Financing Behavior of KSE Listed Companies

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Abstract

This paper attempts to determine the capital structure of KSE listed firms in Pakistan. The study finds that a capital structure exhibits unique attributes in different corporate environment, The study took 125 firms from all sectors listed at the Karachi Stock Exchange for the period 1998-2006 and analyzed the data by using pooled regression in a panel data analysis. Following the simple regression model it has chosen three independent variables i.e. firm size (measured by natural log of total assets), profitability (measured by net profit margin) and sales growth and further analyzed the effects on leverage. The results are not much satisfactory with respect to model but can give good interpretation that in Pakistani corporate environment leverage do not depend on the theoretical viable factors but there are some other factors to influence the leverage.

Keywords: Capital Structure, Financing Behavior, Karachi Stock Exchange

Introduction

Capital structure contributes a lot in determining the over all market value of the firm. Firms use different mix of financing options to finance their assets and most of the times it is based on the nature of the industry and the operations. A firm can choose a mix of three modes of financing: issuing shares, borrowing from the market, and use of retained earnings. The ratio of this mix of funds is purely depending upon the firm and known as optimal capital structure of the firm.

This research is focused on how different performance and operating indicators of firm affect its capital structure and financing choices of KSE listed firms, what combination companies' use and how companies behave in deferent situation. The purpose of this study is two

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fold. One is to see whether there is firm's financing alternatives (especially debt in relation to the Equity) are influenced by firms other indicators (Sales Growth, Total Assets and Net Profit Margin). While on the other hand it is to show the debt in relation to total capital employed. Financing behavior is reflected through many theories of Capital Structure i.e. Modigliani-Miller theorem (MM Model), Pecking order theory, and Trade off theory etc.

The theory of capital structure presented by M&M is based on the assumption that firm is indifferent in selection of debt or equity financing. This theory of M&M is based on many unrealistic assumptions but is used as the base of further research on the determinants of capital structure and provides a strong theoretical background. During this period many theories regarding optimum mix of capital structure are presented by different theorists, some of them explaining the behavior of firm in choosing its capital structure are Modigliani and Miller (Irrelevance of Capital Structure), Agency cost theory of capital structure, Static Trade-off theory, Pecking Order theory, and the Signaling Theory.

The remainder of this paper is divided into four main sections. Section 2 presents the theoretical basis for the analysis presented in this paper. Section 3 then provides a detailed description of the methodology, operational definitions of the variables and model used. Section 4 then details the results of this analysis, comparing the results with the past findings. Finally, section 5 summarizes and concludes.

Theories of Capital Structure

Modigliani and Miller (Irrelevance of Capital Structure)

The modern work on capital structure theory began by Modigliani and Miller (1958). M & M proved that the value of the firm is independent from its capital structure. They prove their hypothesis based on different assumptions. They assume a perfect capital market (no transaction or bankruptcy costs; perfect information); firms and individuals can borrow at the same interest rate; no taxes; and investment decisions aren't affected by financing decisions. Modigliani and Miller made two findings under these conditions. Their first 'proposition' was that the value of a company is independent of its capital structure. That is, you cannot change the size of a cake by cutting it into different sized pieces. Their second 'proposition' stated that the cost of equity for a leveraged firm is equal to the cost of equity for an un-leveraged firm, plus an added premium for financial risk. That is, as leverage increases, while the burden of individual risks is shifted between different investor classes, total risk is conserved and hence no extra value created.

M&M further published the correction for their previous work as "A Correction" in (1963). In that study, they have described that the value of the firm is independent from its capital structure but the interest expenses on the debt create the difference. They further explained that point by sayings that as the interest expenses are tax deductible due to the income tax law prevailing in different countries so the firms working in these countries decreases the tax liability and increases the after tax cash flows. On the other hand, dividend payments are not tax deductible; firms have to pay the tax on all their incomes and this procedure makes equity a costly source of financing. Therefore, this differential treatment encourages corporations to use debt in their capital structures. Their work provides the basis for other researchers (for further research). As a result different other theories of capital structure are developed by other researchers like static trade-off theory, pecking order theory and agency cost theory.

Agency Cost Theory

Jensen and Meckling presented their own theory about optimum capital structure in 1976 and highlighted the issue of owner and manager relationship. Agency theory states that the owners have to bear cost due to the separation of ownership and management in the corporation form of business. The shareholders have to provide incentives to the managers for the efficient working and increased output. The cost, which is paid by owners to managers or agents, is known as agency cost.

If the firm takes loans then the managers have to act as the agent of owners as well as to the debt providers. Therefore, agency cost theory of capital structure states that the optimal capital structure is that point where the agency cost of all the interested parties is at the minimum level.

The Static Trade-off Theory

The static trade-off theory states that the value of the leveraged and un-leveraged firm is not same. In the case of debt financing the firm can save the amount of interest payments on the debts from the tax purposes. However, at the same time due to debt finance the cost of financial distress and the agency cost of the debt financing of the firm increases. This theory further states that the optimal capital structure is that where the tax benefit on the interest payments for the firm and the financial distress and the agency cost of the debt financing balanced with each other (Baxter, 1967 and Altman 1984, 2002). This theory focuses on the three points; these are, tax advantage, financial distress costs, and the agency cost.

This theory states that the firm saves tax on the interest payments of the debt finance. As suggested by MM (1963), that value of the firm is only dependent on the capital structure due to the fact that interest expenses on the debts are tax deducible but the same is not applicable on the dividend payments.

The second point is financial distress costs. As the firm increases its leverage position the chances of bankruptcy increase as suggested by Jensen and Meckling (1976). Therefore, with the continual inclusion of debt financing the bankruptcy cost is also increased for the firm.

As discussed in the agency cost of capital structure that the owners have to pay incentives to their agents (managers) in the corporation is form of business. If the corporation also financed by debts then these agents (managers) have to work as the agents of the debt providers so it increases the agency cost of capital structure. Jensen and Meckling (1976) suggest that the optimal capital structure is that point where the tax advantage on interest payments must be balanced out with the cost of bankruptcy and agency cost of capital structure.

Trade-off theory allows bankruptcy costs to exist. It states that there is an advantage to financing with debt (namely, the tax benefit of debt) and that there is a cost of financing with debt (the bankruptcy costs of debt). The marginal benefit of further increases in debt declines as debt increases, while the marginal cost increases, so that a firm that is optimizing its overall value will focus on this trade-off when choosing how much debt and equity to use for financing.

Pecking Order Theory

Pecking Order theory tries to capture the costs of asymmetric information. It states that companies prioritize their sources of financing (from internal financing to equity) according to the law of least effort, or of least resistance, preferring to raise equity as a financing means "of last resort". Hence internal debt is used first, and when that is depleted debt is issued, and when it is not sensible to issue any more debt, equity is issued. This theory maintains that businesses adhere to a hierarchy of financing sources and prefer internal financing when available, and debt is preferred over equity if external financing is required. Thus, the form of debt a firm chooses can act as a signal of its need for external finance. The pecking order theory is popularized by Myers (1984) when he argues that equity is a less preferred means to raise capital because when managers (who are assumed to know better about true condition of the firm than investors) issue new equity, investors believe that managers think that the firm is overvalued and managers are taking advantage of this over-valuation. As a result, investors will place a lower value to the new equity issuance. Bevan and Danbolt (2002) further work on this idea

and prove that the firm which earns huge profits they have fewer debts due to the use of internally generated funds.

Signaling theory

This approach, originally developed by Ross (1977), explains that debt is considered as a way to highlight investors' trust in the company, that is, if a company issues the debt it provides a signal to the markets that the firm is expecting positive cash flows in the future, as the principal and interest payments on debt are a fixed contractual obligation which a firm has to pay out of its cash flows. Thus the higher level of debt shows the manager's confidence in future cash flows.

Another impact of the signaling factor is the problem of the under pricing of equity. If a firm issues equity instead of debt for financing its new projects, investors will interpret the signal negatively: since managers have superior information about the firm than investors, they might issue equity when it is overpriced.

Among other explanations about a firm's behavior in choosing its capital structure is the *agency theory*. Jensen and Meckling (1976) identify the possible conflict between shareholders and a manager's interests because the manager's share is less than 100% in the firm. Furthermore, acting as an agent to shareholders, the manager tries to appropriate wealth from bondholders to shareholders by incurring more debt and investing in risky projects.

This is consistent with the work of Myers (1977) who argues that, due to information asymmetries, companies with high gearing would have a tendency to pass up positive NPV (net present value) investment opportunities (under investment problems). Myers therefore argues that companies with large amounts of investment opportunities (also known as growth options) would tend to have low gearing ratios.

A manager having a less than 100% stake in the business may try to use these free cash flows sub-optimally or use it to their own advantage rather than use it to increase the value of the firm. Jensen (1986) suggests that this problem can be somehow controlled by increasing the stake of the manager in the business or by increasing debt in the capital structure, thereby reducing the amount of 'free' cash available to managers to engage in their own pursuits (Jensen, 1986, Stulz, 1990). Here the reduction in the cash flow because of debt financing is considered to be a benefit.

Stutz (1990) suggests that the agency problem can be solved to some extent if the management stake is increased or the proportion of debt in the capital structure is increased.

Methodology

This section provides information about the source of data, sample size, measurement of the variables and discussion of different measures of the variables.

Source of Data

This paper is based on the data, which is published by State Bank of Pakistan as "Balance Sheet Analysis of Joint Stock Companies Listed on the Karachi Stock Exchange Volume-II 1996-2001", "Balance Sheet Analysis of Joint Stock Companies Listed at the Karachi Stock Exchange Volume III (1999-2004)" and "Balance Sheet Analysis of Joint Stock Companies Listed at the Karachi Stock Exchange Volume V (2001-2006)" published by state bank of Pakistan statistics department source of the data is www.sbp.org.pk

The Sample

As this study has focused on the non financial sector of KSE listed firms and taking 125 firms whose published data was available from almost each sector after implementing a normal screening criterion for exclusion of firm from the sample. Initially the work is started on 200 firms then after screening the firms with incomplete data and consecutive three year losses we were left with only 125 firms. So we have 125 firm-years for panel data analysis.

Explanation of Variables

This study follows the framework that uses Company Size, Sales Growth, and Net Profit Margin as explanatory variables to determine the degree of Leverage (the response variable). This section presents the description of these variables, how they are measured and what empirical evidence was found by previous studies.

Leverage (D/E and D/CE) (Dependent Variables): Leverage refers to the percentage of assets financed by debt. Previous research studies have used different measures of leverage. Frank and Goyal (2003b) state that the difference between a debt ratio based on market value and one based on book values is that the former tends to regard the firm's future situation whereas the later reflects the past situation. Fama and French (2002) point out some inconsistencies arising from the use of two different debt ratios. According to them, both theories (Pecking Order and Static Tradeoff) apply to the debt book value, and there are doubts if the predictions may be extended to the debt market value.

While measuring the level of leverage the researchers based their measures of leverages on two approaches. One is used by Titman and

Wessels (1988). In this approach, they calculate the amount of leverage dividing book value of debt by book value of debt plus market value of equity. Rajan and Zingales (1995), Shah and Hijazi (2005) have used the second approach. They divide the book value of debt by book value of debt plus the book value of equity. This paper used two ratios for the measurement of leverage, one is Debt to Equity and the other is Debt to Capital Employed. Debt equity ratio is taken as total debt in percentage of shareholder's equity whereas Debt to Capital Employed is measured by the proportion that the loan capital bears to the total capital employed. Where there is preference capital, there is an item of gearing i.e., the loan capital plus the preference capital as the ratio of the total capital employed. The justification for taking the preference capital together with the fixed liabilities is that, from the ordinary shareholders' point of view, both items represent a fixed charge on the profits. Total capital employed is shareholders equity plus total fixed liabilities as given by Balance Sheet Analysis published by State Bank of Pakistan.

Company Size (CS) (Independent Variable): Company size is measured by the book value of total assets at the closing date. To make those values as comparable and to use in the model natural log is taken. The size of a firm can affect the leverage of the firm negatively.

The empirical evidence regarding the relationship between gearing and Company size is rather mixed. Titman and Wessels (1988), Chung (1993) and Barclay et. al. (1995) Rajan and Zingales (1995) and Shah and Hijazi (2005) find a negative correlation, whereas Kester (1986) does not find any support for the predicted negative relationship between growth opportunities and gearing. This is therefore consistent with the hypotheses of Jensen and Mekling (1976) and Myers (1977), and lends weight to the notion that companies with more assets can be expected to have low levels of gearing.

Pecking Order Theory (Myers and Majluf (1984) stated that the firms finance its projects from the internally generated funds. Normally the big firms are not capable to finance all its requirements by the internally generated funds. These firms need external finance and so the leverage is higher (Drobetz and Fix 2003). When the leverage of the firm is higher than the cost of new debts will go up. In this way, the big firms have to be depending upon the equity than on debts. So we can say that there is negative relationship between the size and leverage the same is contributed by Rajan and Zingales (1995)

Hypothesis 1: Larger firms will have higher leverage.

Sales Growth (SG) (Independent Variable): For the measurement of sales growth the difference of two years sales as a percentage of previous years sales as given by the Balance sheet analysis published by state bank of Pakistan

For the Static Tradeoff approach, the higher the firm growth, the greater the possibility it has of issuing debt, resulting in a positive relationship between debt and sales growth. One of the reasons for this is that the firm with high sales growth the lower is the risk of bankruptcy. Growing firms do not consider the direct bankruptcy costs as an active variable in deciding the level of leverage as these costs are fixed by the Constitution and constitute a smaller proportion of the total firm's value and also because growing firms, being more diversified, have less chances of bankruptcy (Titman and Wessels 1988).

Shah A (2005), and Rajan and Zingales (1995), also expecting the negative relationship between sales growth and leverage of the firm.

Hypothesis 2: There is negative relationship between sales growth and leverage of the firm.

Net Profit Margin (NPM) (Independent Variable): There are some conflicting viewpoints about the profitability and the leverage of the firm. Modigliani and Miller (1963) state that if companies generate funds by debts then they will get the advantage of tax deduction on the interest payments. So according to Modigliani and Miller (1963) there is a positive relationship between leverage and profitability.

On the other hand, pecking order theory by Myers and Majluf (1984) states that when the firms need funds, they will prefer internally generated funds instead of external sources of capital. So there must be a negative relationship between profits and leverage of the firm. Rajan and Zingales (1995) also found the negative relationship between leverage and profitability

In previous studies, the measure of profitability used was operating earnings before interest payments and income tax (EBIT), Whereas Shah and Hijazi (2005) measure profitability (PF) as the ratio of net income before taxes divided by total assets. But this study took net profit margin as earning after interest and tax as a percentage of gross sales following the Balance Sheet Analysis published by State Bank of Pakistan.

Hypothesis 3: Firms with higher net profit margin will have lesser leverage

Results

Descriptive Statistics

The following table presents some of the descriptive statistics of the listed textile composite Pakistani firms from 1998-2006

Table-1: Descriptive Statistics

Descriptive Statistics					
STATISTIC	SG	CS	NPM	D/E	D/CE
Mean	0.369	6.876	0.085	1.459	0.172
Median	0.123	6.629	0.057	1.100	0.082
Mode	0	5.361	0.020	0.781	0
Standard Deviation	4.310	1.623	0.313	6.253	0.244
Minimum	-1	0.875	-6.035	-183.040	-1.300
Maximum	124.942	11.922	5.944	33.100	3.178

From the above shown descriptive analysis with the help of different statistics it can be seen that data is in normal stream and there are no outlier.

Correlations

Pearson's co-efficient of correlation have used to check the multi-co-linearity among the independent variables. Following are the results of correlation

Table-2: Correlations

Correlation Matrix					
	Sale Growth	*Comp Size*	*NPM*	*Debt/Equity*	*D/CE*
Sale Growth	1				
Comp Size	-0.098	1			
NPM	0.004	0.050	1		
Debt/Equity	-0.007	0.078	-0.017	1	
D/CE	-0.038	0.090	-0.160	0.005	1

With the help of the above table, it is clear that there is no severe problem of multi-co-linearity among independent variables. However, the table explains some interesting facts about the correlation among these independent variables.

There is a negative correlation between company size and sales growth of the firm but it is not much intensive. It is against the theoretical studies and corporate myths.

There is positive relationship between sales growth and net profit margin and company size and net profit margin that is just according to the theory.

The Regression Model

This study uses panel regression analysis. Panel data analysis facilitates analysis of cross-sectional and time series data. It is also called the Constant Coefficients model, is one where both intercepts and slopes are assumed constant. The cross section company data and time series data are pooled together in a single column assuming that there is no significant cross section or inter temporal effects.

Therefore the equation for our regression model will be:

$$D/E = \alpha_0 + \alpha_1 (CS) + \alpha_2 (SG) + \alpha_3 (NPM) + \varepsilon \text{ ---------- (i)}$$

$$D/CE = \beta_0 + \beta_1 (CS) + \beta_2 (SG) + \beta_3 (NPM) + \varepsilon \text{ ---------- (ii)}$$

Where

D/E = Debt to Equity Ratio
D/CE = Debt to Capital Employed Ratio
CS = Company Size measure by Log of Total Assets
SG = Sales Growth
NPM = Net Profit Margin
ε = the error term

Model-I

Table-3: Model Summary

Regression Statistics	
Multiple R	0.081
R Square	0.006
Adjusted R Square	0.003
Standard Error	6.241
Observations	1125

Table-4: ANOVA

ANOVA					
	df	*SS*	*MS*	*F*	*Sig F*
Regression	3	288.691	96.230	2.470	0.060
Residual	1121	43663.856	38.950		
Total	1124	43952.548			

Table-5: Co efficient

	Coefficients	*Std Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-0.608	0.815	-0.746	0.455	-2.208	0.991
Sale Growth	0.00095	0.043	0.022	0.982	-0.084	0.086
Comp Size	0.305	0.115	2.650	0.008	0.079	0.532
NPM	-0.419	0.594	-0.704	0.480	-1.585	0.747

$$D/E = -0.608 + 0.305(CS) + 0.00095(SG) - 0.419(NPM) + \varepsilon$$

Model-II

Table-6: Model Summary

Regression Statistics	
Multiple R	0.190
R Square	0.036
Adjusted R Square	0.033
Standard Error	0.240
Observations	1125

Table-3.7 ANOVA

ANOVA					
	df	*SS*	*MS*	*F*	*Sig F*
Regression	3	2.451	0.817	14.096	0.000
Residual	1121	64.989	0.057		
Total	1124	67.440			

Table-3.8: Co efficient

	Coefficients	*Std Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	0.084	0.031	2.683	0.007	0.022	0.146
Sale Growth	-0.001	0.001	-0.951	0.341	-0.004	0.001
Comp Size	0.014	0.004	3.264	0.001	0.005	0.023
NPM	-0.129	0.022	-5.629	0.000	-0.174	-0.084

$$D/CE = 0.084 - 0.001\ (CS) + 0.014\ (SG) - 0.129\ (NPM) + \varepsilon$$

The value of the R Square is around 0.6% for model 1 showing relationship between Debt to Equity ratio and company size, Net Profit Margin and Sales Growth, where as it is around 3.6% for model two discussing relationship between Debt to Capital Employed with the same independent variables. The remaining variability in the leverage is due to some other factors which are not included in the model. It is quite obvious that in Pakistani corporate environment there are certain other

factors that affect the leverage decision and choices of the corporate managers and owners.

The F-statistics shows that the models are insignificant on both 5% and even on the 1%.

The coefficients of individual independent variables for company size, net profit margin and sales growth are as follows for model 1 and 2.

Company Size is measured by taking book value of total assets and it has positive relationship with Debt to Equity ratio as well as with Debt to Capital Employed ratio. The positive sign with the coefficients of CS in both models provides the evidence about the relationship of company size and leverage. In the both models the coefficients give same signs but the t-statistics shows significant results so we can say that company size has positive relationship with leverage and we accept our 1st hypothesis.

The result about the sales growth shows that it has positive relationship with Debt to Equity in model 1 whereas negative with Debt to Capital Employed in model 2. Both results are very insignificant. So because of this insignificant result it is very difficult to say about the true relationship sign between the relationship and this insignificant result leads us to reject out 2nd hypothesis of negative relationship between sales growth and leverage.

Net profit margin has the negative relation with leverage. The negative sign confirm our hypothesis. Net profit margin is also statistically insignificant so hypothesis is rejected. This result shows that profitability has the negative relationship but having insignificant impact on the decision of leverage in the Pakistan corporate environment.

Conclusion

The data used in this study, taken from the "Balance Sheet Analysis of Joint Stock Companies listed on the Karachi Stock Exchange" published by the State Bank of Pakistan and Balance Sheet Analysis of Joint Stock Companies listed on the Karachi Stock Exchange (available on the web site www.sbp.org.pk. We used pool regression model of panel data analysis. With the help of this, we have measured the determinants of capital structure in the listed Pakistani firms from 1998 to 2006.

In this study we analyzed a sample of 125 firms from different sectors by using a pooled regression model to measure the determinants of capital structure of the firms in Pakistan and to study the implementation of the capital structure theories in Pakistani environment. In our analysis, we have found the affect of size, profitability, and growth (all are independent variables) on the leverage (dependent variables) position of the company.

With the help of regression, we have found evidence that there are many other factors that can affect the overall Debt Equity Ratio or the leverage decisions in Pakistan on the basis of under observation sample. The three factors in the model didn't cover the major variations in the dependent variable where as individually these factors have no considerable significance. So we should add some new factors into our model and also should increase the companies in the sample to get good results and model generalization. The models show insignificant results that means the variables have no impact on the variation of leverage decisions.

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