CHAPTER VII

SUMMARY OF FINDINGS, SUGGESTIONS AND CONCLUSIONS

7.1 INTRODUCTION

In this chapter an attempt has been made to recapitulate the key findings of the present study and based on these findings a few suggestions have been offered. The PSUs stocks are playing an important role in Indian stock market. In this study an attempt has been made to analyze the performance of PSU stocks in different views to help the investors regarding the investment decision making. To study the stock performance is a difficult process and it is affected by many factors. Hence identifying the forces that drive stock price is a crucial factor for the investors in stock market. PSU stocks are a vital factor in Indian stock market as well as in Indian economy. On an average the PSU stocks contributes one fourth of the total market capitalization of all the listed stocks in Indian stock market. This investigation is about the PSU stocks giving fruitful results to the investors. The disinvestment of PSUs was initiated in India after 1991 and it is one of the major functionality for the liberalization policy. There are 260 PSUs in India out of which 60 are listed in the BSE. Among the 60 companies 27 are related to banking and finance industry, 8 come under oil & gas Industry, 7 companies are in mining and metal industry, 4 belongs to capital goods industry and rest of the 10 companies are related to various industries in Indian economy.
7.2 FINDINGS

- Among the PSU companies the highest market capitalized company is ONGC followed by Coal India and NTPC during the study period.
- The number of profit making PSUs increased steadily from 143 PSUs (2004-05) to 160 PSUs (2007-08). The total number of profit making PSUs as on 2011-12 stands at 161 with a total profit of Rs. 1,25,116 crore. This fact attracts the investors to invest in the stocks of PSUs.
- Six of the top market capitalized PSUs are included in the Sensex, thus it contributes one fourth of the movement in the index.
- Through Initial public offers, offer for sale and open market auction modes, the PSU stocks have come to the secondary market.
- The BSE PSU index which comprises all the listed stocks in BSE gives 10 folds of returns to the investors in the period 2001-2012.
- Larger number of domestic as well as foreign investors entered into the Indian stock market during the study period.

Fractal analysis and Hurst exponent

The fractal analysis of PSU stocks explains the persistency behaviour in the stock returns and explained by Hurst exponent value. It is directly related to the fractal structure. This Hurst value exhibits the degree of relation in the movements of stock returns, i.e the pattern of ups and down movement. The study of persistency on historical data may indicate the probable next movement in the stock returns.

There are six types of stock returns used in this study, namely, one day, one week, one month, three months, six months and one year return. The different kinds of returns are based on the tenure of investment made on the stocks of PSUs. For analyzing the different kinds of return of PSU stocks based on time duration for each company, the Hurst exponent is computed through fractal analysis using gretl software package.
- The overall persistency behaviour of PSU stocks has been evaluated from the investor point of view for different modes of duration. The daily return of all the
stocks is showing the randomness in the price movements, since the average of Hurst value for one day returns is 0.55. This exhibits the randomness in the price movements as the value is slightly above the pure random value of 0.5

- The average value of one week return is 0.62 that reveals the positive persistent behaviour. Similarly the average value of one month return is 0.75 exhibiting the positive persistent behaviour.
- The average Hurst value for six month and one year return is 0.91 and 0.95 respectively. The values indicate that all the returns are showing positive persistency over the study period and when the investment period increases the Hurst value tends to more positive persistency.
- In the long term the stock returns are showing less fractal structure and move to more flat returns. It indicates that the volatility in the stock returns is minimum during long term and maximum during short term.

**Macroeconomic factor impact on PSUs stocks**

The macroeconomic variables such as Crude oil price, FII net inflow, Gold price, IIP, money supply and T-bill rate have been used for the analysis to find the impact on the stock returns of PSUs.

- The PSU stocks have performed well in terms of returns and it managed to give positive returns to its investors during the study period. The PSU index moves in tandem with broad based market index (Sensex) from the year 2003.
- The index shows the monthly mean return of 0.92 and it is half of the return given by gold. The standard deviation is high for FII net inflow which stood at 465.39, indicates that FII actions are more in the stocks of PSUs during the study period.
- In this study GDP of Indian economy ranges from 10.25 to 3.84 and the economy was in the fast growth path from the year 2003 to 2007. After the 2007 the economy started decreasing due to the global economic scenario.
- Unit root test implies that all the macro economic variables are stationary at their first difference. None of the variable is stationary at their level form. All the
variables under study are integrated at order I (1). F values of lagged terms up to three lags in the VAR system rejected the null hypothesis that macroeconomic variables do not jointly cause BSE PSU index. The VAR results showed that the relationship between independent variables and the index is statistically significant in the case of three variables – IIP, T-bill rate and FII net inflow. The IIP and T-bill rate are significant at 5% level whereas FII is at 10% level.

- Unidirectional causality has been observed between PSU index and FII net inflow. Thus it implies that FII movements relate the PSU index movement positively. This might be the expectations regarding the growth prospects of Indian stock market. IIP, FII net inflow, T-bill rate have significant cause for the movement of BSE PSU index. FII and IIP are in the positive direction, whereas interest rate impacts the index in negative direction.

- Another important findings in this chapter is the significant bidirectional relationship between gold rate and FII net inflow. Other variables, namely, Crude oil, money supply and interest rate are showing significant unidirectional causal relationship with the gold rate.

- Keep watching the movements of macroeconomic variables helps the investors in decision making process.

**Successive Divestment Announcement**

Successive disinvestment impact on stock returns can be found by the successive listing announcement of already existing PSUs and it revealed mixed results of stock performance before and after the disinvestment announcement. Eventually it is a crucial event for the shareholders of the PSU companies.

- During the study period seven PSU companies issue shares to the public for the successive times. It is found that there is no significant impact on the stocks due to its issue size.

- From AAR and CAAR analysis of stock returns the disinvestment announcement impact is significant and it signal the investor to make a investment decision. The majority of the PSU shares are trading well below the issue price. Out of seven
company stock only power grid corporation and power finance corporation are performing good after the successive divestments. The remaining stocks decline over the successively divested price after the listing in stock exchange. It might be noted that successive investment decision making is a crucial factor for the stake holders of PSUs.

**Forecasting Performance**

The performance of PSU stock returns is based on the two distinguished forecasting methods, viz, ARIMA and Artificial Neural Network. Neural networks are basically experimental methods where lot of trial and error is involved. Neural network with different structures can be used to predict the stock market behaviour and a comparison have been made with conventional econometric ARIMA models. The return of PSU stocks is showing varying performance with the tools.

- ARIMA models are better than NN models in predicting short term returns, because forecasting evaluation statistics such as MAE, MAPE and RMSE are comparatively low in ARIMA models for one day, one week and one month return.
- NN models are better than ARIMA models in predicting the long term returns such as six month and one year return and statistics of MAE, RMSE and MAPE are lower for these returns.

**7.3 Suggestions**

Public sector is one of the important segments in Indian economy as well as in Indian stock market. The studies on PSUs are very limited on the stock performance perspective.

Over the long term the shares of PSUs show less volatility; it is suggested from the study that investor holding the share for a long term, will benefit more and they may face less risk on the returns than the short term investors.

FII net inflow significantly affects the stock returns of PSUs. It is advisable to the investors to keep noticing the movement of FII in the market that leads to optimal investments in PSU stocks.
Successive divestment of PSUs can negatively impact the PSU stock returns so that existing investor should be cautious about the further divestment and make the decision accordingly.

Investors may use the NN model for long term and ARIMA model for short term for the improved returns of PSUs.

Scope for future research

The scope for further research in this area of interest is:

- A study with similar objectives could be made from time to time.
- A study with similar objectives could be made with reference to other indices and index constituents company stocks in Indian stock market.
- Comparative analysis on other sectoral indices of Indian stock market can be made with the frame work of this study.
- Since the successive disinvestment is vulnerable to the existing shareholder a study can be made to find the solution for this problem.
- This study may be extended more macroeconomic variables in order to find the impact on stock movement.

7.4 CONCLUSION

The present study examines the performance of stocks through fractal analysis, econometric methods, abnormal return analysis, ARIMA models and neural network analysis. It starts with the discussion about the role of public sector in Indian economy. Then the study started focusing on role of PSUs in Indian securities market. Overall the 60 PSU stocks listed in stock exchange have been used for studying the stock performance. The listed PSU companies belongs to all the major sectors of the Indian economy including the sectors such as Power, Oil &Gas, Finance, metal &metal products and Capital goods.

In a stock market there may be different types of investors namely short term, medium term and long term investors. To help all these investors this study used six different kinds of varying returns of PSU stocks. The fractal analysis helps in finding the
pattern in the movement of stock returns and found that randomness in returns is gradually decreasing from one day return to one year return, that is, H value lies between 0.55 to 0.95. For the conservative investors long term investment in PSU stocks is a better investment option. Short term investments are much vulnerable to the investors, since it is noted that short term movements of PSU stock returns follow the random behaviour.

The investors of the PSU stocks might give importance to FII net inflow factor among the six macroeconomic variables under study. So, the investors concerning about the PSU investment may follow the activities of FIIs in Indian stock market. The next important factors followed by FII inflow are IIP and Interest rate. So the investor may concentrate IIP data of India because it significantly affects stocks of PSUs.

Investors must keep on watching the divestment announcement of PSUs and accordingly their timing investment helps in benefitting the returns from the stock through successive issue of shares. From this study it is noticed that successive public issue of majority companies gives negative returns to the investors. Pricing plays a prominent role in successive divestment of PSUs and hence the authorities should give maximum importance for the pricing of PSU stocks. The forecasting performance of PSU index has been revealed by the popular ARIMA and NN models. The tools are applied in predicting PSU stocks return and found helpful results. Fund managers may aware of the fact that ARIMA models are good in predicting short term returns.

The results from all the analysis might be helpful for investors in investment decision making on the stocks of PSUs. The results may further be helpful to the government of India, the owner of the company, in understanding PSU stock performance for critical decision making such as Disinvestment of stocks, buy back of shares etc. The disinvestment of PSUs is the major function for the government.

The results and findings have reduced the complexity in investment decision making on PSU stocks. Eventually this investigation may serve as an indicator for the investors to arrive optimum profits. The awareness of the investors about the PSUs stocks helps the government in disinvestment and thereby protection of investor interest in respect to the capital market.