CHAPTER 5

DETERMINANTS OF EXTERNAL FINANCE AND DIVIDEND BEHAVIOUR

In this chapter, the determinants of external financing activity and dividends behaviour are analysed.

5.1 EXTERNAL FINANCE : POSSIBLE DETERMINANTS

5.1.1 BASIC ISSUES :

The demand for external finance arises mainly due to the constraints on the availability of internal sources of financing. Internal source of finance comprises of dividends paid to share holders and retained earnings of the firms. Firms depend on external sources of financing, to achieve a higher rate of growth than is possible with retained earnings. So, higher amount of dividend paid to share holders induce higher demand for external finance. Hence, the demand for external finance is positively related to the investment needs. This hypothesis may not be true in the case of firms which are either not growing or have no growth opportunities.

External sources of finance comprise of borrowings from banks and other financial institutions, borrowings from government and semi-government bodies, equity and preference shares, deposits, debentures, bonds and paid-up capital.
5.1.2 Analytical Framework:

Kalecki’s (1937) principle of increasing risk is incorporated in the model of external finance. According to this principle, the extent to which a firm can or will borrow is governed by the amount of its indebtedness, as the marginal risk rises with the increase in outstanding debt in relation to its own capital. Risk is considered to be an increasing function of outstanding debt, since in the event of failure of business, borrower is endangered. Increasing risk constrains borrowing to some portions of its own capital. Hence, the flow of credit is negatively related to outstanding debt.

In the empirical investigations, the risk factor is represented by the stock of net debt. The analysis is done to examine the linkage between financial and investment decisions. The other explanatory variables included in the model in step-wise regressions of alternative specifications are fixed investment, inventory investment, profits or alternatively retained earnings and flow of net debt. Much discussion on the choice of variables was done in earlier chapters. Two specifications of the model are considered with profits in one, and alternatively retained earnings in the other.

The analysis is carried out for three cases viz, cross section, time series and pooled time series cross section. Both linear and log-linear forms of the specifications are estimated
for time series and cross sections data. Since the results are similar for both linear and log-linear forms, only the results of the former are presented here.

Time series estimation is done for 5 cases. Case 1, has 23 companies in it having data from 1965-66 to 1986-87. In case 2, there are 27 companies with data ranging from 1965-66 to 1985-86. There are 34 companies, with data ranging from 1965-66 to 1982-83. Case 4 has 45 companies, with data from 1965-66 to 1980-81. In case 5, there are 56 companies. The data in this case are from 1965-66 to 1975-76.

All the variables are at current prices. Cross sections for each year, involving 21 years are estimated. But results of alternate years and where ever the $R^2$ values are more than 0.3 are only reported. All the variables are deflated by the capital stock of the preceding year as a correcting measure for heteroscedasticity. The results are obtained by the method of ordinary least squares. All the tables of this chapter are presented in appendix IV.

The specifications of the model are given by:

\[
\frac{FND(t)}{K(t-1)} = a + b \frac{I(t)}{K(t-1)} + c \frac{IN(t)}{K(t-1)} + d \frac{NDE(t-1)}{K(t-1)} + e \frac{RENT(t)}{K(t-1)}
\]  
(5.1)
5.1.3 DISCUSSION OF RESULTS:

5.1.3.1 Cross Section Analysis:

The estimated results of the specification (5.1) are presented in table IV.1. The $R^2$s here, range from 0.50 to 0.87. In all the regressions, inventory investment variable is statistically significant, with a positive coefficient. In all the years, the retained earnings variable is negatively significant, except in 1969-70, wherein it is not significant. This shows that the larger the retained earnings, the lesser will be the demand for external funds. This finding is consistent with the theory and empirical findings of earlier studies.

The fixed investment variable is positively related to the demand for external funds, except in one or two years. In more than half of the cross sections, this variable turned out to be significant. Stock of net debt is positively related to external finance in half of the regressions.
The results of the specification (5.2) in which profit variable is included in lieu of retained earnings are given in table IV.2. The \( R^2 \)s range from 0.51 to 0.93. The inventory investment variable is significant in all the years and is positive also. Profits are negatively related to external finance. Stock of net debt is positively related to external finance variable in half of the cross sections. These results confirm the findings of specification (5.1).

5.1.3.2 **Time Series Analysis** :

The time series results of specifications (5.1) and (5.2) are presented in tables IV.3 and IV.4 respectively. The model has performed well in terms of the explanatory power and statistical significance of the variables. The \( R^2 \)s are well over 0.9 in almost all the cases. Here also, inventory investment, retained earnings and profits after tax are statistically significant. The latter two internal sources of finance are negatively related to external finance.

5.1.3.3 **Pooled Analysis** :

The estimated model specifications for pooled cross section time series are as follows:

\[
\frac{FNDE(t)}{K(t-1)} = \frac{0.0272}{(1.5741)} - \frac{0.8271}{(-16.6438)} \frac{PAT(t)^*}{K(t-1)} + \frac{0.3777}{(10.4618)} \frac{I(t)^*}{K(t-1)}
\]
In this case too, the $R^2$s are good. Inventory investment, fixed investment and stock of net debt are statistically significant and positively related to external finance. The retained earnings and profits variables are negatively related and significant. These results are in conformity with the cross section and time series results.

5.2. DETERMINANTS OF DIVIDENDS BEHAVIOUR:

5.2.1 BACKGROUND:

Dividends refer to that portion of a firm's net earnings which are paid out to shareholders. Since dividends are distributed out of profits, the alternative to the payment of dividends is the retention of earnings or profits. There is a reciprocal relationship between retained earnings and cash dividends, the larger the retentions, the lesser will be the
dividends and vice versa. A major financial decision of a firm, is the dividend decision, in the sense that the firm has to choose between either distributing profits to induce the share holders to invest in share capital or retaining the profits net of tax provision as retained earnings or cash flow or liquidity of the firm. This helps to raise the stock market value of the firm so that the internal funds are ploughed back for reinvestment.

There are conflicting opinions regarding the impact of dividends on the share prices and valuation of the firm. According to one school of thought (Modigliani and Miller (1961)) dividends are irrelevant so that the amount of dividends paid has no effect on the valuation of the firm. The second school of thought considers that dividend decisions are relevant to the value of the firm measured in terms of the market price of the share unit of the firm. The theories that support the relevance of dividends in market valuation of firms are that of Walter (1963) and Gordon (1960). Yet, there is another conceptual and analytical framework of Lintner (1956) presented in the following section.

5.2.2 MATERIALS AND METHODS:

In the present study, empirical investigations of the dividend behaviour have been carried out in the framework of the Lintner's (1956) model.
The Lintner hypothesis is a major and well established proposition on dividend behaviour. This hypothesis states that dividends represent primary and active decision variable, while retained earnings are largely a by-product of dividend decision taken in terms of well established practices and policies.

The capacity of the firm to pay dividends is inversely represented by cash flow variable i.e., profit net of taxes but gross of depreciation. Liquidity is implicitly considered in the model by including flow of net debt variable which is again inversely related to Liquidity. Lagged dividend is included as the previous year's dividends can have a bearing on the present dividend decision of the firm. Another variable incorporated in the model is total investment expenditure, which includes fixed as well as inventory investment. Profits after tax is another important determinant considered in the model. In empirical investigations of the dividend behaviour, many of the above explanatory variables, viz., investment, external finance, liquidity and profits after tax have been incorporated in the model.

The specification of the model is given by,

\[
\frac{\text{DIV}(t)}{K(t-1)} = a + b \frac{\text{PAT}(t-1)}{K(t-1)} + c \frac{\text{FNDE}(t-1)}{K(t-1)} + d \frac{\text{I}(t) + \text{IN}(t)}{K(t-1)} + e \frac{\text{DIV}(t-1)}{K(t-1)}
\]  (5.3)
All the variables are at current prices. All the variables are deflated by capital stock of previous year to correct for heteroscedasticity, which is common in cross-section analysis. The analysis is done for three cases, time series, cross-section and Pooled. Both linear and log-linear forms of the model are estimated, but results of the linear form only are being reported, since they are similar in both the forms.

In the case of time series analysis, different cases were formed by increasing the number of companies in each case. Thus in case I, there are 23 companies, case II 27 companies, case III 34 companies and case IV 45 companies. This is done mainly because of lack of data for all the companies for all the years. Hence, in case I, the 23 companies data are from 1965-66 to 1986-87, where as in case 2, the data are from 1965-66 to 1985-86 for 27 companies. That is, in case II 4 more companies could be included if we were to loose the last observation ie data for 1986-87. The results are obtained by the method of ordinary least squares (OLS).

5.2.3 ANALYSIS OF RESULTS:

5.2.3.1 Cross Section Analysis:

The cross section results of dividends behaviour are presented in table IV.5. An overall view of this table suggests that the estimated regression equation has R values ranging
from 0.44 to 0.87. Another striking feature is that in all the years except in 1976-77, the lagged dived ends variable is statistically significant with a positive sign. This shows the influence of lagged dividends on current dividends. Profits after tax variable is the next better explanator of dividends. Flow of net debt variable and total investment expenditure variable show relatively poor explanatory power, and are not statistically significant. In some years the coefficients bear negative sign.

5.2.3.2 Time Series Analysis:

The estimated linear time series model for case I involving 23 companies is given by,

$$\frac{DIV(t)}{K(t-1)} = \frac{0.0109}{1.3495} - \frac{0.0192}{-0.1907} \frac{PAT(t)}{K(t-1)} + \frac{0.3138}{0.7010} \frac{PAT(t)-PAT(t-1)}{K(t-1)}$$

$$+ \frac{0.0252}{0.9035} \frac{FND(t)}{K(t-1)} - \frac{0.0413}{-1.1700} \frac{I(t)+IN(t)}{K(t-1)}$$

$$+ \frac{0.8346}{2.1348} \frac{DIV(t-1)^*}{K(t-1)}$$

$$R^2 = 0.3122$$

$$F = 1.3624$$

$$D.W = 2.1025$$

The estimated linear model for case 2, involving 27 companies is given by,

$$\frac{DIV(t)}{K(t-1)} = \frac{0.0019}{0.3834} + \frac{0.1517}{1.5712} \frac{PAT(t)}{K(t-1)} - \frac{1.2171}{-3.6216} \frac{PAT(t)-PAT(t-1)^*}{K(t-1)}$$
The estimated linear model for case 3, including 34 companies is given by,

\[
\begin{align*}
\text{DIV}(t) &= 0.0099^* + 0.2312 \frac{\text{PAT}(t)}{K(t-1)} - 0.0814 \frac{\text{PAT}(t) - \text{PAT}(t-1)}{K(t-1)} \\
&\quad + 0.0422 \frac{\text{FNDE}(t)}{K(t-1)} - 0.0427 \frac{\text{I}(t) + \text{IN}(t)}{K(t-1)} \\
&\quad + 0.2099 \frac{\text{DIV}(t-1)^*}{K(t-1)}, \quad R^2 = 0.7560 \\
&\quad F = 6.8108 \\
&\quad D.W = 2.1814
\end{align*}
\]

The estimated linear form of case 4, involving 42 companies is given by,

\[
\begin{align*}
\text{DIV}(t) &= 0.0074 + 0.0629 \frac{\text{PAT}(t)}{K(t-1)} - 0.2808 \frac{\text{PAT}(t) - \text{PAT}(t-1)}{K(t-1)} \\
&\quad + 0.0082 \frac{\text{FNDE}(t)}{K(t-1)} + 0.0001 \frac{\text{I}(t) + \text{IN}(t)}{K(t-1)} \\
&\quad + 0.5807 \frac{\text{DIV}(t-1)^*}{K(t-1)}, \quad R^2 = 0.8664 \\
&\quad F = 1.2991 \\
&\quad D.W = 2.2934
\end{align*}
\]
The estimated linear form of the model for case 5, involving 56 companies is given by,

\[
\frac{\text{DIV}(t)}{K(t-1)} = \frac{0.0252}{(1.1561)} + \frac{0.5670}{(1.7353)} \frac{\text{PAT}(t)}{K(t-1)} - \frac{0.5887}{(-1.1684)} \frac{\text{PAT}(t) - \text{PAT}(t-1)}{K(t-1)} \\
+ \frac{0.0423}{(0.4559)} \frac{\text{FNDE}(t)}{K(t-1)} - \frac{0.0027}{(-0.0266)} \frac{\text{I}(t) + \text{IN}(t)}{K(t-1)} \\
- \frac{1.8346}{(-1.5574)} \frac{\text{DIV}(t-1)^*}{K(t-1)}, \quad R^2 = 0.6101 \\
F = 1.2513 \\
D.W = 2.2017
\]

From the analysis of the above five estimated linear equations, it becomes amply clear that lagged dividend variable is consistently and statistically significant across the alternative specifications throughout. On the whole, the \(R^2\) values are well above 0.6, indicating the goodness of fit of the model. In all the cases, the lagged dividend variable is having positive sign.

5.2.3.3 Pooled Analysis:

The estimated pooled time series cross section model is as follows:

\[
\frac{\text{DIV}(t)}{K(t-1)} = \frac{0.0046^*}{(8.2448)} + \frac{0.0092}{(2.8951)} \frac{\text{PAT}(t)^*}{K(t-1)} + \frac{0.0161}{(4.6664)} \frac{\text{PAT}(t) - \text{PAT}(t-1)^*}{K(t-1)}
\]
Here $R$ value is above 0.5 and all the variables except flow of net debt have a positive sign for their coefficients. Lagged dividends is significant here also as in the case of cross section study. Total investment expenditure and profit after tax variable are statistically significant.

5.3 CONCLUSIONS:

1. In terms of the $R^2$ values and explanatory power of the variables, inventory investment is the most important determinant of external finance. The other determinants in the order of importance are retained earnings and alternatively profits, fixed investment and stock of net debt variables.

2. The demand for external finance is negatively related to internal sources of finance. This means the lower the profits, the higher will be the demand for external funds.

3. Investment expenditures, both fixed and inventory influence external financing activity significantly. More particularly, inventory investment has greater impact on external finance.
4. The principle of increasing risk, constraining the flow of external finance is substantiated in many of the cases.

5. Dividend decisions are largely autonomous of investment and external financing decisions and therefore retained earnings are residual in character.

6. The profit variable is not statistically significant in determining the dividends in sugar industry.

7. Other variables such as the flow of net debt, investment expenditures and the liquidity position of firm have not established any influence on the dividend policy.

+ This trend emerges in log-linear form also.