squared of Strait Times is very low at only 0.004 and F ratio is also very poor and hence the return from the equation might not be considered as acceptable. The stock indices of UK (FTSE 100), Australia (All Ordinaries) and Hong Kong (Hang Seng) registered a growth of around 5.5% to 6.5%. The R squared of All Ordinaries is highest is above 0.905 and might be considered as most dependable return in our study. The R squared of FTSE 100 and Hang Seng
was around 0.5. The stock indices of Canada and France have registered a growth rate of over 7.5% per annum. The r squared of TSX Composite and France is 0.8 and 0.6 and might be considered as goodness of fit of the linear trend.

The Australian stock index, All Ordinaries, has average value of 2586.50 for the last fifteen years. All Ordinaries grew 13.79 points per month and 165.48 points per annum. The monthly growth is 0.533% and annual growth figure is 6.40%.

6.1.2.2 Growth Rate Taking Moving Average

The Canadian Stock index, S&P TSX Composite has average of 6231.71 during the period of study. S&P TSX Composite index has grown by 41.43 points per month and 497.16 per annum. The monthly growth rate of the Canadian Index is 0.665% and annual growth rate is 7.98%.

The stock index of France is CAC 40. The average value of CAC 40 during the period of study is 3363.22. The stock index has grown by 30.51 points per month. The yearly growth is 366.12 points. The monthly growth rate is 0.907% and the yearly growth rate is 10.89%.

The stock index of Germany, DAX index, has average value of 3883.54 for the last fifteen years. All Ordinaries has grown 35.55 points per month and 426.6 points per annum. The monthly growth is 0.915% and annual growth figure is 10.98%. The stock index of Germany has registered highest growth during the period of study.

The stock index of Hong Kong, Hang Seng, has average value of 11073.18 during the period of study. The Hang Seng has grown by 42.89 points per month and 514.68 per annum.
annum. The monthly growth rate of the stock index of Hong Kong is 0.387 % and annual growth rate is 4.64%.

The Nikkei 225 is the stock index of Japan. The Nikkei has average value of 16658.26 during the period of study. The Nikkei has declined by points 74.78 per month and 897.36 per annum. Nikkei registered highest declined over the period of study. The monthly decline rate of the Nikkei was 0.448 % and annual rate of declination is 5.38 %.

The stock index of Singapore, Straits Times, has an average value of 1874.03 for the last fifteen years. Straits Times declined by 3.38 points per month that come to 40.56 per annum. The monthly decline rate was 0.181% and annual negative growth figure was 2.17 %.

The average value of Swiss Market index, the stock index of Switzerland, was 5051.73 during the period of study. The monthly increment of the index was 44.07 i.e. yearly increment is 528.84. In percentage wise, monthly growth of Swiss Market index was 0.872% and the yearly growth of the same stock index is 10.47%.

The FTSE 100 is the stock index of United Kingdom. The FTSE 100 has average value of 4581.49 during the period of study. The UK market has grown by 24.96 points per month and 299.52 per annum. The monthly growth rate is 0.545% and annual growth rate is 6.54%.

6.1.3 Comparison of Growth Rates between Indian and Other Stock Indices

The stock index of United States of America is S&P 500. The average value of S&P 500 data series during the period of study was 896.66. The stock index grew by 7.77
points per month. The yearly growth was 93.24 points. The monthly growth rate is 0.867% and the yearly growth rate is 10.40%.

It is observed that the growth rate of Indian stock indices is significantly different from the growth rate of other stock indices of the world. It has been shown earlier that short-term return of the stock indices is significantly different from each other. Even after taking many steps towards globalising Indian economy, the long-term growth of stock indices of India have not interlinked with stock indices of other countries.

From the above discussion, we may come to the conclusion that the stock market growth is one of the lowest in the world. The growth of Indian stock market is higher only to the stock market of Japan and Singapore --- those registered negative growth during the period of study. All other countries under study have registered much higher growth rate in comparison to India. From further observations of the stock market of different countries, it would not be unreasonable to comment that there might be three categories of growth rates. The Asian countries form a group, the Australia, UK and Canada form a group and the other European countries and United States make another group. The Asian countries have yielded lowest growth ranging from -2.17% to 4.64% under moving average method. Among the Asian countries, Hong Kong has registered highest growth of 4.64%. The Japan and Singapore register negative growth rate. The performance of Indian stock market is mediocre even in the Asian parameter. The stock indices of Australia, Canada and United Kingdom register growth rate ranges from 6.5% to 8%. The performance of United Kingdom is worst among European countries. Where Canadian stock market has grown at around 8%, the stock market of United Kingdom and Australia registers growth around 6.5%. Some advanced European Countries like France, Germany, Switzerland and United States have displayed the highest growth. The growth rate
during the period of study is around 10.5%. Germany has registered highest among all countries in study closely followed by France, Switzerland and United States.

It is noticed that, the growth rate of Sensex is statistically different than all other stock indices of the world [See Appendix XXVIII and XXX]. It is further observed that the growth rate of Nifty is also significantly different from the growth rate of other stock indices of the world except in case of Hang Seng and FTSE 100. The growth rate of Hang Seng and FTSE 100 are not significantly different from the growth rate of Nifty [See Appendix XXIX and Appendix XXXI].

6.1.4 Comparison of Growth Between Two Methods

The growth rate under log value method and growth rate under moving average method demonstrate varying rate of return. In case of some stock indices it is found that both the method yield similar rate of return but in most of the cases, the growth rates under both the method, show marked difference.

The difference of growth rate is highest in case of Indian stock indices in absolute terms. Under log value method the growth of Sensex is 5.04% p.a. On the other hand under moving average method the growth rate of Sensex is 2.41%. The growth rate of Nifty is 5.64% under log value method and the growth rate of Nifty under moving average method is 3.2%. Both the differences are statistically significant [see Appendix XXXII] as well. From this, it might be observed that the Indian stock indices are too cyclical in nature. If fact, later we would observe that the mean reversion tendency is highest in case of Indian stock indices. So, in moving average method data points are averaged and thus lower growth rate is exhibited.
If we examine the stock indices of other countries we can find that the difference of growth rate is more pronounced in case of the stock indices of Asian countries. The Straits Times Index has almost remained stagnant during the period of study under log value method whereas under moving average the index declined by over 2%. Again, under log value method, Hang Seng has grown by 6.6% but under moving average method the respective growth is found to be 4.64%. The growth rate of CAC 40, DAX also varies under both the method. On the other hand, growth rate of Swiss Market Index and All ordinaries registered same growth under both the method. The difference of growth rate of SMI under both the method is not statistically significant also. The growth rate of TSX Composite, S&P 500, FTSE 100 under both the method are comparable, the difference is statistically significant. [For details about statistical significance of difference under both the methods see Appendix XXXII].

The return from trend equation does not tell everything. In fact, the nature of the frequency distribution is very important to understand the return properly. For this purpose, standard deviation, skewness and kurtosis have been computed.

6.2 Nature of Stock Index Distribution

The determination of absolute return is certainly important but that loses its meaning without the distribution and variation of the data. So, a discussion of variability of data and the nature of distribution should also be taken into account. Firstly, let us discuss about the variability of data. Here, instead of moving average data, original set of data is considered. We know that the moving average data reduces the variability has been taken into consideration. So to get the actual understanding of the variability of data original set of data were taken. To understand the distribution of the data Skewness and Kurtosis were calculated on the original data for the same reason.
The original set of data is taken into consideration for understanding the distribution of the stock indices. It is presumed that the original data would give real picture to understand the nature of frequency distribution. So, the nature of distribution of log value data and moving average data has not discussed.

6.5.1 Variability of Data

The most popular measure of variability is standard deviation. The standard deviation of Sensex is 1011 and for Nifty the standard deviation is 322. In comparison to other markets of the world, standard deviation of Nifty has got lowest standard deviation of all. The standard deviation of Sensex is almost in the middle. Nikkei of Japan has the highest amount variability as far as measurement of standard deviation is concerned. The standard deviation of Japan is 4459. The variability of Hang Seng of Hong Kong is also very high followed by Swiss Market Index of Switzerland and TSX Composite index of Canada. The standard deviation of Hang Seng is 3342. The standard deviation of Swiss Market Index and TSX Composite were 2098 and 1963 respectively. The standard deviation of DAX of Germany has also high standard deviation with 1712. The standard deviation of S&P 500 of United States and Straits Times of Singapore were very close and were among the lowest. The standard deviation of S&P 500 and Straits Times were 352 and 357 respectively. All Ordinaries of Australia also got low standard deviation with 661. The standard deviation of CAC 40 of France was not very high. The standard deviation of CAC 40 is 1382.

The standard deviation may be most popular measure of variability but is not suitable for different comparison. The different stock indices have got different arithmetic mean so the measurement on the basis of absolute figure would be misleading. To avoid that, the coefficient of variation (C.V.) has also been calculated. The C.V. of different
indices are much more comparable than standard deviation as far as variability of data is concerned. The coefficient of variation of Sensex and Nifty were almost same and 28.35 and 29.81 respectively. So, it is not unreasonable to say that both the indices represent a same level of volatility. The C.V. varies from 19.81 to 47.91. So, we understand that Indian Stock indices remain in between. The C.V. of other stock indices would confirm this. Indian stock market is moderately volatile and can not be said that Indian stock market is one of the most volatile market in the world. The Straits Times has got the lowest C.V. among all the stock indices. The C.V. of All ordinaries and Nikkei is also low at 26 and 17 respectively. All other stock indices have got higher C.V. than Indian Stock indices. The DAX of Germany has got the highest C.V. with 48, followed by Swiss Market Index of Switzerland and CAC 40 of France. The C.V. of Swiss Market Index is 45 and that of CAC 40 is 43. The C.V. of United States is also very high at 41. The C.V. of TSX composite of Canada, Hang Seng of Hong Kong and FTSE 100 of United Kingdom are at lower level at close to C.V. of stock indices of India. The coefficient of variation of TSX Composite, Hang Seng and FTSE 100 were very much similar and ranges around 31 and 32.

6.5.2 Skewness

The average would be more representative if distribution of data is more symmetrical. In other words, the average of a very asymmetrical distribution might not be very dependable representative. The ‘skewness’ determines the level of asymmetry in the data set. A symmetrical distribution has zero skewness. The asymmetrical distribution can be positively skewed or negatively skewed. Like any other real world data series, it could be observed that no stock indices have zero skewness. In the sample of my study it been seen that some stock indices have high skewness and some stock indices have low skewness. It can be observed that the stock indices have inclination
towards the positive skewness. There are four cases where skewness is negative but those figures were rather small. The Indian stock indices are positively skewed. We can see Sensex has lower skewness than Nifty. The skewness of Sensex is 0.16 where as Nifty has skewness of 0.36. The Sensex has got one of the lowest measurements of skewness; on the other hand the Nifty has one of the highest measurements of skewness during the period of study. The Swiss Market Index has the lowest skewness of all at 0.03 followed by Nikkei at -0.09, S&P 500 of US at 0.09 and All Ordinaries at -0.12. The Straits Times has low negative skewness at -0.16. Hang Seng has the skewness of -0.18. The skewness of S&P TSX Composite and FTSE 100 were also low. The skewness of S&P TSX Composite and FTSE 100 were 0.21 and 0.24 respectively. The CAC 40 has got highest skewness at 0.84, followed by skewness of DAX index at 0.59. So, we can observe that like most of the stock indices, the Indian stock indices were positively skewed. It implies that the distribution has long right tail. So, there was more number of data points above the mean than the number of data points below the mean. This feature of the distribution is certainly encouraging for the investors.

6.5.3 Kurtosis

Kurtosis refers to the degree of "peakedness" of the frequency curve. For the normal distribution curve, which is neither very peaked nor flat topped, is called 'mesokurtic'. The measurement of kurtosis in that case is zero. The measurement of kurtosis of Indian stock indices is peculiar in comparison to other stock indices of the world. We can observe from the analysis that except Sensex and Nifty all other stock indices are negative. The kurtosis of Sensex is 0.63 and the same of Nifty is 0.70. As the measurement of kurtosis is positive so it may be commented that the frequency curve is 'leptokurtic' implying the frequency curve is sharp peak. It seems that data were
more inclined towards central tendency. It might also be commented that the mean reversion feature of Indian stock prices are more prominent than indices of other countries. All other frequency curves are 'platykurtic' showing negative measure of kurtosis. The frequency of these stock indices is relatively flat topped specially in relation to Indian stock indices. The most flat topped stock index is Swiss Market Index with measurement of kurtosis of \(-1.40\), followed by S&P 500 of US with measurement of kurtosis of \(-1.38\) and FTSE 100 with measurement of kurtosis of \(-1.16\). All Ordinaries, S&P TSX Composite, Straits Times, Nikkei and DAX index have high negative kurtosis. The kurtosis of those indices is \(-1.12\), \(-0.94\), \(-0.87\), \(-0.76\) and \(-0.74\) respectively. The kurtosis of CAC 40 and Hang Seng is some how low. It means the frequency curves of these indices were not so flat topped in comparison to other countries except India. The kurtosis of CAC 40 and Hang Seng was \(-0.28\) and \(-0.42\) respectively.

6.3 Tendency of Mean Reversion

From the calculation of the Growth / Co-efficient of variation (G/V) ratio it is observed that G/V ratio for Sensex and Nifty is 8.5 and 10.7 respectively. The G/V ratio for Straits Times is near 10 in absolute term, comparatively lower like other Asian stock indices. The G/V ratio of All Ordinaries, S&P TSX Composite Index and CAC 40 ranges between 24 and 25. The same ratio in for DAX index, Hang Seng and Nikkei ranges from 14 to 22 in absolute terms. The G/V ratio for Swiss Market Index, FTSE 100 and US S&P 500 ranges between 21 to 25.

The most prominent mean reversion tendency is observed in Indian stock index. The G to V ratio is low for both Sensex and Nifty. The mean reversion is also prominent in Straits Times of Singapore and Hang Seng of Hong Kong. Only Nikkei 225 of Japan
has lower degree of mean reversion in Asia. But, the mean reversion tendency of
Nikkei 225 is more prominent in comparison of other European Countries, US and
Australia. The least amount of mean reversion was observed by US S&P 500 and
CAC 40 of France closely followed by S&P TSX Composite Index of Canada and All
Ordinaries Australia. The mean reversion tendency of DAX index of Germany and
FTSE 100 is also poor.

From the above discussion it can be concluded that the ratios are mostly divided into
two categories. In one group there are Asian stock indices and in other group there
are European, Australian and US stock indices. The Asian stock indices demonstrate
low G to V ratio where as the US, European and Australian stock indices demonstrate
high G to V ratios. It implies that the Asian stock indices are more mean reverting in
nature in comparison to non-Asian stock indices. In other words, the mean reverting
characteristics of US and other European Countries are less prominent.

6.4 Dividend Earning & Long Term Return

It is observed that dividend yield per annum depends upon the investment horizon.
The higher the investment horizon, higher would be dividend yield per year. It is
further observed that for one year investment horizon dividend yield is 1.14%, for five
year investment horizon the return in terms of dividend is around 1.68% and for
fourteen year investment horizon the dividend is expected to be 3.95% per annum.
For the calculation of the very long-term return, the higher investment horizon should
be preferred. In that case, lower return due to long-term mean reversion tendency
might get off set at least to some extent by the higher dividend earning per annum.
The growth per annum for Sensex ranges from 2.4% to 5.02% and dividend earning is 3.95% per annum. So, long term return from Sensex ranges from (2.4+3.95)% or 6.35% to (5.02+3.95)% or 8.97%. Similarly, it is observed that dividend yield for the period 1991-2004 for Nifty is around 3.71% per annum. So, the long-term return from Nifty under moving average method would be (3.18%+3.71%) or 6.89% and the log value method would be (5.64%+3.71%) or 9.35% per annum.

So, it can be stated that return from Indian stock index varies from around 6.35% to 9.35%. In other words the return might not exceed 10% and the same does not generate less than 6% on the long-term basis.

6.5 Important Aspects of Findings

The findings of the study are important in many aspects. Let us enumerate one by one.

1. The study found the existence of growth component in the Indian stock market. In fact, it has been found that on an average the stock market all over the world grows over the years. The long-term return from Indian stock index is around 7% p.a. in moving average method and around 10% under log value method during the period of study. The growth of Indian stock indices is one of the lowest as is revealed by both the method. The long-term stock index growth of France, Germany, Switzerland and United States is around three times than that of India under moving average method. The growth of stock indices of Australia, Canada and United Kingdom is more than double than that of India. The growth of Indian stock indices is higher only to growth of Japanese and Singaporean stock indices and comparable to stock index of
Hong Kong under the same method. However, under the log value method, the picture is better for Indian stock indices. But, in that case also the growth is among the worst in our sample.

2. The co-efficient of variation (C.V.) of original data of Indian stock indices has been found to be around 29 and the C.V. of other stock indices ranges from 20% to 48%. This implies that there is a lot of variation and volatility among the data. Specially, CAC 40, DAX index, Swiss Market index and S&P 500 of US has coefficient of variation of more than 40%. The skewness of raw data of Indian stock indices was 0.16 for Sensex and 0.36 for Nifty and ranges from 0.84 to -0.16 for other stock indices. It is observed that most of the frequency curves are positively skewed including that of India. Some like CAC 40 and DAX have very high coefficient of skewness. The kurtosis of Indian stock indices is near 0.65 and for the other stock indices of kurtosis ranges from –1.40 to 0.63. The Swiss Market Index, FTSE 100, S&P 500 of US and All Ordinaries have negative values of much above than 1.00. The very high rate of unstructured volatility is the cause of high coefficient of variation, high skewness and high kurtosis. In the present study, to reduce the volatility and tried to get some structured data the log value and the moving averages were applied taking a very long period. We found under the moving average method that the C.V. varies from 6% to 31%. We can see variation of data is reduced to a large extent. The skewness of processed data has been found to be very low and almost equals to zero in all the cases. The highest skewness in absolute figure is for Nifty at 0.05 followed by skewness of Sensex at 0.007. The kurtosis of the processed data is surprisingly very much consistent to one another. Under moving average method, all frequency curves are 'platykurtic'
in nature implying flat top curve in comparison to normal curve. The kurtosis ranges from \(-1.18\) to \(-1.21\). Under the log value method we found that C.V. is the smallest for Indian stock indices and other stock indices among all the three methods. So, we understand that the data is more structured and more ready for comparative analysis. Such processed data would certainly lead to more meaningful inferences. So, it can not be denied that the deduction and the conclusion of the present study would be more dependable and realistic.

3. We might get some idea about the return of pre-liberalisation era from earlier studies. Jorion & Goetzmann (1999) demonstrated the annual return for 39 markets over a very long period of time. They found the nominal compound return of Indian Stock market above 6% p.a. during the period of 1939-1996.\(^1\) This study has determined that return from Indian stock indices are at around 6.5% at least.\(^2\) So, there might have been some improvement during the period 1991-2004.

4. During the period of study the Indian economy went through the process of economic liberalisation. The economic liberalisation in India has started from the mid eighties. So, the determination of return during 1991-2004 should have got the impact of liberalisation. We observed that the higher rate of return from Indian stock market after the liberalisation. It is established from the data that the Index of Industrial Production (IIP) has improved during the period. So, this finding supports Dremer & Berry (1995) that fundamentals would affect stock prices directly sooner or later.

---


\(^2\) ibid
5. The developed economies have registered strong growth during the period of
study. Those developed countries are basically governed by the liberal
economic policies from long ago. The effect of economic liberalisation should
have been smoothened by now. On the other hand, in the initial years of the
reform process, the economies like India should have observed supernormal
growth. But, we found that even the long-term return of Indian stock market is
not at par with other developed countries. This led us to believe that the
economic liberalisation might not be the 'panacea'.

6. The global managers are not confined to their own country as far as their
investment is concerned. Depending upon the opportunity, they are investing
in the other countries as well. The stock market was opened up for the Foreign
Financial Institution (FII) in India from the year 1993. The FII also found the
investment in the Indian Stock Market as very encouraging. At present, India is
considered as one of the top destination of the FIIIs. As such, India also
experienced very high inflows of fund from Foreign Financial Institutions after
the opening up of the economy for them. But, even such higher inflow did not
improve the long-term return of India. So, when the FII inflow would decline or
even when the growth of FII inflow would come to a stand still, then no one
knows what would happen.

7. As money flows from one country to the other, it is expected that money would
flow from overpriced market to the under-priced market. As a result of that, the
return should have been consistent. But, we observed something different. The
growth of stock indices varies widely among the countries during the period of
study. Under moving average method, the annual growth of Australian market
is 6.4% p.a. Canada yielded 7.98%. The growth rate of stock market index of France is 10.89% on the other hand Germany yielded 10.98%. The rate of stock market of Hong Kong is 4.64% and the same for Indian stock market is 2.41%. Japan and Singapore demonstrated negative growth rate of 5.38% and 2.17%. Switzerland, United Kingdom and United States show growth of 10.47%, 6.54% and 10.40% respectively. The return figures are not in consistent with each other. It can be concluded that the stock return from the markets in different countries is not comparable even in the days of globalisation where money flows from one country to the other.

SECTION II

6.6 Implications of the Findings

The findings of the study have several implications on existing literature, on the investors and on the government policies. The observations regarding the implications of the study has been divided into three parts.

(A) Implications on the Existing Literature

(B) Implications on the Investors

(C) Implications on Government Policies

6.9.1 Implications on the Existing Literature

The present study on long-term return analysis has supported many findings of the other literature and again it has raised questions on many of the existing literature in some way or the other. Let us discuss one by one.
1. Poterba & Summers (1988), Jegadish (1991), Barberis (2000) and Fama & French (1988) found mean-reversion of the share prices in some way or the other. Fama & French (1988) found positive auto-correlation among share prices in daily and weekly data. They concluded that there is strong negative correlation demonstrating mean reversion. They further concluded that in recent years, the mean reversion is more prominent in smaller foreign markets than in the United States. The present study found that the Asian countries registered less growth in stock indices in comparison to the United States. So, this finding is in line with Fama & French (1988).

2. In the analysis of the study it has been found that though the stock market index are very volatile in nature still there is a growth rate over a very long period of time. As the growth rate is not zero, so, the nature of the stock prices as individually or as a group may be termed as 'price reversal' instead of 'mean reversal'. This view supports the Hirschey (2002). He found average annual return of around 9.7% for the US S&P 500 index for the period 1950 to 2002 and at the same time detected the price reversal in the stock market.

---

7 ibid
(i) Madhusoodanan (1997) observed that the Indian market is found to be mean reverting. The present study does not only asserts this rather it goes on saying that Indian stock market is one of the most mean reverting in nature in the world.

(ii) In case of a casino or gambling the gain of one is the loss of other in exactly same amount. As a result, the sum of expected return by all the members equals zero. But in case of equity investing it is not so. It is found that there is positive growth rate of the stock index and if we add up dividend yield the return would be much higher. So, gain from the stock market by the investment is higher than the loss incurred by the investors. The return from Sensex and Nifty is at least 6.35% per annum. This point goes against the Keynes (1957) who describes the stock market as 'Casino'.

4. Jegadish & Titman (1993) concluded that the stock prices might follow a similar trend for a holding period of 3 to 12 months. DeBondt & Thaler (1985) & Poterba & Summers, (1988) found opposite trend with in a period of 3 to 5 year. The present study demonstrates decent nominal growth rate during a very long period of study not only in India but in the

---


other parts of the world as well. The existence of positive growth rate made us to believe that there might be a positive growth rate during a very long period. Combining with the present study along the above mentioned study it might be stated that there might be some prominent trend observed in the short and medium term, there might be some opposite trend evident in the long term (up to five years) but in the very long term (for fifteen years or so) there would be some positive growth component in the stock indices of India and other parts of the world.

5. Mandelbrot (1966) concluded that even if dependencies of the share price can be detected, that would not help the investors to increase his profits. In the present study we found that the return from Indian stock indices ranges up to around 10% per annum. Considering the inflation rate during this long period of study, the brokerage cost, holding cost and taxation it would be found that that the real return would be very low. Comparing risk free rate of return, the study is in no way in a position to reject Mandelbrot (1966).

6. As the time passes, the economic activities increase in the country. As a result, the number of registered company increases, so also the case of total market capitalisation in the stock market (m-cap). The stock indices constitute scrips with high market capitalisation (m-cap). So, whenever economic activities increase, the large companies get a share of it directly or indirectly. As a result, the fundamental of the company

---

15 ibid
improves over the years. The trend of the most stock index also shows upward inclination. So, wealth created in the nations is certainly being reflected in the stock market. This view suggests to modify the comment offered by Bhole & Pattanaik (2002) that the wealth created in the stock market does not appear to increase the real worth of the nation. In fact, stock market is the indicator of worthiness, it is not a place where the wealth is created.

7. Jorion & Goetzmann (1999) demonstrated the annual return for 39 markets over a very long period of time. They found that the nominal compound return of Indian stock market was above 6% p.a. during the period of 1939-1996. The present study shows that even after huge ups and downs in the economy the average annual return is prevailing at around 6.35% ~ 9.35% for a very period of time in Indian context.

8. Mallik (1992) demonstrated the short-term movement in the stock market. The present study takes care of the permanent component for the long-term analysis in a different perspective as suggested by him. In this context, the present study would carry out trend analysis to find out the slope of the trend and consequent long-term return.

6.9.2 Implications on the Investors

The study has some implications on the investing decisions of the investors.

---


18 ibid
1. It has been found that on an average the stock market all over the world grows over the years. The long-term growth from Indian stock index is around 2.5% -5.5% p.a. Adding up the dividend yield during the period under study we find annual average return of around 7%-9%. Even after more than fifteen years of economic liberalisation we have not achieved a higher rate of return from the Indian stock market. So, we understand that the stock market specially Indian stock market should not be treated like a place of winning jackpot.

2. There are many literatures on the portfolio management and investment analysis which are more concerned about whether the return is above market return or not. Many studies have been undertaken for developing strategy to beat the market. The literature hardly gives any importance to the absolute return that is certainly important at least from the viewpoint of the investors. A performance of beating the market and ending with negative return is certainly not desirable. A common man or a novice investor interested to know about the amount of return he could earn from his/her investment. He/she might not mind even someone gets more return than him/her. But, the present study seeks to find out the absolute long-term return an investor can expect to have.

3. Sometimes, it is said that, the fixed return interest does not yield enough return to offset inflation. It is also suggested from that quarter that equity investment is a better option. But, this study suggests something different. The stock return in India is not very high even in comparison to risk-free interest. The investing community would be having a knowledge
that yearly growth of stock index hovers around 2.5% to 5.5% however with adequate amount of fluctuations. Considering the dividend income from the stock index, we observe that return might not exceed 10% for a very long period. If we deduct taxation, brokerage and holding cost for keeping in the demat form, our return would be even lower. This rate is not much higher than the almost risk-free fixed rate of return from the small savings or Employees’ Provident Fund or Public Provident Fund. So, any sort of long-term investment in the stock market might not seem to be worthy at least in Indian stock market. So, novice investors should not venture entering the stock market directly without adequate knowledge.

4. Berstein (1985) argued that the stock market is efficient in rapidly incorporating information that would have an effect on prices in the short run even if it fails to process more complex long run information in an efficient manner. As a result, many investors who follow news have such disappointing result while the followers of p/e anomaly, dividend discount model, Bejamin Graham strategies and other systematic methods of contrarian models of investing have superior results. Berstein (1985) further argued that market would provide arbitrage opportunities from long run inefficiencies. There are several studies which have found long-term inefficiency in the stock market. The present study suggests that there is growth component in the indices. So, combining

---


20 ibid
long-term inefficiency in the stock market and long-term growth, a prudent efficient investor can fetch handsome return.

5. The present study suggests a trend line of the stock index and a growth rate on an average on the same. In case of India, we get two straight-line trend --- one for Sensex and another for Nifty. The observed data hovers around the trend line. The deviation from the trend line may be thought as inefficiency. To encompass all the observed data an upper limit and lower limit may be developed. On the trend line, an upper limit line and lower limit line may be developed. The upper limit of the growth line may be liquidating points of equity investment and lower limit line may be buying point. We know there is 99% chance that data hovers around $+3\sigma$ and $-3\sigma$. There is 95.5% chance that data moves within $+2\sigma$ and $-2\sigma$. This way the long-term inefficiencies of the stock market can be exploited. Investment strategy can be developed on the basis of the index trend line. There can be buy signal if the index line is a certain percentage below the trend line. On the other hand, there could be a sell signal if index line is a certain percentage higher than the trend line. So, empirically someone may find out which would be most suited strategy for maximizing return.

6. Market return is very important to determine a benchmark for comparison of the performances in the stock market. Empirically, it is difficult to find out market return. Different investment horizon yields different return. But, the present study has found out a very long-term return from the Indian Stock Market. The stock market is too volatile. So, return
calculation would vary from one period to another. But, this variation is bound to reduce in the very long term. As this present study determines the long-term return that may fairly be accepted as the market return.

7. The long-term return all over the world gives an impression about what should be the justified expectation from the stock market. If some one is looking for very high rate of return (like 30% or 50% p.a. or more) consistently, he or she should look at somewhere else outside the stock market. The abnormal expectation may be dangerous for the investors. As that may be in the way of earning even the normal rate of return.

8. Regarding price reversals: The most prominent mean reversion tendency is observed in Indian stock index. So, if someone can structure the mean reversion properties he can exploit the opportunities. In that case instead of very long term investment some one can follow Poterba & Summers (1988)\(^{21}\) or De Bondt & Thaler (1985)\(^{22}\). The high mean reversion tendency might be the reason for attracting the FII inflow with such a huge magnitude over past several years.

9. There are several studies that supports that “Buy & Hold” strategy is the best to get decent return from the equity market. But, this study infers otherwise. The return per annum from a very long period does not even touch double-digit figure. The net real return after considering taxation, brokerage and holding cost certainly low. If we again discount the return


by the risk then the return would be even lower. So, the efficacy of the
"Buy and Hold" strategy can not be justified.

10. The investors readily calculate point-to-point growth rate for its
comprehensiveness. Not only the investors but also the media reports
also calculate the point-to-point growth to show the higher rate of return
during a particular period. Thus, the investors get misleading picture
about the long-term return from the stock market. This study found out
that the return from Indian stock market is not above 10% in any of the
method. So, the study requires the investor to rethink whenever a rosy
picture is drawn for the future showing the two points of the past that
yield decent return.

6.9.3 Implications on Government Policies

There is no denying the fact that the stock market is very risky place. But, the
annual average rate of return in Indian stock market is less than 10%. So, some
may be earning more than 10% from the market but at the same time it is also true
that many investors earns much lower than even 6%. Some investors must be
earning even negative return. So, the stock market is not a place for investing the
retirement fund like Pension Fund and Provident Fund. The Government of India is
weighing the possibilities of allowing the trustee of Pension Fund and Provident
Fund to invest in the stock market. The study indirectly suggests that due to low
rate of return in a risky place like stock market it would be disastrous to take such
a step.
SECTION III

6.7 Suggestions

Finally, the following suggestions are offered. These suggestions are important for different concerned sections of the society.

1. The present study does not support the view that market yields decent return from stock market in the long-term at least in case of Asian countries including India. Some may outperform the market and might get some better return but on an average return is poor specially for the novice investors. Average yearly growth rate of Indian stock indices is around 2.5-5.5% for a very long period of investment. The return from Indian stock indices is 6.35% -9.35%. We understand, the return from the equity investing is not at very high level. So, the novice investors are to decide how to approach at the stock market. Being a tough place to earn handsome return in the stock market, it is advisable to avoid investing in stock market directly. Again, someone may take the help of experts or can invest through mutual funds.

2. The economic liberalisation in India has started from the mid eighties. So, this study should have got the impact of liberalisation that should have been reflected in the stock market as well. A healthy growth was expected in the stock market. But, surprisingly we found that even the long-term return of Indian stock market is low. India also experienced very high inflows of fund from Foreign Financial Institutions after the opening up of the economy for them in the year 1993. But, even such higher inflow did not improve the long-term return of India. So, when the growth of FII inflow would come to a stand
still or decline, then no one knows what would happen. So, it is highly advisable to the common people not to enter in the stock market directly.

3. Some people suggest that as the fixed return interest does not yield enough return to offset inflation so they say that equity investment is a better option. But, this study suggests something different. The stock return in India is poor even in comparison to risk-free interest. So, novice investors should not venture entering the stock market directly without adequate knowledge.

4. On the backdrop of the low interest rate, the individual people may tend to invest in the stock market for the decent return of their money. Even being risky proposition, it would be difficult to keep them away from the market. In fact, novice investors invest on their superficial intuition that may be a wrong guide in a volatile place like stock market. However, to invest in the stock market without minimum knowledge and experience may prove to be dangerous. In Indian context, the simple buy and hold strategy would fetch less than 10% return per annum on an average even in the long term. If, we consider the risk component of the stock market then risk adjusted return would be even lower. In practical sense, there is at least some chance that an investor may earn even less than that rate on his/her savings even after taking so much risk. So, the study suggests refraining from taking direct exposure at least in the Indian stock market without proper knowledge.