SUMMARY OF FINDINGS

7.1 INTRODUCTION

Companies require capital for starting up of new business and its expansion. Every business transaction involves fund directly or indirectly. With the increasing financial requirements firms tend to have large amount of capital. A firm requires both equity forms of finance as well as debt to cater to its requirement. At the same time, there is always a need for critical examination by the finance manager to decide on the optimum mix of equity and debt. The financing decision of the firm is one of the basic decisions towards the achievement of the maximization of the share holder’s wealth. Hence, the companies are forced to have clear vision on whether to go in for equity or debt. Even if the firm decides to choose debt form of financing, they need to have a clear vision on the factors that contribute to the choice of debts. Determination of optimum debt capital and its impact on the firms over all capital structure is regarded as an integral part of the firm’s financial decision. The financial decision is not only confined to fund raising operation but it extends to cover fund utilization and monitoring its uses. Thus, the crux of financial decision lies in decision making in the areas of optimal level of debt, method of raising those funds and various sources from which the debt can be raised. The present study is undertaken to find out the factors that affect level of corporate leverage.

OBJECTIVES

The following are the broad objective of the study:

1) To examine the extent of financial leverage
2) To study the determinants of corporate financial leverage
3) To examine the impact of leverage on investment.

METHODOLOGY

The data required for the study are collected from the Prowess data base provided by CMIE (Centre for Monitoring Indian Economy). A sample of 24 chemical companies has been considered for the study. The period of the study is sixteen years from 1995 to 2010.
The data collected have been analyzed making use of (i) simple average (ii) correlation (iii) multiple regression analysis (iv) Stepwise regression analysis and (v) path analysis.

7.2 FINDINGS

Findings of the study are presented in the following paragraphs

7.2.1 CHEMICAL INDUSTRY

7.2.1.1 Level of leverage

(i) **Ratio of Long Term Debt to Net Fixed Asset**

The average ratio of long-term debt to net fixed asset amounts to 95 per cent. The total debt of the Industry has been found to remain more stable as compared to net fixed assets. The value of correlation between total long term-debt and net fixed assets amounts to 0.97.

(ii) **Ratio of Debt to Equity**

The average ratio of debt equity amounts to 94 per cent. A total debt of the Industry has been found to remain more stable as compared to equity. The value of correlation between total long term debt and equity amounts to 0.97.

(iii) **Ratio of EBIT to Interest**

The average ratio of EBIT to interest amounts to 2.70 times. The ratio has been found to be highly adequate to cover the payment of interest. The value of correlation between EBIT to interest amounts to 0.56.

(iv) **Ratio of Long Term Debt to Total Capitalization**

The average ratio of long-term debt to total capitalization amounts to 48 per cent. The total debt of the Industry has been found to remain more stable as compared to total capitalization. The value of correlation between total long term-debt and total capitalization amounts to 0.99.
7.2.1.2 Variables associated with Leverage

The correlation analysis reveals that the variables namely previous year leverage, Growth in total assets, interest, net sales and returns on assets are found to be positively associated with corporate leverage. Collateral value, interest coverage and Tobin’s q are found to be negatively associated with debt equity ratio.

7.2.1.3 Determinants of corporate leverage

The regression analysis reveals that previous year leverage, Growth in total assets, interest and cash flow are found to be positively associated with corporate leverage. It has been found that Retained earnings, Collateral value, Net sales and Tobin’s q are found to be negatively associated with corporate leverage.

The multiple regressions reveals that 43.60 per cent of variation in corporate leverage is due to the fourteen selected variables. Stepwise regression reveals that 42.40 per cent of variation in corporate leverage is due to the previous year leverage, interest, Tobin’s q, collateral value, assets structure, retained earnings, cash flow and net sales.

7.2.1.4 Impact of leverage on investment

In the case of regression estimates for Indian chemical industry, the Hausman test shows a large chi-square value (28.68), showing that fixed effect model is an appropriate model to be used. It reveals that the retained earnings are positively associated with investment.

7.2.2 BASIC CHEMICAL COMPANIES

7.2.2.1 Level of leverage

(i) Ratio of Long Term Debt to Net Fixed Asset

The average ratio of long-term debt to net fixed asset amounts to 144 per cent. The total debt of the basic chemical companies has been found to remain more stable as compared to net fixed assets. The value of correlation between total long term debt and net fixed assets amounts to 0.96.
(ii) **Ratio of Debt to Equity**

The average ratio of debt equity amounts to 160 per cent. The total debt of the basic chemical companies has been found to remain more stable as compared to equity. The value of correlation between total- long term debt and equity amounts to 0.96.

(iii) **Ratio of EBIT to Interest**

The average ratio of EBIT to interest amounts to 2.51 times. The ratio has been found to be highly adequate to cover the payment of interest. The value of correlation between EBIT to interest amounts to 0.74.

(v) **Ratio of Long Term Debt to Total Capitalization**

The average ratio of long-term debt to total capitalization amounts to 61 per cent. The total debt of the basic chemical companies has been found to remain more stable as compared to total capitalization. The value of correlation between total long term- debt and total capitalization amounts to 0.99

7.2.2.2 **Variables Associated with Leverage**

The correlation analysis reveals that the variables namely previous year leverage, Growth in total assets, interest, net sales and returns on assets are found to be positively associated with corporate leverage. Collateral value, interest coverage and Tobin’s q are found to be negatively associated with debt equity ratio.

7.2.2.3 **Determinants of corporate leverage**

The regression analysis reveals that previous year leverage and interest are found to be positively associated with corporate leverage. It has been found that Growth in sales and Tobin’s q are found to be negatively associated with corporate leverage.

The multiple regressions reveal that 51.80 per cent variation in corporate leverage is due to the fourteen selected variables. Stepwise regression revels that 48.90 per cent of variation in corporate leverage is due to the previous year leverage, interest and Tobin’s q,
7.2.2.4 Impact of leverage on investment

In the case of regression estimates for basic chemical companies, the Hausman test shows a large chi-square value (50.08), showing that fixed effect model is an appropriate model to be used. It reveals that the retained earnings are positively associated with investment.

7.2.3 SPECIALTY CHEMICAL COMPANIES

7.2.3.1 Level of leverage

(i) **Ratio of Long Term Debt to Net Fixed Asset**

The average ratio of long-term debt to net fixed asset amounts to 31 per cent. The total debt of the specialty chemical companies has been found to remain more stable as compared to net fixed assets. The value of correlation between total long term debt and net fixed assets amounts to 0.59.

(ii) **Ratio of Debt to Equity**

The average ratio of debt equity amounts to 27 per cent. The total debt of the specialty chemical companies has been found to remain more stable as compared to equity. The value of correlation between total long term debt and equity amounts to 0.67.

(iii) **Ratio of EBIT to Interest**

The average ratio of EBIT to interest amounts to 3.01 times. The ratio has been found to be highly adequate to cover the payment of interest. The value of correlation between EBIT to interest amounts to 0.17.

(iv) **Ratio of Long Term Debt to Total Capitalization**

The average ratio of long-term debt to total capitalization amounts to 21 per cent. The total debt of the specialty chemical companies has been found to remain more stable as compared to total capitalization. The value of correlation between total long term debt and total capitalization amounts to 0.71.
7.2.3.2 Variables Associated with Leverage

The correlation analysis reveals that the variables namely previous year leverage, interest and Tobin’s q are found to be positively associated with corporate leverage. Interest coverage is found to be negatively associated with leverage.

7.2.3.3 Determinants of corporate leverage

The regression analysis reveals that previous year leverage, interest, investment and cash flow are found to be positively associated with corporate leverage. It has been found that retained earnings, assets structure, Collateral value, interest coverage and Tobin’s q are found to be negatively associated with corporate leverage.

The multiple regressions reveal that 51.90 per cent variation in corporate leverage is due to the fourteen selected variables. Stepwise regression revels that 49.50 per cent of variation in corporate leverage is due to the previous year leverage, interest, Tobin’s q, collateral value, assets structure, retained earnings, cash flow and net sales.

7.2.3.4 Impact of leverage on investment

In the case of regression estimates for specialty chemical companies, the Hausman test shows a large chi-square value (13.41), showing that fixed effect model is an appropriate model to be used. It reveals that the net sales are positively associated with investment.

7.2.4 SMALL CHEMICAL COMPANIES

7.2.4.1 Level of leverage

(i) **Ratio of Long Term Debt to Net Fixed Asset**

The average ratio of long-term debt to net fixed asset amounts to 15 per cent. The total debt of the small chemical companies has been found to remain more stable as compared to net fixed assets. The value of correlation between total long term-debt and net fixed assets amounts to 0.87.
(ii) **Ratio of Debt to Equity**

The average ratio of debt equity amounts to 18 per cent. The total debt of the small chemical companies has been found to remain more stable as compared to equity. The value of correlation between total- long term debt and equity amounts to 0.85.

(iii) **Ratio of EBIT to Interest**

The average ratio of EBIT to interest amounts to 3.11 times. The ratio has been found to be highly adequate to cover the payment of interest. The value of correlation between EBIT to interest amounts to 0.29.

(vi) **Ratio of Long Term Debt to Total Capitalization**

The average ratio of long- term debt to total capitalization amounts to 15 per cent. The total debt of the small chemical companies has been found to remain more stable as compared to total capitalization. The value of correlation between total long term- debt and total capitalization amounts to 0.87.

### 7.2.4.2 Variables Associated with Leverage

The correlation analysis reveals that the variables namely, liquidity, cash flow and returns on assets are found to be positively associated with corporate leverage. Collateral value is found to be negatively associated with debt equity ratio.

### 7.2.4.3 Determinants of corporate leverage

The regression analysis reveals the interest and cash flow are found to be positively associated with corporate leverage. It has been found that assets structure and Collateral value are found to be negatively associated with corporate leverage.

The multiple regressions reveal that 68.80 per cent variation in corporate leverage is due to the fourteen selected variables. Whereas stepwise regression revels that 60.90 per cent of variation in corporate leverage is due to the investment, collateral value, assets structure, and cash flow.
7.2.4.4 Impact of leverage on investment

In the case of regression estimates for small chemical companies, the Hausman test shows a large chi-square value (52.08), showing that fixed effect model is an appropriate model to be used. It reveals that the liquidity and net sales are positively associated with investment on the other hand; leverage is negatively associated with investment.

7.2.5 MEDIUM CHEMICAL COMPANIES

7.2.5.1 Level of leverage

(i) Ratio of Long Term Debt to Net Fixed Asset

The average ratio of long-term debt to net fixed asset amounts to 91 per cent. The total debt of the medium chemical companies has been found to remain more stable as compared to net fixed assets. The value of correlation between total long term debt and net fixed assets amounts to 0.96.

(ii) Ratio of Debt to Equity

The average ratio of debt equity amounts to 84 per cent. The total debt of the medium chemical companies has been found to remain more stable as compared to equity. The value of correlation between total long term debt and equity amounts to 0.94.

(iii) Ratio of EBIT to Interest

The average ratio of EBIT to interest amounts to 3.58 times. The ratio has been found to be highly adequate to cover the payment of interest. The value of correlation between EBIT to interest amounts to 0.75.

(vii) Ratio of Long Term Debt to Total Capitalization

The average ratio of long-term debt to total capitalization amounts to 45 per cent. The total debt of the medium chemical companies has been found to remain more stable as compared to total capitalization. The value of correlation between total long term debt and total capitalization amounts to 0.97.
7.2.5.2 Variables Associated with Leverage

The correlation analysis reveals that the variables namely previous year leverage, interest, collateral value, Tobin’s q and returns on assets are found to be positively associated with corporate leverage. Assets structure, liquidity, interest coverage and net sales are found to be negatively associated with debt equity ratio.

7.2.5.3 Determinants of corporate leverage

The regression analysis reveals that previous year leverage, Growth in total assets, interest, collateral value, net sales and Tobin’s q are found to be positively associated with corporate leverage. It has been found that Growth in sales, retained earnings, return on assets and cash flow are found to be negatively associated with corporate leverage.

The multiple regressions reveals that 90.50 per cent variation in corporate leverage is due to the fourteen selected variables. Whereas stepwise regression reveals that 89.90 per cent of variation in corporate leverage is due to the previous year leverage, interest, return on assets, assets structure, retained earnings, Growth in total assets, Growth in sales and net sales.

7.2.5.4 Impact of leverage on investment

In the case of regression estimates for medium chemical companies, the Hausman test shows a large chi-square value (5.33), showing that fixed effect model is an appropriate model to be used. It reveals that the cash flow and leverage are positively associated with investment.

7.2.6 LARGE CHEMICAL COMPANIES

7.2.6.1 Level of leverage

(i) Ratio of Long Term Debt to Net Fixed Asset

The average ratio of long-term debt to net fixed asset amounts to 165 per cent. The total debt of the large chemical companies has been found to remain more stable as compared to net fixed assets. The value of correlation between total long term-debt and net fixed assets amounts to 0.68.
(ii) **Ratio of Debt to Equity**

The average ratio of debt equity amounts to 647 per cent. The total debt of the large chemical companies has been found to remain more stable as compared to equity. The value of correlation between total- long term debt and equity amounts to 0.46.

(iii) **Ratio of EBIT to Interest**

The average ratio of EBIT to interest amounts to 1.33 times. The ratio has been found to be highly adequate to cover the payment of interest. The value of correlation between EBIT to interest amounts to -0.26.

(viii) **Ratio of Long Term Debt to Total Capitalization**

The average ratio of long-term debt to total capitalization amounts to 76 per cent. The total debt of the large chemical companies has been found to remain more stable as compared to total capitalization. The value of correlation between total long term- debt and total capitalization amounts to 0.89.

**7.2.6.2 Variables Associated with Leverage**

The correlation analysis reveals that the variables namely previous year leverage, Growth in total assets and liquidity are found to be positively associated with corporate leverage. Collateral value is found to be negatively associated with debt equity ratio.

**7.2.6.3 Determinants of corporate leverage**

The regression analysis reveals the previous year leverage is found to be positively associated with corporate leverage. It has been found that Tobin’s q is found to be negatively associated with corporate leverage.

The multiple regressions reveal that 46.80 per cent variation in corporate leverage is due to the fourteen selected variables. Whereas stepwise regression revels that 33.50 per cent of variation in corporate leverage is due to the previous year leverage.
7.2.6.4 Impact of leverage on investment

In the case of regression estimates for large chemical companies, the Hausman test shows a large chi-square value (154.75), showing that fixed effect model is an appropriate model to be used. It reveals that the retained earnings and liquidity have significant positive association with investment.

7.3 CONCLUSION

Leverage is one of the extensively research areas of corporate finance. Several theories have been developed to explain the impact of leverage on the firm value. In general, many companies go in for borrowed capital because of cost effectiveness of borrowed capital. A company's dependence on borrowed capital and extent of leverage engaged are determined by several factors. The present study has found out that Tobin’s q is one of the factors that influences level of leverage.

The present study has an exclusive focus on the determinants of leverage of Indian chemical industry. Nevertheless, the scope for pursuing research on the same theme is vast and wide. Attempts may be made to examine the difference in the determinants of capital structure between manufacturing and services sector. How for the private sector companies differ in their attitude towards financial leverage as against government companies is another research question that may be considered for the further study. Orientation towards financial leverage among Indian and multinational companies is another promising field of study. To what extent geographical locations of companies influence the composition of capital structure may be examined to understand, if, for instance, north based companies differ significantly from their counterparts situated in the south. Thus, financial leverage promises still more greener pastures to those who want to take up their research work in finance. The researcher would feel highly rewarded if the present piece of research work would serve as an eye-opener for young budding researchers.

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