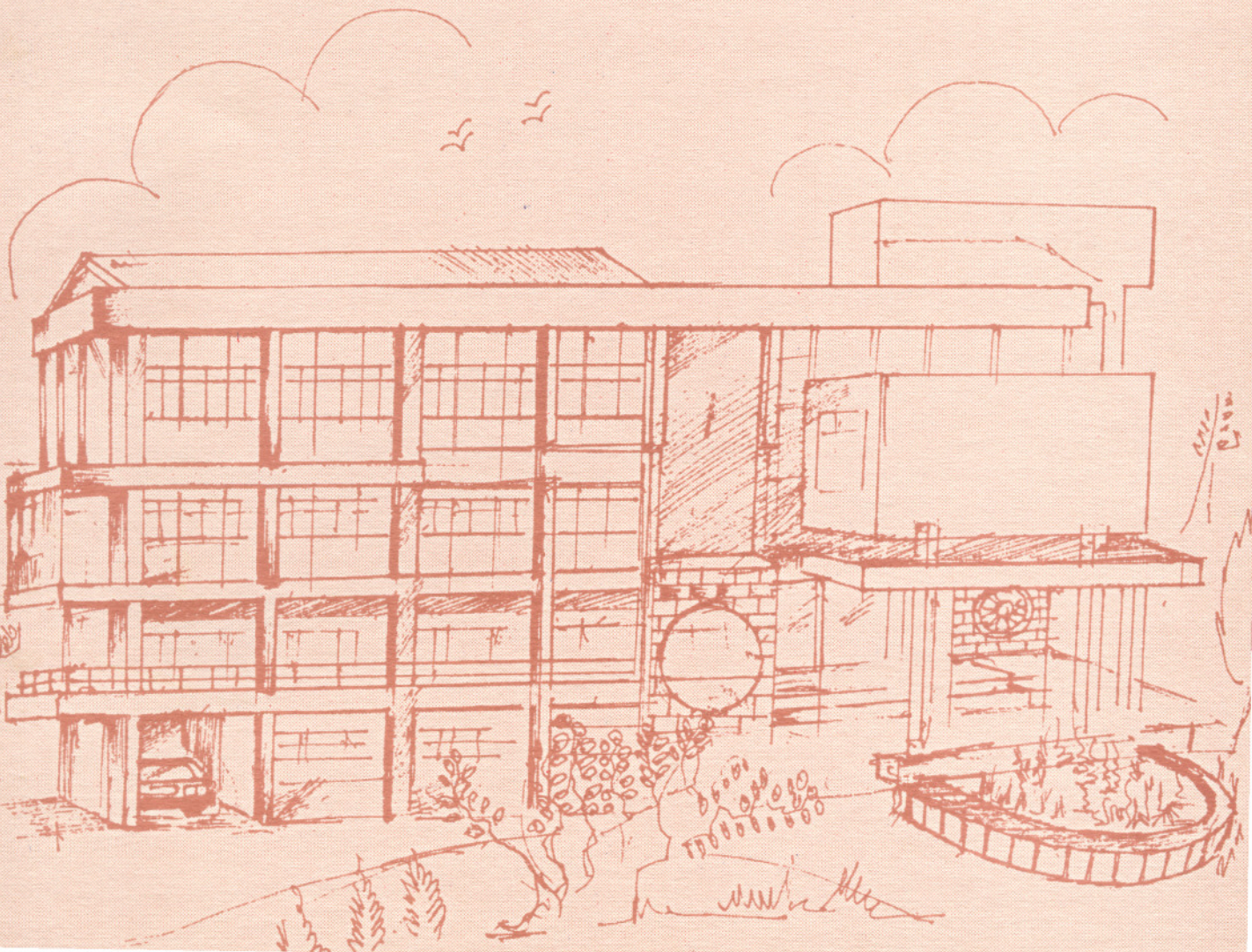


Working Paper Series

**Does Ownership Structure
affect Capital Structure?
An Empirical Investigation of
Indian Firms**



Does Ownership Structure affect Capital Structure? An Empirical Investigation of Indian Firms

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TAPMI WORKING PAPER SERIES NO. 2005/16

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Abstract: This paper looks at the cross sectional variations in the capital structure of Indian firms from the ownership structure perspective, viewing it as shareholding by promoters and shareholding by institutional investors. This study finds that the promoters' shareholding is inversely related to the debt ratio and this relationship is found to be statistically significant. The institutional investors' shareholding is not found to be a statistically significant variable in explaining the variations in the level of debt used by the sample firms. The firm specific variables which are found to be significant determinants of the debt usage are firm size, growth, profitability, level of tangible assets held, free cash flows, business risk and growth opportunities.

Does Ownership Structure affect Capital Structure? An Empirical Investigation of Indian Firms

Dr. Lakshmi Sharma¹

The study of determinants of capital structure as a theme for empirical research has assumed great importance among corporate financial economists since the publication of Modigliani and Miller's capital structure irrelevance theory in 1958. Though a large number of potential determinants have been modeled, the empirical literature has failed to come out with a decisive list of factors that explain the time series and cross sectional variations in capital structure. According to Saa-Requejo (1996), Rajan and Zingales (1995) and Harris and Raviv (1992) more research on capital structure hypothesis is required to be carried out to improve the robustness of its predictors. Titman and Wessels (1988) point out that the empirical works' failure to identify the determinants of capital structure may be because the relevant attributes advanced by various theories of capital structure are abstract and are not directly observable. As a result, Myers (1984) describes the capital structure decision as a puzzle; Stiglitz (1989) says it is a dilemma and Kamath (1997) calls it an enigma.

Empirical research focuses on the trade-off between the expected costs and benefits of debt financing to explain the choice of debt-equity mix of firms taking cue from the Modigliani-Miller's proposition. (See for example Kraus and Litzenberger 1973, Chen 1979) The costs associated with debt financing are the costs of financial distress (Scott 1977), agency costs of debt and equity financing (Jensen and Meckling 1976, Myers 1977, Stulz 1990, Hart and Moore 1995), costs of adverse selection arising from information asymmetry between more informed managers and less informed investors (Myers 1984, Myers and Majluf 1984), costs of loss of non-debt tax shields (DeAngelo and Masulis 1980), etc. The benefits that are identified with debt financing are the tax advantages of employing debt (Modigliani and Miller 1963), benefits of controlling free cash flows (Jensen 1986), the disciplinary effects of leverage over managerial discretion

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(Jensen and Meckling 1976), monitoring of managers by large shareholders (Shliefer and Vishny 1986), etc. The empirical studies also have come out with a list of firm specific characteristics which are found to explain the capital structure variations across firms like size, rate of growth of tangible assets, profitability, asset structure, volatility of income, tax considerations, etc. (See Harris and Raviv 1991 for a survey of literature)

This study does a cross sectional analysis of capital structure variations across firms from ownership structure view point, by focusing on the shareholding of two categories of shareholders i.e. promoters and institutional investors. That the equity-debt financing mix decision of a firm is not only a function of firm's characteristics and the cost-benefit analysis of debt financing, but is also the outcome of the conscious choice made by the decisions makers is the focus of the recent research on capital structure. (See for example, Barton and Gordon 1988) This 'managerial self-interests hypothesis' argues that the equity owners of a firm can diversify their risk of financial capital by investing in well diversified portfolio, but the managers' risk of human capital in a firm cannot be diversified as it is firm specific. (Amihud and Lev 1981) This non-diversifiable risk results in a welfare reduction for managers. (Crutchley and Hausen 1989) As a result, managers have specific incentives to diversify this employment risk and take decisions in their self interests which may come in conflict with the interests of the shareholders. Friend and Lang (1988) point out that one method of reducing the non-diversifiable employment risk of managers is decreasing the firm's debt holdings. However, the recent developments in research on agency theory suggest that the corporate ownership structure can affect the firm performance by mitigating the agency conflicts between shareholders and managers. (See for example Agrawal and Mandelker 1990, Putterman 1993, Prowse 1994) These research findings argue that the structure of equity ownership can influence the managerial opportunism and as a consequence may be related to capital structure.

Promoters' shareholding and capital structure

Jensen and Meckling (1976) point out that the managers' have a natural tendency to make decisions that serve their own interests which may be in conflict with those of

shareholders. As debt increases the risk of financial distress, managers may employ debt at a level less than what is required for value maximization in order to serve their self interests. Harris and Raviv (1990) point out that managers are concerned with the bankruptcy risk as it may result in them losing control of the firm and may cast doubts on their managerial competencies. But higher levels of promoters' shareholding will bring in pressure on managers to act in the interests of these controlling shareholders and may not provide room for managers to act in their self interests. Hence, promoters' shareholding and debt may be positively related.

Fama and Jensen (1983) argue that as the insider ownership increases the managers get entrenched at some point and may get a free hand to pursue their self interests. Such an entrenchment may result in managers employing less debt than what is required for value maximization. That entrenched managers will choose lower levels of debt is because of it relieves them from facing the pressure that debt places on the firm's free cash flows. (Jensen 1986) and also it reduces the risk of financial distress and thereby reduces their employment risk. (Fama 1980) As a result, promoters' shareholding and debt may be negatively related.

The empirical findings on the relationship between promoters' ownership and debt do not converge. Kim and Sorensen (1986), Agrawal and Mandelker (1987) and Agrawal and Knoeber (1996) find a positive relationship between insider ownership and debt levels, while Friend and Lang (1988) and Agrawal and Nagarajan (1990) show a negative relationship between debt and insider ownership.

Hence there is no a priori hypothesis on the relationship between promoters' shareholding and the level of debt.

Institutional investors and capital structure

Institutional investors can reduce the agency costs by monitoring the firm's performance and by ensuring the interests of shareholders. (Jensen 1986, Pound 1988) Shleifer and Vishny(1986) show that institutional investors successfully monitor the performance of

the management team. According to this 'active monitoring hypothesis' institutional investors can reduce the scope of managerial opportunism by closely monitoring them. Because of their fiduciary position, institutional investors are compelled to monitor the managers. Their huge financial stake in the firm provides the economics for doing so. Shome and Singh (1995) produce evidence that support the active monitoring hypothesis. Lev (1988) argues that the institutional investors are better informed than individual investors because of their access to various sources of information. Friend and Lang (1988) suggest that external blockholders have incentives to monitor and influence management appropriately in order to protect their significant investments. This close monitoring of institutional investors may force managers to take decisions in the interests of the shareholders and their ability to pursue self interest may diminish. As a result, managers may be prevented from employing lower levels of debt to protect their employment risk. Hence, we may hypothesize that institutional shareholding and debt levels will be positively related.

The empirical literature also shows that institutional shareholding and firm debt level are related. Crutchley, Jensen, Jahera and Raymond (1999) show that institutional ownership may be related to capital structure. They find that institutional ownership is simultaneously determined with leverage.

Pound (1988) challenges the active monitoring hypothesis and puts forth the argument that large external shareholders may be passive voters and may collude with insiders against the interests of the dispersed shareholders. In line with this argument, McConnell and Servaes (1990) present the 'passive voters hypothesis' by relating the large shareholders and firm value. If this happens to be the behaviour of institutional investors then institutional shareholding and debt level may be negatively related to each other.

Hence, we once again end up not being able to fix a ex ante relationship between institutional shareholding and debt level.

The Study

This paper investigates the relation between structure of equity ownership and cross sectional variation in capital structure by defining ownership structure as promoters' shareholding and institutional investors' shareholding. The study uses regression analysis. The need for this study is established by the fact that though the ownership structure and firm performance is well researched and the determinants of capital structure is studied without ownership variable are carried out, the relationship between ownership structure and capital structure is not analysed, in spite of sufficient grounds to believe that they may be related.

Sample

All the companies that are listed and permitted to trade in National Stock Exchange (NSE) are considered for the study. From this set of companies, all the companies for which the data required for the study for all the three years, i.e. 2002 to 2004, are available in the Prowess data base of Centre for Monitoring Indian Economy are selected for study. 762 such companies constitute the sample for this study on which the analysis is carried out and the conclusions are drawn.

Dependent Variable

Debt ratio is used as the measure of capital structure and is the dependent variable in this study. That debt ratio is a key indicator of capital composition is established by some of the earlier studies. (Titman and Wessels 1988, Graham 1996) Debt ratio is defined as the book value of long term debt divided by the sum of market value of equity and book value of long term debt. Long term debt is used as most of the arguments in finance theory use this definition of debt. (Miguel and Pindado 2001)

Independent variables

As mentioned earlier the study defines ownership structure variable as shareholding by two categories of shareholders, i.e., shareholding by promoters and shareholding by

institutional investors. The promoters' shareholding is measured by the percentage of shares held by promoters and the institutional investors' shareholding is measured by the percentage of total shares held by them.

Control variables

In addition to these two independent variables the study also uses certain firm specific characteristics that are identified to have an impact on the capital structure of the firm by earlier research as control variables.

Size

That firm size is significantly positively correlated to gearing is brought out by some of the research studies. (See for example Crutchley and Hanson 1989) However, it is theoretically difficult to set out clearly the a priori relationship between these two variables. The relationship between firm size and leverage will be a function of what the firm size is used as a proxy for. Fama and Jensen (1983) argue that larger firms tend to be more diversified and as a result are less likely to go bankrupt. In addition to this, they also argue that larger firms generally provide more information to lenders than smaller firms. As a consequence, larger firms may employ higher levels of debt. Warner (1977) and Ang and McConnell (1982) also suggest that the direct financial distress costs decrease with firm size. Rajan and Zingales (1995) state that, 'the effect of size on equilibrium leverage is more ambiguous. Larger firms tend to be more diversified and fail less often, so size may be an inverse proxy for the probability of bankruptcy'. (p.1451) These arguments predict a positive relation between firm size and debt level.

The earlier studies also bring out the fact that firm size may also be related inversely to the level of information asymmetries between insiders and external shareholders which will facilitate the usage of more level of equity financing. (Rajan and Zingales 1995) Hence, this argument will let us hypothesize a negative relationship between firm size and debt financing i.e. larger firms will use less of debt than firms which are smaller in size.

The empirical findings on the relationship between firm size and the level of debt financing used by the firm are not uniform. As mentioned earlier, Crutchley and Hanson (1989) find a significant positive correlation between firm size and gearing, while Kester (1986) finds a insignificant negative relationship. Remmers, Stonehill, Wright and Beekhuisen (1974) find that firm size does not have effect on debt level.

The measure of firm size used in this study is total assets expressed in natural logarithmic form.

Growth

Signaling theory, tax based theory, and pecking order theories are used to predict the relationship between firm growth and debt level.

Signaling theory suggest that high growth firms generally are characterized by greater information asymmetry and as a consequence use higher debt levels to signal firm performance. This theory predicts a positive relationship between firm growth and debt.

The tax based theory is based on the assumption of progressive tax structure. This implies that expected tax liabilities are higher with greater volatility in taxable income. Since higher growth firms may have higher cash flow volatility, they are motivated to reduce their debt exposure. (Smith and Watts 1992) So the higher the firm growth the lower would be the debt level employed.

The pecking order theory suggests a positive relationship between firm growth and debt. This is because the higher growth firms also require more funds, funds exceeding the level of what can be provided by internally generated and equity sources, as a result of which they need to employ higher levels of debt, *ceteris paribus*.

The annual percentage change in the value of total assets over the period 2002-04 is used as the measure of firm growth.

Profitability

It may be expected that higher profits firms will have better access to debt financing. As a consequence, profitability may be positively related to debt financing level. This argument relates to the supply side. However, the demand side argument is that higher profit firms do not require large amount of external financing. According to the pecking order theory, since debt financing is the last choice for firms, higher the profits the lower would be the debt employed by the firm.

Modigliani and Miller(1963) use the tax deductibility of interest payments to show that firms may prefer to use debt to equity. Since the higher profits firms have the ability to bear the interest rate risk exposure that is associated with higher levels of risk, they are expected to use higher levels of debt to enjoy the tax shields on interest payments. Miller (1977) contradicts this argument of Modigliani and Miller citing the personal taxation effects. DeAngelo and Masulis (1980) show that as firms may use other sources of tax shields like depreciation, they may not depend on the tax shields provided by interest. Titman and Wessels (1988) show that higher profitable firms use their cash flows to pay back debt and as a result end up with lower levels of debt. Toy, Stonehill, Remmers, Wright and Beekhuisen (1974), Kester (1986), Titman and Wessles (1988), Shyamsunder and Myers (1999) and Fama and French (2002) find a negative relationship between profitability and leverage. Long and Malitz (1985) and Firth (1995) find that there exists no significant relationship between profitability and leverage.

The measure of profitability used in this study is the operating profits before interest and taxes scaled by total assets.

Tangibility

Managers generally use the riskier debt financing only if they have assets in place. The cost of borrowing is expected to be lower if the firms have collaterals to offer, in the absence of which they may be higher. The higher the value of tangible assets, the higher

would be the leverage ratio. Long and Malitz (1985), Friend and Lang (1988), Jensen, Solberg and Zorn (1992) and Grier and Zychowicz (1994) empirically support this hypothesis.

The agency cost and asymmetric information theories of capital structure also help to explain the relationship between asset structure and capital structure. As mentioned earlier, managers have a tendency to use sub-optimal debt level to serve their self interests. Firms with less collateralizable assets are more vulnerable to such agency costs as monitoring of capital expenditure is more difficult for such firms. (Grossman and Hart 1982, Jensen 1986) Debt may be used as a proxy for monitoring to reduce the agency costs. Therefore a negative relationship can be expected between the level of tangible assets and debt according to this line of argument.

The ratio of average net fixed assets to total assets is used as a measure of tangibility.

Free cash flows

The free cash flows of the firm determine its debt employing capacity. Since debt involves periodical cash out flow, firms with higher levels of free cash flows have higher level of debt capacity and as a result may employ higher level of debt.

But the pecking order theory of firm financing argues that the use of internal funds are preferred to debt funds. As a consequence, firms with higher free cash flows are expected to be characterized by lower level of debt as they can substitute the external borrowing with internally generated funds.

As Zwiebel (1996) notes the relationship between free cash flows and capital structure is complex. Colombo (2001) finds empirical evidence to support the hypothesis that firms with higher level of free cash flows employ lower levels of debt. Brailsford, Oliver and Pua (2002) find no significant relationship between free cash flows and debt.

This study defines free cash flows in a manner similar to Lehn and Poulsen (1989) and Brailsford et al. (2002). It is the average sum of operating income before tax, depreciation and amortization after deducting the taxes and dividends paid divided by total assets.

Business risk

Finance theory suggests that firms that are characterized with higher business risks should not employ higher debt as debt involves periodic cash outflow towards interest payment. Therefore, firms with volatile income are expected to be less geared, as both increases the probability of bankruptcy. Bradley, Jarnell and Kim (1984) argue that, if the costs of financial distress are significant, the debt and variability in firm value are negatively related. Jensen et al. (1992) argue that the supply of debt to higher business risk firms is low at any given interest rate.

But Myers (1977) concludes, on the basis of the findings of his study, that firms that are characterized by higher business risks may have lower agency costs of debt and may, as a consequence, borrow more than firms with lower business risk.

The empirical evidence is mixed. Bradley et al. (1984), Friend and Lang (1988), Jensen et al. (1992) and Bathala, Moon and Rao (1994) find a significantly negative relationship between business risk and debt, while Long and Malitz (1985), Kim and Sorensen (1986) and Bennett and Donnelly (1993) report a positive relation between the variables. Titman and Wessels (1988), Grier and Zychowicz (1994) and Firth (1995) find no significant relationship between business risk and debt.

Business risk is measured by the standard deviation of the annual percentage of change in operating income before interest, taxes and depreciation over 2002-04.

Growth opportunities

According to corporate finance theory, risky debt creates incentives for excessive risk taking on the part of the firm. (Jensen and Meckling 1976, Green 1984) Jensen and

Meckling (1976) argue, 'with that financial structure (firms financed almost entirely with debt type claims) the owner-manager will have a strong incentive to engage in activities (investments) which promise very high payoffs if successful even if they have a low probability of success. If they turn out well, he captures most of the gains, if they turn out badly, the creditors bear most of the costs. (pp.334) This risk shifting behaviour creates an agency cost of debt. The opportunity for such a risk shifting behaviour depends on the investment opportunities available to the firm. Firms with low growth opportunities are expected to indulge less in risk shifting and enjoy lower agency costs. As a consequence, the firms with low growth opportunities are expected to carry higher levels of debt. Myers (1977) suggests that growth opportunities add value to the firm only as long as the firm exists. If a firm faces insolvency the potential loss in firm value is greater for firms with higher growth opportunities. Bradley et al. (1984) suggest that the debt ratio should be negatively related to the cost of financial distress, including bankruptcy costs and the agency costs of debt. Hence, the firm with higher growth opportunities will employ lower levels of debt.

The market-to-book ratio defined as the sum of market value of equity and total assets minus net worth divided by total assets.

Non-debt tax shields

The tax based theory of capital structure suggests that firms tend to use more debt financing because of the tax deductibility of interest payments. DeAngelo and Masulis (1980) point out that the firms with other sources of enjoying the tax shields like depreciation. Hence firms that take advantage of higher levels of non-debt tax shields are expected to use less debt.

The non-debt tax shields defined in this study is same as the one used by Brailsford et al. (2002). It is defined as the ratio of depreciation to total assets.

The Model

$$\text{DEBT} = a + b \text{ PROMOTER} + c \text{ INSTITUTIONS} + d \text{ LOGTA} + e \text{ GROWTH} + f \text{ PROFIT} + g \text{ TANGIBLE} + h \text{ FCF} + i \text{ BRISK} + j \text{ GROWTHOPTIONS} + k \text{ NDTS}$$

where

DEBT = Book value of long term debt / (Market value of equity + book value of long term debt)

PROMOTER = Percentage of shares held by promoters

INSTITUTIONS = Percentage of shares held by institutional investors

LOGTA = Total assets in natural logarithmic form

GROWTH = Average of annual percentage change in total assets over the period 2002-04

PROFIT = Operating profits before interest and taxes scaled by total assets

TANGIBLE = Net fixed assets/total assets

FCF = (Operating income before income tax + depreciation + amortization – tax paid – dividend paid)/ total assets

BRISK = Standard deviation of the annual percentage of change in operating income before interest, taxes and depreciation over 2002-04.

GROWTHOPTIONS = (Market value of equity + total assets – net worth)/ total assets

NDTS = Depreciation/total assets

All variables are averages for the period 2002-04.

Descriptive Statistics

The descriptive statistics for the sample is given in table 1 below.

Table 1
Descriptive Statistics

	Minimum	Maximum	Mean	Standard Deviation
Long term debt (Rs crores)	0.00	16984.66	200.32	827.45
Market value of equity (Rs crores)	0.96	68020.67	627.10	3697.39
Net worth (Rs crores)	-933.61	37805.30	350.56	2007.32
Promoters shareholding (percent)	0.00	98.35	52.70	16.67
Institutional investors shareholding (percent)	0.00	59.61	10.99	10.81

Total assets (Rs crores)	1.14	68969.27	943.16	4377.32
Profits before interest and taxes (Rs crores)	-188.54	15302.99	103.53	705.22
Net fixed assets (Rs crores)	0.07	33114.49	424.11	2007.49
Free cash flows (Rs crores)	-257.35	24547.97	148.82	1094.82

The average long term debt employed by the sample firms is Rs. 200.32 crores. The maximum debt employed is 16984.66 crores and a few companies have not borrowed long term at all. The average market value and the net worth of the firms studied are Rs. 627.10 crores and Rs. 350.56 crores respectively. The promoters' shareholding is on an average at 52.70 percent for the sample firms and their maximum and minimum shareholdings for the sample firms are 98.35% and 0% respectively. The institutional shareholding ranges from 59.61% to 0%. The mean net fixed assets and total assets for the firms studied are Rs.424.11 crores and Rs.943.16 crores respectively. The Free cash flows ranges from Rs. 24547.97 crores to Rs.-257.35 crores. The maximum and minimum profit figures for the sample firms are Rs.15302.99 crores and Rs.-188.54 crores respectively.

The Results

The results of the regressions run are presented below.

Table 2
Regression results

Independent variables	Coefficient	t-value	Significance level
Constant	0.388	8.430	99% level
PROMOTER	0.001903	-3.693	99% level
INSTITUTIONS	.0005608	-0.625	Not significant
LOGTA	.03836	2.502	99% level
GROWTH	-0.001528	-3.034	99% level
PROFIT	1.224	5.782	99% level
TANGIBLE	0.540	11.282	99% level
FCF	-1.807	-14.277	99% level
BRISK	-0.0001695	-2.790	99% level

GROWTHOPTIONS	-0.06031	-6.237	99% level
NDTS	0.245	0.530	Not significant

Dependent variable: DEBT

$R^2 = .593$ Adjusted $R^2 = .587$

F statistic = 109.202 *

* Significant at 99%

The Results

The promoters' shareholding emerges to be statistically significant in explaining the debt level differences of the sample firms and it bears a negative sign, i.e., higher the promoters' shareholding lower the level of debt. The institutional shareholding is found to be an insignificant variable as a determinant of capital structure. The firm specific variables that are found to be statistically significant determinants of capital structure are firm size, growth, profitability, level of tangible assets, free cash flows, business risk and growth opportunities. Firms that are bigger in size, grow less, more profitable, with higher level of tangible assets, less free cash flows, lower business risk have higher level of debt. The only firm specific variable included in the model as an explanatory variable but is found to be statistically significant is the non-tax debt shield.

Discussion of results

This study shows that the promoters' shareholding is significantly negatively related to the level of debt used by firms. This result is very much in line with the finding of some of the empirical works carried out earlier, which cite managerial entrenchment as the reason. Fama and Jensen (1983) argue that as the shareholding of insiders increases, at some point the managers get entrenched. Such an entrenchment gives the managers the ability to decrease the debt levels and avoid their employment risks (Fama 1980) and avoid the disciplinary role that debt can play over the firm's free cash flows. (Jensen 1986) Grier and Zychowicz (1994) show that entrenched managers attempt to free themselves from the disciplinary role of debt. Jung et al. (1996) find evidence to support the fact that entrenched managers prefer equity issuances even in circumstances where the use of debt financing can improve the firm value better. The findings of studies carried out by Berger, Ofek and Yermach (1997), De Jong and Veld (2001) and Douglass (2002) support this argument. Their empirical evidence shows that managers' natural

preference for low debt produces a negative correlation between entrenchment and leverage.

The other reason that is given out to support a negative relationship between promoters' shareholding and debt financing concerns the expropriation phenomenon. As the ownership concentration increases a conflict between the owners with controlling interests and minority shareholders arises. This may result in the controlling owners pursuing their own interests and end up losing incentives to monitor managers. Further, it can even result in them compromising on the value maximization goal. Demsetz and Lehn (1985) argue that large shareholders are expected to encourage the use of lower levels of debt for risk reduction purposes.

The institutional investors' shareholding does not emerge to be a significant variable in explaining the cross sectional variations in the debt financing levels of the sample companies. This may be because of the fact that these are portfolio investments and are highly liquid. As a result, they may exit from the stock of a particular company if they sense any irregularity than incur the cost of monitoring the stock.

Summary of findings

1. Promoters' shareholding is inversely related to the level of debt.
2. The institutional investors' shareholding is found to be statistically insignificant in explaining the differences in the debt level of firms.
3. The bigger size firms employ a higher level of debt.
4. Firms grow more employ lower levels of debt.
5. The profitability of the firm and the debt level are positively related to each other.
6. Firms that hold higher levels of tangible assets have higher levels of debt.
7. Firms that have higher free cash flows depend less on debt.
8. Firms that are characterized with lower level of business risk seek higher level of debt financing.
9. Firms that have lower growth opportunities have more debt.
10. The non-debt tax shields are found to be insignificant variable in explaining debt level differences among firms.

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