

***Determinants of Capital Structure Decisions**

Case of Pakistani Government Owned and Private Firms

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Abstract

Capital structure decisions are among the most important and crucial decisions for any business because of their effect on value and cost of the company. In this paper we have discussed the determinants of capital structure of Pakistani firms .We selected a sample from Pakistani companies registered on Islamabad Stock Exchange. The sample is divided into two sub-samples of private and government owned companies to make comparison between both sectors. The sample comprised 91 Pakistani companies out of which 80 companies are private and 11 are government owned covering the period of 1999 – 2006. Tangibility, Size, Growth rate, Tax Provision, ROA and Profitability are used as independent variables, while Leverage is the dependent variable. For analysis purpose descriptive statistics, Spearman's correlation and Regression analysis are used. The Results imply that government owned and private companies of Pakistan use different patterns of financing, and that government owned companies employ more leverage than private companies.

1. Introduction

In one way or another, business activity must be financed. Without finance to support their fixed assets and working capital requirements, business could not exist. There are three primary sources of finance for companies:

- Cash surplus from operating activities.
- New equity funding.

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- Borrowing from bank and non- bank sources. Non- bank sources are mainly investors in capital markets who subscribe for bonds and other securities issued by companies.

By taking into account a company's particular circumstances, management should decide what is the most appropriate mix of internal and external funding, and of equity and debt, i.e. how the company should structure the necessary capital to finance its activities.

This study is important since it works on the following issues:

- Deciding the optimal capital structure for a company, over short – term and long – term planning periods.
- Ensuring that funds are always available to finance the company's growth and development.
- Deciding how much to borrow, who or where from, when, for how long, and in what currency.
- Ensuring that money will be available to meet loan repayment obligations, and that refinancing would be available if required.
- Helping the public and private companies of Pakistan to determine the appropriate mix of debt and equity in order to maximize its value and minimize its cost.
- Helping in identifying which sector is employing more debt.

Firms included in this sample are all those ones listed on Islamabad Stock Exchange (ISE). The firms are selected using convenience sampling. There are 241 firms listed on ISE. But, we have included only 91 firms in our sample study, covering the period of 8 years from 1999 – 2006. We have divided the sample of 91 firms into 11 government owned firms and 80 private firms.

2- Literature Review

Allan J. Taub (1975), attempted to examine the factors influencing the firm's choice of a debt- equity ratio. He dealt explicitly with the relationship between overall debt equity ratio of the firm and its choice of new financing. The variables were;

- a- the difference between the expected future return on firm's capital and pure rate of interest
- b- the uncertainty of the future earning of the firm
- c- the size of the firm
- d- tax rate
- e- Firm's period of solvency, and the debt equity ratio as dependent variable.

He investigated the relationship between variables for a total of 89 randomly chosen firms, for ten years. The 10 year observations were from 1960 – 1969. Two statistics were used: the likelihood- ratio and *t*- test. The empirical results show that differences between return to the firm and long term rate of interest and size had a positive influence on debt equity ratio. The uncertainty of the firm's earning had negative influence on debt equity ratio. Results for the remaining variables were less than satisfactory.

Fakher Buferna, Kenbata Bangassa & Lynn Hodgkinson (2005), provided evidence of the capital structure theories pertaining to developing countries and examined capital structure with reference to the Libyan business environment.

The dependent variable was leverage ratio and the independent variables were size, tangibility, growth opportunities and profitability. Their sample included 5 years data from 1995 – 1999 about 55 companies. The companies selected as a sample were from both public and private sectors. The sample consisted of thirty-two public companies, and twenty-three private companies. To test the relationships between the level of debt and their explanatory variables they used

ordinary least square regressions. The results indicated that private companies tended to have a higher average growth rate and tangible assets than public ones. The private companies had higher levels of short-term debt than public companies, meaning that private companies had higher average debt ratios than the public ones. The level of long-term debt was very similar for both private and public companies. The tangibility and growth variables had a positive correlation with short-term debt, and a negative correlation with long-term debt. Profitability and size had a negative correlation with short-term debt and total debt ratios. This implies that growing companies and companies with high levels of tangible assets tend to use short-term debt rather than long-term debt and large, and profitable companies tend to use less debt overall.

3- Methodology & Research Design

This paper extends the research made by others. The determinants of capital structure decision of the public and private sectors are identified. Comparison is made between both sectors to see which one employs more leverage and uses the same determinants of capital structure. Very little research has been done in the area of determinants of capital structure. Moreover, no research has been done before in Pakistan on basis of comparing both sectors. We are identifying the important determinants of capital structure decisions for both public and private sectors of Pakistani firms separately, narrowing down the scope to Islamabad Stock Exchange (ISE) for a period of eight years from 1999–2006.

3.1- Dependent Variables

1 - Debt to Equity Ratio as a proxy for Leverage (LG) of the firm.

3.2- Independent Variables

- 1- Tangibility of Assets (TG)
- 2- Profitability (PF)

- 3- Size of the Firm (SZ) taken as the natural logarithm of sales
- 4- Growth of the Firm (GT)
- 5- Tax Provision (TAX)
- 6- Return On Assets (ROA)

In this study we expect a positive relationship of Tangibility, Size and Tax rate with Leverage, and negative relationship of Growth, Profitability and ROA with Leverage. We provide in our design both descriptive and quantitative analyses.

For quantitative analysis we use two methods:

First: we use correlation to determine the degree of association between the different variables under consideration. Spearman correlation is calculated for all independent variables used in our study to see their association with our dependent variable. Second: we use regression analysis to measure more accurately the variable and their relation with dependent variable.

4- Discussion and Findings

4.1- Descriptive Data Analysis

Table 4.1
91 Pakistani Firms, 1999 – 2006, 728 firms – year observations

	N	Tangibility	Size	Growth	Profitability	Tax Provision	ROA	Leverage
Maximum	728	1.882	12.773	349.848	0.543	19943.600	120.900	340.159
Minimum	728	0.038	0.095	-100.000	-1.232	0.100	-123.200	-178.5
Mean	728	0.762	7.345	14.713	0.054	300.368	6.106	2.559
Median	728	0.738	7.287	8.267	0.048	15.100	5.500	1.371
S. D.	728	0.364	1.890	30.593	0.128	1631.931	13.447	21.094

The determinants of capital structure for private and Government owned firms are studied separately, through calculating Maximum, Minimum, average, median and standard deviation. Similarly the trends of different variables in both sectors are analyzed over the period of 8 years. For further analysis of each sector included in our sample study, graphs are used. Sector-wise analysis shows how each variable is performing during the period from 1999 – 2006.

This analysis will help in determining which sector is employing high level of leverage and which one is employing the least; the same is done for all other variables. The average of each variable for that period is obtained to show the overall picture.

Table 4.2
Spearman's Correlation Coefficients

91 Pakistani Firms, 1999 – 2006, 728 firms – years Observations

		Tangibility	Growth	Size	Profitability	Tax Rate	ROA	Leverage
Tangibility	Correlation Coeff.	1.000	-.250(**)	-.214(**)	-.155(**)	-.294(**)	-.166(**)	-.083(*)
	Sig. (1-tailed)	.	.000	.000	.000	.000	.000	.014
Growth	Correlation Coeff.		1.000	.183(**)	.320(**)	.302(**)	.320(**)	.155(**)
	Sig. (1-tailed)		.	.000	.000	.000	.000	.000
Size	Correlation Coeff.			1.000	.301(**)	.761(**)	.303(**)	.122(**)
	Sig. (1-tailed)			.	.000	.000	.000	.001
Profitability	Correlation Coeff.				1.000	.524(**)	.947(**)	-.190(**)
	Sig. (1-tailed)				.	.000	.000	.000
Tax Rate	Correlation Coeff.					1.000	.494(**)	.077(*)
	Sig. (1-tailed)					.	.000	.025
ROA	Correlation Coeff.						1.000	-.162(**)
	Sig. (1-tailed)						.	.000
Leverage	Correlation Coeff.							1.000
	Sig. (1-tailed)							.

* Correlation is significant at the 0.05 level (1-tailed).

** Correlation is significant at the 0.01 level (1-tailed).

4.2 Regression Analysis

For the purpose of identifying the important variables influencing our dependent variable the results of our regression model are shown below:

Table 4.3

Regression Analysis
91 Pakistani Firms, 1999 – 2006, 728 firms – years Observations
Dependent Variable: Leverage (LG)

Variables	Std. Error	Beta	t	P-value
(Constant)	4.587		2.216	.029
Tangibility	2.520	-.018	-4.46	.004
Growth	.030	.324	8.325	.000
Size	.515	.045	2.093	.034
Profitability	9.309	-.069	- 2.307	.022
Tax Provision	.001	.017	4.42	.007
ROA	.089	-.041	-3.073	.021

Other Statistics

R – Squared	0.264
Adjusted R- Squared	0.220
F – Statistics	12.831
Prob (F – Statistics)	0.000

5- Conclusion

The results suggest that asset tangibility (TG), Profitability (PF) and ROA is negatively correlated with debt. Where Size (SZ), Growth rate (GT) and Tax rate (TAX) is positively related with leveraged. On basis of the descriptive statistics

and Spearman's correlation analysis of government owned and private firms, we conclude that government owned companies in Pakistan employ more debt as compared to the private companies. On average, TG and GT of the Pakistani private companies are on the higher side relative to the government owned companies; where SZ, PF, TAX and ROA are on the higher side for government companies as compared to private companies. Moreover, we further conclude that while government owned companies' TG is positively correlated with leverage it is negatively correlated in private companies. But, GT is positively correlated for both in government owned and private companies. SZ is positively correlated with leverage in private companies and negatively correlated in government owned companies; however the relationship of size in government owned companies is not statistically significant which implies that SZ does not matter in the determination of capital structure of Pakistani government owned firms. Similarly in government owned companies PF is positively correlated where in private companies it is negatively correlated. TAX and ROA are positive for both private and government owned companies, but the relationship of ROA in private companies is not statistically significant which implies that ROA does not matter in determination of capital structure of Pakistani private firms.

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