Capital Structure Antecedents: A Case of Manufacturing Sector of Pakistan

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Abstract

Capital structure is about company financing decision. The study is about to investigate the factors of capital structure and decisions associated to it. Leverage is used as the proxy of capital structure and non debt tax shield, taxes, profitability, assets tangibility, liquidity, firm size, cost of debt are used as independent variable to investigate data of manufacturing sector listed companies at KSE. Moreover, study has endeavored all hypotheses significant with leverage except firm size. And study supported Pecking order theory significantly.

Keywords: Capital structure, Leverage, Non Debt Tax Shield, Taxes, Liquidity, Assets Tangibility, Cost of Debt, Firm Size, Karachi Stock Exchange

Introduction

Pakistan, according to his geographical location is found more rich because of cultivate able land plus huge mineral resources that provides material of production to manufacturing industry including cement sector (Qayyum, 2013). While capital is blood of business that births & guarantees the life line of a business. And each corporate entity adopts a separate capital mix according to nature of business and decisional styles of corporate managers. Such capital is aggregate amount of equity endorsed by shareholders and debt provided by lenders and financial institutions (Afza & Hussain, 2011). Therefore, such capital mixes are more likely to support in tax matters by tax shield and reduces weighted average cost of capital as well. While, during a financial period various transactions are executed and sometimes companies operating profit falls below the breakeven level then it becomes prior consent of company objectives to finance it by amount borrowed. Moreover, increase in indirect costs causes mostly decrease in level of equity because of non asymmetrical nature of information that harms leverage also. The initial work on it was started by Modigliani & Miller (1958) based on some less realistic assumptions but established a ground for research on capital structure. So three main theories that supports the

decisions during selection of capital structure are Pecking order theory, Static trade off theory and Signaling theory. But in Pakistani context, it is found that only trade off theory and pecking order theory supports the entire corporations.

So the objective of the study is to investigate the antecedents of capital structure of manufacturing sector of Pakistan and to acquire knowledge for the decision making concerned with leverage of manufacturing sector.

The paper is divided into four sections. Section 02 explains the theoretical base, section 03 clarifies the detailed methodology and technical explanation of all variables, section 04 is about results and data analyses and section 05 concludes the findings of the paper.

Theoretical Framework

The cost of equity of is generally greater than the cost of the debt because it is deemed to carry out a greater risk. Conversely, cost of debt is found safer than cost of equity and therefore has low cost. So this gives the impression that having the greater volume of debt can reduce the overall cost of the company and improves its value. So initially M & M have given their propositions with some unrealistic assumptions that capital markets are perfect and Taxes, bankruptcy and transaction costs are not real. Conversely, these costs are real and capital markets can't be perfect particularly in developing countries like Pakistan.

Trade off Theory

This theory is based on the simple idea of cost and benefit analyses. If the likely benefits are greater than the costs, the decision should be made implemented. However, if the cost of implementing decision is greater than the benefits, the decision should not be taken. In the terms of capital structure, it is acknowledged that having debt in the total capital has certain benefits i.e. lower cost than equity & tax shield. The flip side of taking debt is possible financial distress. So the Trade Off theory of capital structure argues that, the managers of the company will keep increasing the level of debt for as long as the benefits of the debt is greater than the perceived cost of financial distress and the managers will keep to increase the level of debt, where the value of additional benefits is exactly offset by the additional cost of financial distress.

Pecking Order Theory

G Donaldson provides such hypothesis initially in 1961 then C. Mayers put it more formally in 1984. Such hypothesis argued that managers have an order of preferences while deciding on the sources from which to raise additional funds. The hypothesis states that company first preferences is to raise funds from internal sources, if internal sources are not adequate then to go for debt that provides negligible effect on the WACC of the company. And as the last resort additional funds for requirements are raised by issuing equity shares. While, pecking order hypothesis clearly demonstrates the managers bias towards the financing of equity from the retained earnings and equity financing from shareholders as the last resort.

But these theories are not much appropriate, firms should choose target ratios for cost and benefit analyses. But in Pakistan most of the business is family limited business that are mostly found not willing to sell additional shares to disturb voting rights. So the attitude to decide on the bases of ratio is found zero because ratios are also defined by top management according to preferences and the pulp is enjoyed before. And ratios are only tool that shows financial position not parameters of decisions. So there are the chances of biased decisions. Moreover, directors are not willing to show the any financial distress of companies in Pakistan because it is the threat that the company bankruptcy poses to the controlling shareholders. Hence, capital structure decisions in Pakistan are intentionally or unintentionally affected with trade Off theory and pecking order theory with considerable extent.

Literature review

Capital structure explained by different economists in different views. Modigliani and Miller, (1958) gave the concept of Irrelevance theory of capital structure This research is still continuing that it is a relevance or Irrelevance but with the passage of time more dimensions included in this relevance and Irrelevance debate of capital structure.

M&M Irrelevance theory says that there is no optimal capital structure that is better than other which affects the firm's performance. According to M&M if Market is perfect then capital structure is Irrelevant from organization's performance.

Berger, Herring, and Szegö (1995) criticized it and inspected the importance of capital structure in financial firms and defined the difference between the regulatory and non-regulatory capital

requirements. They pointed out by their findings that such theory s not more supportive in services sector specially in banking sector. And summarized that it is supportive in matters of tax shield and increase in rate of return.

Ross et.al, (2008) also criticized the trade-off theory that marginal benefit acquired is off settled by the marginal cost faced by the firm.

Stewart C. Myers (1988) presented Pecking Order Theory describe that the firms prefer to their pecks of financings and each firm has their pecking orders of funds financings. While, profitability, asset structure, size, growth and corporate tax have major influence on bank's financing and are major determinants of capital structure in Ghana industries.

Titman & Wessels, (1988) stated that financing with debt was pessimistically related to firm's uniqueness concerning its type of business. Rajan & Zingales, (1995) found that factors study by previous analyst as correlated with the firm leverage in the United State.

Booth et.al, (2001) observed that the facts from ten underdeveloped countries including Pakistan and practically showed that some of the uniqueness. Rahman, (1990) found that Industry and Size as determinants of Capital Structure decisions and the results showed that Engineering and Tobacco industries were heavily leveraged. Mahmood, (2003) comparatively studied the Japanese industry with Pakistani industry and showed leverage correlation with other determinants pointed by other researchers used in his research.

While, Shah & Khan, (2007) argued that due to family business structure high leverage ratio is pointed out in textile sector of Pakistan that is alarming and not found in other sectors comparatively. Shah & Hijazi, (2005) examined the cement sector of Pakistan and the results, except for firm size, were found to be highly significant and rejected the static trade off theory.

Followings are the hypothesis that are taken,

*H1:		The	cost	of	debt	has	negative	relationship	with	leverage.*
*H2:		The	size	of	a	firm	has	negative	relationship	with	leverage.*
*H3:		The	profitability	of	a	firm	has	negative	relationship	with	leverage.*
*H4:		The	higher	rate	of	taxes	has	positive	relationship	with	leverage.*

H5:   The   non   debt   tax   shield   has   negative   relationship   with   leverage

H6:   The tangibility of the assets have the positive relationship with leverage.

Methodology

This study is based on the financial data of sample firms from 2006-2011 and has been taken from the State Bank of Pakistan Publications "Analysis of Joint Stock Companies Listed on the Karachi Stock Exchange 2006-2011". And manufacturing sector of Pakistan is focused as the sample of the study. We have taken all the 26 firms (which are listed on the Karachi Stock Exchange) from which17 companies are of fuel & energy and 08 companies are of the Electrical sectors & 06 companies of the paper sector whose published data was available were selected. So the firms with complete data are selected and now the sample size is 31 firms selected for panel data analysis.

Table 1
Sample Sector Percentage Representation

Sector Name	Percentage Representation
Fuel & Energy Sector	54.84%
Electric Sector	25.81%
Paper Sector	19.35%

Moreover, the leverage is taken as the proxy of the capital structure and is selected as the dependent variable. And the independent variables are as follows,

Asset Tangibility (TG), Firm Size (FS), Profitability (PF), Taxes (TX), Liquidity (LQ), Cost of Debt (CD), Non Debt Tax Shield (NDTS).

So the econometric model is given as below and the variables are calculated based on following formulas,

$$LG = \beta_0 + \beta_1 (TG) + \beta_2 (SZ) + \beta_3 (PF) + \beta_4 (TX) + \beta_5 (LQ) + \beta_6 (CD) + \beta_7 (NDTS) + \varepsilon$$

    a. Leverage = (Total Debt/Total Assets)

    b. Firm Size = (log (Net Sales)

c. Liquidity = (Current Assets – Inventory/ Current Liabilities)

d. Profitability = (EBT/ Total Assets)

e. Assets Tangibility = Fixed Assets/ Total Assets

f. Non Debt Tax shield = (Debt*Tax Rate).

Therefore, to find more precise results we used descriptive analysis Spearman's correlation, Regression analysis on panel data for variables analysis.

Data Analyses

Table.02
Descriptive Statistics

Variable	Mean	Standard Deviation
CD	0.8090	0.11573
FS	15.2297	3.47624
LQ	2.3721	3.59792
NTDS	0.0334	0.02512
PF	0.0560	0.12515
TG	0.7551	0.44607
TAX	0.0831	0.85461
LEVERAGE	1.4797	0.98082

Descriptive statistics are used to measure the data response. The mean value of cost of debt is 0.8090, firm size has 15.2297, liquidity mean value is 2.3721, the non debt tax shield is 0.034 very less in response and profitability mean value is 0.0560. Moreover, assets tangibility has the value of 0.7751, taxes are 0.0831 and leverage as dependent variable of the study has 1.4797. Such responses of all variables measured from the data sets of secondary source.

Table.03
Correlation Analyses

Variables	1	2	3	4	5	6	7	8
CD	1							
FS	0.007**	1						
LQ	-0.165*	-0.095*	1					
NTDS	0.101*	-0.174*	-0.138*	1				

PF	-0.046*	0.548*	0.186*	-0.085*	1			
TG	0.136*	-0.328*	0.117	0.497*	-0.243*	1		
TAX	0.55*	0.288*	0.030*	- 0.096*	0.366*	0.186*	1	
LEV	0.059*	0.153*	-0.700*	0.102*	-0.130*	-0.485*	0.004*	1

*. Correlation is significant at 0.05 level (02-tailed)
**. Correlation is significant at 0.01 levels (02-tailed)

The table shows correlation among determinants of capital structure. Correlation analyses revealed that cost of debt has positive significant relationship with firm size (0.007**, p<0.01) and firm size has significant negative relationship with liquidity (-0.095*, p<0.05). While liquidity has negative significant relationship with non debt tax shield (-0.138*, p<0.05) and non debt tax shield is is negatively significant related to profitability (-0.085<0.05). Profitability is negatively correlated with assets tangibility (-0.243*<0.05) and tangibility is positively correlated with taxes rates with (0.186*<0.05). Whereas taxes are significant positively correlated with leverage with 0.004 where p. value is 0.05.

Table: Regression Model Summery

R	R Square	Adjusted R Square	Std. Error of Estimates
0.693	0.480	0.447	0.72937

Table: ANOVA (b)

	Sum of Square	DF	Mean Square	F	Significance
Regression	53.607	07	7.658	14.396	0.000
Residual	57.986	109	0.586		
Total	111.596	116			

a. Predictor (Constant): Tax, LQ, PF,TG, CD, NTDS,FS
b. Dependent Variable: Leverage

Table: Regression Coefficients & their Significance

	Unstandardized Coefficients		Standardized Coefficients	t. Statistics	Sig
	Beta	**Std.Error**	**Beta**		
(Constant)	2.184	0.412		5.307	0.000
CD	-0.082	0.594	-0.010	-0.138	0.890
FS	0.018	0.022	0.063	0.792	0.430
LQ	-0.079	0.022	-0.288	-3.551	0.001
NTDS	-4.415	2.899	0.113	1.523	0.131
PF	-2.993	0.593	-3.82	-5.044	0.000
TG	0.989	0.187	-0.450	-5.301	0.000
TAX	0.158	0.80	-0.138	-1.967	0.052

The table shows regression analyses results and the R-square value (0.480) shows that seven variables i.e. asset tangibility, growth, firm size, profitability, non debt tax shield, taxes, cost of debt explains nearly 48% relationship. It means that capital structure choice and selection is 48% based on these variables in manufacturing sector of Pakistan. The figure is less than half statistically because of family ownership structure business is in Pakistan especially in manufacturing sector. So various agency issues and objectives influences such choice behaviors. Therefore, the figure is not more. While, te adjusted R-Square is below than the R-Square and model is fit, we can see from the value of F. statistics.

Table: Expected & Observed Relationships

Antecedents	Expected Relationship	Observed Relationship	Hypothesis Acceptance/Rejection
CD	Negative	Negative	Accepted
FS	Negative	Positive	Rejected
NDTS	Negative	Negative	Accepted
PF	Negative	Negative	Accepted
TG	Positive	Positive	Accepted
TAX	Positive	Positive	Accepted

Here in this table results are as per the correlation results and all hypotheses are accepted. Likewise, firm size is statistically significant at 0.01%. Past studies reveled it as negatively co integrated but is positively correlated upon to this data. So here hypothesis of firm size is rejected. While the results are up to the data of Shah & Hijazi, (2005) founded positive relation between size of the firm and leverage. While rest of the hypothesis are fully matched with observed constructs and therefore, all other hypothesis are accepted.

Conclusion

In this study the data of manufacturing industry of Pakistan is analyzed and all research hypotheses are accepted and found significant statistically except firm size. Therefore, firm size hypothesis is rejected. Hence, data suggest that firm leverage is strongly dependent upon asset tangibility, profitability, cost of debt, taxes and non debt tax shield except firm size. It states that manufacturing sector has some other behavioral point of decisions that influences. Hence it has rejected that static trade of theory that supports firm size with firm growth with partial assumptions and inversely supported pecking order theory.

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