

Effects of Debt on Value of a Firm

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Abstract

Capital structure has been studied extensively with the main focus on whether debt affects firm's value or the proportion of debt usage is irrelevant to the individual firm's value. This paper investigates the relationship between leverage and firm's value, in Pakistani context, to show that what happens to value of a firm in face of changing financial leverage. Secondary data was obtained for this purpose from KSE and financial statements of hundred companies for six years. Regression analysis was carried out for the said relation. It was found that increase in leverage is positively related to the value of a firm.

Keywords: PS; ROE; ROA; Total assets; Fixed assets; KSE; Pakistan

Introduction

Firms can finance their activities either by issuing debt or equity but most prefers the mixture of these two called financing mix or capital structure. Deciding on debt and equity level is a key role played by financial managers, who always want to choose an optimal capital structure i.e. the one which maximizes the value of a firm and minimizes its cost of capital. Tax deductibility of interest payments has made firms to rely on debts as against equity thereby causing an increase in debt to equity ratios and increase in bankruptcy risk, giving rise to debt bias. Evidences have shown that all this creates inequities, economic distortions and put in to threat the public revenues. The debt bias can be made less intense by making the interest payments not to be tax deductible or by introducing tax deductibility for equity returns [1].

A lot of work is done with capital structure its main theme; the research paved its way from the path breaking contribution of Modigliani and Miller irrelevance theory [2]. Later on a number of scholars have shown the effects of financial leverage on the value of a firm. Many of these scholars have shown and reinforced the positive effects of debt financing and a few have argued the opposite.

A firm will be having high ROE when its borrowing increases and a profitable firm is able to earn at a higher rate than it is paying for borrowed funds. Accordingly the firms can use higher levels of debts in their capital structures, but there is a limit to the amount of debt that a firm can use in its financings. The proportion of debt and equity depends upon how the firm divides its cash flows between debt payments which is a fixed component and dividends- a residual component. Therefore financial leverage affects the value of a firm. According to Ross, Westerfield and Jordan [3] investors expects a positive return from their investments which is in the form of dividends and capital appreciation, as is reflected by increase in share price. Therefore the goal of the firm is to maximize the market value of shares and the relationship between firm value and capital structure has become a key issue.

The main objective of the study is to show negative relation between debt and value of a firm so as to abstain firms from debt financing which in turn will remove the inequities and will provide more of the tax revenue. The possible consequences of interest to be the main cause of financial failure need to be addressed. Being condemned by different religions of the world (Aristotle, Plato, Genucia) and never consider to be a legitimate or even moral payment, but still largely in practice and has a very strong and dominant effect in shaping the returns of a firm. Condemned mainly because it makes the poorer more miserable and

the wealthier more wealthy. The only logic behind tax-deductibility of interest payments is that the borrower being in a weaker position should be given an advantage in the form of a tax shield. But now even healthier firms are issuing debts to take an advantage of debt tax shield at the expense of creditors.

An inquiry in to debt within the capital structure of a firm has become significant not only for the firm but also for the benefit of society at large. In developing countries like Pakistan there should be a shift from debt financing to equity financing which will not only increases tax revenues of Government; but will also lowers the bankruptcy risks and inequities.

Literature Review

According to Ross, Westerfield and Jordan [3] "A firms Capital structure is the specific mixture of long term debt and equity the firm uses to finance its operations" (p. 3). Capital structure is at the heart of Corporate Finance. Theories have been proposed and empirical researches were conducted for showing the relationship between Firm's value and its Capital Structure. All its way the literature has focused on whether an Optimal Capital Structure do exists or the proportion of debt usage is irrelevant to the firm's value.

According to Ward and Price financial leverage refers to that proportion of capital which is financed with debt. It represents the claim of the creditors on the assets of a firm in the events of liquidation. The value of a firm as is shown by the share prices is all that the management of a firm wants to maximize. The higher the market prices per share, the higher the firm's value.

The existing capital structure theory has evolved as a result of Modigliani and Miller [4] famous Irrelevance Theorem. They argued that, leverage has nothing to do with value of a firm when impact of tax is to be ignored (MM1). When criticized for ignoring tax effects they brought forward a correction (MMII) in [5], thereby showing a positive association between debt and value of a firm by taking into

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consideration the effects of corporate tax, which make the interest payments on loans tax deductible. Accordingly by relying on debt the firm can increase its value and hence a firm can be financed totally with debts. But hundred percent debt financing is not feasible in any situation; so their arguments initiated further research in this direction. Miller [4] claimed that debt tax shield disappears when personal income taxes come into play. Bankruptcy is the possible consequence of relying heavily on debts. The firm should not obtain debt beyond its targeted level because the firm with higher debt carries higher bankruptcy costs [6]. The use of debt in the capital structure of a firm provides information about its future performance. Ross [3] increasing debts carries good news while decreasing debt carries bad news about the future of a firm. Myers [7] argued that a firm can reap higher profits by maintaining higher Debt-to-Equity ratio i.e. by using more debt as compared to equity. But Stulz has shown that debt payments reduce the availability of funds for investment.

Capital structure is affected by interest rate changes. High interest rates make interest payments on loans to be high. Joseph found that stock returns changes as a result of changes in interest rates. Hyde states that with interest rate change, the interest payments and principle amount of a loan changes. Ju and Leland [8] have also shown the effect of interest on capital structure.

On the management side, capital structure is affected by the Agency Problem and agency costs [7]. Jensen and Mickling have introduced the concept of agency costs and have investigated its nature due to the existence of debt and outside equity. Haris and Raviv [9] have shown that due to conflict the management might maximize its own value at the cost of the owners. Moreover they have argued that if cash flows are poor then creditors can force liquidation of the firm. Capital structure alters while moving from one industry to another and also changes with life stages of a firm.

To make clear the concept of capital structure a lot of theories have been proposed. Myers and Majluf [7] has found that corporate insiders act in the best interest of shareholders and accordingly the firm prefers internal finance (from retained earnings) as against external one; even if external funds are needed the firm prefers debt to equity i.e. The Pecking Order Theory. French and Fama [10] have found that many companies issue some form of equity each year. Every time leverage is moved from its settled position it comes back to its optimal point [7]. Frank and Goyal [11] have divided this to two parts i.e. The Static Trade-off Theory and the Target Adjustment Behavior. According to static trade-off "the firm borrows-up to the point where the tax benefit from an extra dollar in debt is exactly equal to the cost that comes from the increased probability of financial distress" [3].

Methodology

The research methodology used was a causal research, employing quantitative analysis of secondary data. I have tried to show the cause-and-effect relationship between debt and value of a firm, by ratio analysis. Ratio analysis over comes the problem of comparing the performance of companies with different sizes. For the purpose of the paper, to show that debt affects the value of a firm, a sample of hundred companies was taken randomly from nearly all companies of Pakistan listed at Karachi Stock Exchange (KSE) with the unit of analysis being a company listed at KSE. Secondary financial data of these listed companies was obtained from State Bank of Pakistan and Karachi Stock Exchange on yearly basis for six years [12-16].

Correlation and regression analysis was carried out, with capital structure being the independent variable and the firm value as a

dependent variable, to show that whether the proposed relationship exists or not. The proxy of the firm value is return on equity (ROE), return on assets (ROA), and earnings per share (EPS).

The dependent variables are ROE, ROA, and EPS. ROE shows the return that the investors receive for their capital contribution to the firm. It is an important parameter for measuring the performance of a firm from investors' point of view. The investors are likely to invest as long as they receive good return. ROA measures the firm profit relative to its investment in assets and is an indication of whether the assets are under or over utilized. It is thus an indicator of operating performance. EPS is derived when net profit is expressed on per share basis and provides a measure of what the market will pay for a share based on perception of future earnings of the firm [17-22].

The independent variable is capital structure, measured by D/E ratio, and shows the amount of debt and equity the firm uses to finance its operations.

The value of a firm is normally depicted by its share prices (MPS) but with MPS data gaps were there i.e. for some companies MPS figures were not available in each successive period due to which the regression result can't be obtained, and hence MPS is replaced with its proxies [23-26].

H₀: There exists negative relationship between financial leverage and value of a firm.

H₁: There exists positive relationship between financial leverage and value of a firm.

Results Analysis

To draw conclusions easily in relation to the hypothesis already stated i.e. Debt affects the value of a firm; the results are presented in tabular form. The results show that a significant relationship exists between leverage and firm value in the market. Also the results on a whole point out a positive relationship between leverage and value of a firm. Although the correlation among variables is weak but the overall results appear to be significant. Regression analysis was carried out with the test conducted at 95% confidence level. The confidence level estimates a range in which the population mean is expected to fall. The sign of the parameter estimates show the direction of the relationship whether positive or negative. Positive sign shows direct relationship and the negative shows inverse one. Based on p-values the null hypothesis is either rejected or accepted. P-values are to be compared with the significance level, if p-value is less than significance level the null hypothesis is to be rejected otherwise accepted. The correlation coefficient R² determines the degree to which the independent variable explains the variations in the dependent variable? (Tables 1 and 2).

Earnings per share

At a significance level of 5% there exists a negative relationship between debt to equity and value of a firm. For each one unit decrease in debt to equity earnings per share shows an increase of 0.07 units. The result is non-significant since t-stat is less than acceptable level and p-value is higher than 0.05. 17.15% of the variations in earnings per share are explained by the movements in debt to equity.

Return on assets

At a significance level of 5% there exists a positive relationship between debt to equity and returns on assets. For each one unit increase in debt to equity returns on assets shows an increase of 0.02 units. The result is significant since t-stat is greater than acceptable level

	DE	EPS	ROA	ROE	TA	FA	CA	Mean(D.V)	S.D (D.V)
DE	1								
EPS	0.003111	1						17.81022	343.6164
ROA	0.016192	0.047914	1					5.454833	18.20554
ROE	0.076901	0.01569	0.029799	1				3.725693	172.6698
TA	0.018536	-0.00519	0.151061	0.114753	1			3730589	8353935
FA	0.014649	-0.007	0.084756	0.100311	0.929066	1		1921269	5186393
CA	0.019608	-0.00175	0.20445	0.108983	0.878909	0.640119	1	1809319	4022412

Table 1: Correlation matrix.

Dependent variables	D/E Coefficients	t-stat	Probabilities	R ²
Earnings Per Share	-0.074391	-0.119534	0.9049	0.171531
Return on Assets	0.025896	1.975899	0.0447	0.428885
Return on Equity	0.855654	2.463402	0.0141	0.201756
Total Assets	2610.183	0.353396	0.7239	0.802575
Fixed Assets	946.1322	0.150375	0.8805	0.628306
Current Assets	1664.051	0.497054	0.6194	0.825048

Table 2: Firm value and debt to equity.

and p-value is lower than 0.05. 42.88% of the variations in returns on assets are explained by the movements in debt to equity.

Return on equity

At a significance level of 5% there exists a positive relationship between debt to equity and returns on equity. For each one unit increase in debt to equity returns on equity shows an increase of 0.86 units. The result is significant since t-stat is greater than acceptable level and p-value is less than 0.05. 20.17% of the variations in returns on equity are explained by the movements in debt to equity.

Total assets

At a significance level of 5% there exists a positive relationship between debt to equity and total assets. For each one unit increase in debt to equity total assets shows an increase of 2610 units. The result is non-significant since t-stat is less than acceptable level with a higher p-value. 80.25% of the variations in total assets are explained by the movements in debt to equity.

Fixed assets

At a significance level of 5% there exists a positive relationship between debt to equity and fixed assets. For each one unit increase in debt to equity fixed assets shows an increase of 946 units. The result is non-significant since t-stat is less than acceptable level with a higher p-value. 62.83% of the variations in returns on equity are explained by the movements in debt to equity.

Current assets

At a significance level of 5% there exists a positive relationship between debt to equity and current assets. For each one unit increase in debt to equity current assets shows an increase of 1664 units. The result is non-significant since t-stat is less than acceptable level with a higher p-value. 82.5% of the variations in returns on equity are explained by the movements in debt to equity.

Discussion

The results as a whole shows that financial leverage is positively related to the value of a firm, any increase in leverage will increase the value of firm. The results are in line with previous researches conducted on this topic showing a positive relationship. The complexity in results

is arisen because of the ratios used as proxies for the firm value. The coefficients of assets are higher because actual figures are compared with a ratio; such a comparison when used yields inaccurate results. Arguments exist both for and against increased level of financial leverage. But the combination of debt and equity to be used depends upon the firm specific needs and its operating conditions. According to Jiming negative relation exists for high and low growth companies where as positive one is more likely for mid-growth companies. Hence in data in this case might be taken from mid-growth companies. Because of different kinds of arguments Myers, an expert on the subject matter, stressed that there exists no universally acceptable theory of capital structure and further that there exists no solid reason to prefer one against the others. The complexity in results is arisen because of the ratios used as proxies for the firm value. The coefficients of assets are higher because actual figures are compared with a ratio; such a comparison when used yields inaccurate results.

An exact capital structure doesn't exist but however a range can be identified for capital structure to maximize a firm value. The managers should recognize this range and also the shareholders should focus on this range so as to avoid agency problems.

Present study has certain limitations. Firstly mainly because of time limitations it was not possible to gather and arrange all the relevant data to be included in a sample. Secondly, the data used is only for six years and hundred companies; any company having its data not directly available is not included in the sample. Moreover the sample just represent a specific time period. This might cause a sample bias. Thirdly, the market price per share is not included instead its proxies are taken for firm value. The firm value can best be presented by its share prices. Fourthly, to be included in a sample a company must be listed on KSE, it therefore doesn't take into consideration any company listed at other stock exchanges. Fifthly, ratios are used instead of actual figures. Future research should consider a number of factors. Sample should be chosen at care by including only those firms for which at least 10 years of worth data is available. Moreover by allowing equal chances for all the firms to be included in the sample can yield somewhat different results. Instead of using ratios one might need to get actual data from companies' financial statements. Instead of relying on proxies efforts can be made for obtaining actual data for all the variables involved. Over and above the effects of interest, paid for the use of money, on firm value should be clearly addressed. If all

this is to be made based on actual data and on a sample which is true representative, then there exist chances that the variables of interest will show a negative relationship. By combining such a study with that of De Wet a range for optimal capital structure could be identified.

Conclusion

The purpose of the paper was to show whether there exist a relationship between leverage and value of a firm or not. The results showed a positive relationship between leverage and value of a firm, on the basis of which we reject the null hypothesis. Debt positively affects the value of a firm mainly because of the tax shield. The studies conducted in countries where there are no taxes, like Saudi Arabia, the debt has nothing to do with the value of a firm. In countries where taxes are there, the results of the study appears to be positive.

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