CHAPTER V

FINDINGS OF THE STUDY AND DIRECTIONS FOR FUTURE RESEARCH

5.1 INTRODUCTION

Investment means parking of savings in some avenue that would yield considerable
returns in the future. Keeping savings idle would yield nothing; instead, one can
invest it in various avenues of investment such as bank deposits, postal deposits, life
insurance, shares, debentures, bonds, etc. Each of these investments carries differing
levels of risk; hence, varies the return also. Of the various forms of investment, the
investment in equity shares has gained wide spread popularity.

Investment in equity shares serves dual purposes. For firms, it acts as a source of
finance for their capital requirements; by issuing equity shares, firms can raise the
required capital. At the same time, it is a source of income for the investors; equity
shares yield two forms of returns to investors: one is dividend and the other is capital
gain. Dividend is a portion of the firm’s profit that is distributed to the shareholders,
whereas capital gain is the profit that one makes when he/she sells the share for more
than what he/she paid for it.

Equity share prices is one of the widely researched areas in finance that has garnered
the attention of researchers worldwide. Various issues relating to share prices have
been studied in the literature and the quest to understand the share price dynamics
still goes on. The thesis has attempted to add to the literature on share prices by
empirically examining three crucial issues relating to share prices, viz.: (i) whether
share prices and dividends of Indian firms affect each other in the long-run; (ii) what are the firm specific fundamental factors that influence the share prices of Indian firms; and (iii) whether price pressure hypothesis with respect to stock index revisions hold good in the Indian market.

The first issue, *share price-dividend causal nexus*, examines the long-run causal relations between share prices and dividends, to find out whether share price and dividend affect each other in the long-run. Prior research has examined the long-run relations between share price and dividend based on two prominent theoretical frameworks, viz., present value model of stock price and the Lintner’s (1956) dividend model.

As per the present value model, stock price is a linear function of the present discounted value of expected future dividends. Campbell & Shiller (1987) assert that, for the present value model of stock price to hold, stock prices and dividends should be cointegrated. This proposition has been empirically tested by Campbell & Shiller (1987) and various other studies. Later, based on present value model and Lintner’s (1956) dividend model, Sung & Urrutia (1995) derived models of causality between share price and dividend, and also empirically tested these relations. Few other studies have also tested the causality between share price and dividend.

From the review of literature, it is found that prior studies on long-run relations between share prices and dividends have largely used time series data. Very few studies have used panel data; however, the focus of such studies is limited to the test of cointegration between share price and dividend. Moreover, all these studies
pertain to foreign markets, and the investigation of long-run causal relations between share price and dividend, for the Indian market, has been left untouched.

Hence, an attempt has been made in this thesis to examine whether share prices and dividends of Indian firms affect each other in the long-run. For the empirical analysis, panel data comprising of annual time series data over the period 1999-2008 and cross section data pertaining to four sectors, viz., capital goods, healthcare, metal and PSU is used. As a measure of dividend, dividend per share computed as annual dividend amount paid to equity shareholders upon number of equity shares outstanding is used.

The examination of long-run causal relations between share price and dividend is carried out in four steps. As a first step, the unit root properties of the data is studied. For this purpose, the panel unit root tests, viz., Fisher-ADF and Fisher-PP are employed. Both these tests assume individual member specific unit root process i.e. the autoregressive coefficient ($\rho_i$) is allowed to vary across the cross sections. Next, the test of cointegration between share price and dividend is carried out by using the panel cointegration test of Pedroni (1999). This test allows for considerable heterogeneity among individual members of the panel. It allows for individual member specific fixed effects, deterministic trends and slope coefficients.

In the third step, the cointegrating parameter is estimated using the group mean panel fully modified ordinary least squares method of Pedroni (2000). This method estimates the cointegrating parameter by allowing for considerable heterogeneity across individual members of the panel. It takes care of serial correlation and
endogeneity problems by using a serial correlation correction term and transformed endogenous variable in the conventional ordinary least squares estimator, and produces unbiased estimates. Finally, panel error correction model of Canning & Pedroni (2008) is estimated to infer the direction of long-run causality between share prices and dividends. This model makes use of two tests, viz., group mean based test and lambda-Pearson test.

The second issue, *share price determinants*, focuses on identifying the firm specific fundamental factors that influence the share prices of Indian firms. Share price movements depend on various factors, which could be either firm specific internal factors such as dividend, earnings, etc. or external factors such as interest rate, foreign exchange rate, etc. Possessing knowledge of such factors and their likely influence on share prices is essential both for investors and firms. Such information would help investors to make wise investment decisions and aid firms in enhancing their market value.

Prior studies have investigated the determinants of share prices for various markets. Particularly, in the Indian context, quite a number of studies have focused on this issue. From reviewing the extant studies, it is evident that most of the studies have used either time series or cross section data. Few have used panel data; however, such studies have examined whether the data fits into fixed effect or random effect model. This way, the time series properties of the data are ignored and it is likely that the results generated might be suffering from spurious relationship.
In this thesis, an attempt has been made to fill these gaps by identifying the firm specific fundamental factors that influence the share prices of Indian firms. To this end, panel data comprising of annual time series data over the period 2000-2009 and cross section data pertaining to three sectors, viz., auto, healthcare and PSU is used. As possible determinants of share prices, four firm-specific fundamental variables, viz., dividend, profitability, price-earning ratio and leverage, are considered.

The dependent variable, share price, is measured as the average of yearly high and low prices of the share. As a measure of dividend, dividend per share computed as annual dividend amount paid to equity shareholders upon number of equity shares outstanding is used, and it is expected to positively influence share price. To examine the influence of profitability on share prices, return on assets i.e. the ratio of profit after tax to total assets is used. Profitability is expected to bear a positive relation with share price.

Price-earning ratio is computed as market price per equity share upon earnings per share of the firm, and share price is expected to be positively influenced by price earning ratio. Leverage, measured as debt-equity ratio, is expected to negatively influence share prices.

As a first step in the empirical investigation of share price determinants, the unit root properties of the variables are examined. For this purpose, the panel unit root tests, viz., Fisher-ADF and Fisher-PP are employed. This is followed by the application of panel cointegration test of Pedroni (1999) to test for cointegration between the variables share price, dividend, profitability, price-earning ratio and leverage.
Finally, in order to identify which of the chosen explanatory variables are significant determinants of share price, the fully modified ordinary least squares method proposed by Pedroni (2000) is employed.

The third issue, *price pressure hypothesis*, tests whether price pressure hypothesis with respect to stock index revisions hold good in the Indian market. Stock index revisions have now become a common phenomenon in almost all the markets worldwide. Stock indices are being regularly monitored and their composition is revised whenever required. Stock index revisions are expected to have significant effects on the price and volume of the stocks undergoing the revision, and an insight into such effects would be beneficial to both investors and firms.

According to price pressure hypothesis, stock index revisions will cause a temporary change in the price and volume of the stocks that are included to or excluded from the index, and the prices will gradually revert to their fundamental values after the revision. Such price movement is attributed to the heavy trading activity of index fund managers in response to index revisions.

Ample research has been carried out on testing the validity of price pressure hypothesis for different markets. However, very few studies have addressed this issue for the Indian market; moreover, these studies have either examined only the price effects or if both price and volume effects have been examined, conclusions drawn by the study regarding the validity of price pressure hypothesis are not emphatic. Hence, an attempt has been made in this thesis to test whether price
pressure hypothesis holds good in the Indian market, by examining both the price and volume effects of index revisions.

To this end, stocks that are included to and excluded from S&P CNX Nifty during the period September, 1996 to September, 2010 are considered. The final data sample comprises of 24 inclusions and 31 exclusions. The issue is empirically examined by employing event study methodology. Event study methodology enables to estimate and draw inferences about the impact of a particular event on the behaviour of stocks under consideration.

Abnormal returns are computed to measure the price effects of stock index revisions. Three methods, viz., mean adjusted model, market adjusted model and market model are employed to compute abnormal returns. Once the abnormal returns are computed, mean abnormal return is then calculated to draw an overall inference about the impact of the event on stock prices. This is followed by the computation of cumulative abnormal returns which enables to draw inference about the impact of the event over multi-period interval.

To measure the volume effects of stock index revisions, abnormal volumes are computed. For this purpose, three methods, viz., mean adjusted model, modified Harris/Gurel model and market model are employed. The mean abnormal volume is then calculated to draw an overall inference about the impact of the event on the trading volume of stocks.
5.2 MAJOR FINDINGS OF THE STUDY

Following is a brief discussion of the major findings of the study for each of the three objectives, viz., share price-dividend causal nexus, share price determinants and price pressure hypothesis.

5.2.1 SHARE PRICE-DIVIDEND CAUSAL NEXUS

From the results of panel unit root tests, it is found that, share price data pertaining to each of the sectors under consideration, viz., capital goods, healthcare, metal and PSU, is non-stationary in level and becomes stationary upon first differencing. Similarly, in each of the chosen sectors, dividend is non-stationary in level and stationary in first difference form. These results indicate that, in each of the chosen sectors, both share price and dividend follow an I(1) process.

The results of panel cointegration test indicate that, share prices and dividends are cointegrated, in each of the sectors under consideration. This implies that there exists a long-run equilibrium relationship between share price and dividend.

The estimate of the cointegrating parameter obtained from fully modified ordinary least squares method is found to be positive and significant, in all the chosen sectors, which indicates that dividend has a significant positive impact on share price.

The empirical evidence from the error correction model reveals that, for all the sectors under consideration, there is long-run causality from share price to dividend and from dividend to share price. This finding of existence of bi-directional long-run
causality between share prices and dividends implies that, in the Indian market, both share prices and dividends affect each other in the long-run.

5.2.2 SHARE PRICE DETERMINANTS

The panel unit root test results indicate that, for each of the sectors under consideration, viz., auto, healthcare and PSU, the variables share price, dividend, profitability, price-earning ratio and leverage are non-stationary in level and stationary in first difference. All these variables thus follow an I(1) process.

From the results of panel cointegration test, it is found that, in each of the chosen sectors, the variables share price, dividend, profitability, price-earning ratio and leverage are cointegrated i.e. there exists a long-run equilibrium relationship between them.

The results of fully modified ordinary least squares method reveal that, for all the sectors under consideration, the variables dividend, price-earning ratio and leverage are significant determinants of share prices. While dividend and price-earning ratio bear a positive relation with share price, leverage bears a negative relation. In the auto sector alone, profitability is found to be a significant factor influencing share prices; it is found to positively influence share prices.
5.2.3 PRICE PRESSURE HYPOTHESIS

The empirical evidence drawn from event study methodology reveal that stocks added to Nifty experience positive price effect on the effective day of revision, whereas those deleted experience negative price effect on the effective day. Also, there is increased trading volume associated with both stock additions and deletions.

Further, both for stock additions and deletions, there is no evidence of price reversal in the post effective day period. This finding indicates that the positive (negative) price effect associated with stock additions to (deletions from) Nifty is permanent in nature; hence, price pressure hypothesis does not hold in the Indian market.

5.3 DIRECTIONS FOR FUTURE RESEARCH

In the future, the present work can be extended in the following directions:

1. The investigation of share price-dividend causal nexus and share price determinants can be carried out for other sectors by considering the sectoral indices of NSE. Also, the time period can be extended subject to data availability.

2. The study has considered only firm-specific fundamental factors as possible determinants of share prices; there is scope to extend the work by considering the effect of macroeconomic factors such as interest rate, inflation, exchange rate, etc. on share prices.

3. Why do the factors determining share prices differ across sectors is another issue that could be explored in the future.
4. Prior research has proposed various hypotheses for the permanent price effects of stock index revisions. Identifying which of these hypotheses could be attributed for the permanent price effect observed in this study is another issue that is worth examining.

5. As part of future research, the effects of changes made to other Indian stock indices such as the Sensex could be examined and that can be compared with the effects observed in this study.