

Full Length Research Paper

Cross-industry determinants of capital structure: Evidence from Pakistani data

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This study was conducted to know the factors that enhance the performance of Pakistani universities teachers. The objective of this study is to provide a roadmap for policy makers and human resource management executive to adopt such practices, which increase the performance of employee. Therefore participants of this study are both from public and private sector universities. Questionnaire was distributed among the 200 faculty members of different Pakistani universities. We received 173 questionnaires from our respondent. The response ratio of return questionnaire is 86%. This is sufficient sample size for our study. Simple correlation and regression tools were used for analysis of data. Our findings show that empowerment, work life policies, training and development and organizational citizenship behaviour (OCB) are important factors to enhance the performance of university teachers. It is recommended that managers to adopt HR practices for enhancement of teacher performance.

Key words: Empowerment, work life policies, training and development, organizational citizenship behaviour, employee performance.

INTRODUCTION

Selection of an optimal capital structure is always a critical issue for every firm. The reason for this importance is of course, financial risk and tax advantage which are directly influenced by company's choice of capital structure. Therefore, so many researchers investigated the relationship between capital structure and firm's value (Abor, 2007; Krishman and Moyer, 1997). Debate on capital structure started with the theory given by Modigliani and Miller (1958). According to them, if there is no bankruptcy cost and tax benefit, then firm's value would be independent of capital structure. But in reality, there is a tax benefit of debt and bankruptcy cost so, firm's value is affected by capital structure. This issue tends to an optimal capital structure (Kraus and Litzenberger, 1973; Kim, 1978). Under the "the trade-off theory of leverage," firms face trade-off between tax advantage of debt and its bankruptcy cost. Up to the point where marginal tax benefit is higher than marginal

bankruptcy cost, debt will increase the firm's value. But by increasing the amount of debt, marginal bankruptcy cost increases, and the point at which marginal cost equate the marginal tax benefit is called the point of optimal capital structure. According to pecking order theory, a firm does not follow the pattern of optimal capital structure. Infact, firms finance their business in the pattern of internal sources to external sources of finance (Myers and Majluf, 1984). Baxter (1967) gave the same concept as tradeoff theory. He argues that as the leverage of firm increases, firm's bankruptcy cost increases and creditors demand more risk premium. So, a firm must use the debt up to the level where this cost is lesser than tax advantage. From the last five decades, so many researchers explored this topic and found different factors that affect the capital structure decisions of firms. Titman and Wessels (1988) state that structure of assets, non-debt tax shields, growth, uniqueness, industry

classification, size, earnings volatility and profitability are determinant of capital structure. Harris and Raviv (1991) in their review article compare the different researches and found that leverage increases with fixed assets, non-debt tax shields, growth opportunities and firm size, and it decreases with volatility, advertising expenditure, R&D expenditures, profitability, uniqueness of the product and probability of bankruptcy. Bennett and Donnelly (1993) for nonfinancial firms found that non-debt tax shields, asset structure, size and profitability have strong impact of the firm's choice of capital structure. Literature suggested that debt requirement of a firm in one industry differ from the firm in other industry (Titman and Wessels, 1988). Bradley et al. (1984) empirically proved that there is a strong relationship among leverage and industry classification. Sinha (1993) stated that there is a strong inter-industry leverage variation in Indian firms. As the literature proves that the firms related to different industries shows different debt levels, this study will investigate if there is any difference in determinates of capital structure among different industries.

DATA AND RESEARCH DESIGN

Sample of our study includes firms from three different sectors (textile, energy and cement) that are listed on Karachi Stock Exchange (KSE). Data is collected from "financial statement analysis" issued by State bank of Pakistan. Sample consist of 199 firms (149 from textile, 23 from cement and 27 from energy sector) and total years of observation are five (2005 to 2009).

Variables

Leverage

In this study, leverage (Lvg) is taken as the measure of capital structure, which is a dependent variable. There are different approaches to measure this variable. One method is market value based and the second one is book value based. Consistent with previous study of Shah and Hijazi (2004) on Pakistani non financial firms, book measure is used in this study. Book value based method is useful in the way that tax advantage is calculated on book value bases (Banerjee et al., 2000). To measure this variable, ratio of total debts to the sum of debt and equity is used.

Profitability

Profitability (Prft) is another independent variable. To measure this variable, ratio of earnings before interest and taxes to total assets is used (Fama and French, 2002; Titman and Wessels, 1988). Literature showed both positive and negative relationship of profitability with leverage. According to Myers and Majluf (1984), a firm with more profits has an opportunity of internal finance so they may have less leverage. In consistence with most of the studies conducted in Pakistan, we expect profitability will decrease the leverage (Shah and Hijazi, 2004; Shah and Khan, 2007).

Growth

Second independent variable is growth (Grow). Firms in growth

phase need huge amount of finance so they would have higher leverage (Drobotz and Fix, 2003). A proxy variable of percentage change in total assets has been taken for showing the impact of this variable in the model. A positive correlation of growth and leverage is expected.

Non-debt tax shield

Non-debt tax shield (NDTS) includes tax advantages a firm received on some sort of investment. According to DeAngelo and Masulis (1980), non-debt tax shield is a source of tax advantage so it could substitute the interest expenses. So, non-debt tax shield could decrease the leverage of a firm. To measure this variable, depreciation to total assets ratio is used as a proxy variable because depreciation is the major source of non-debt tax shield. A negative correlation among NDTS and leverage is expected.

Size

Size is another prominent determinant of capital structure. Titman and Wessels' (1988) argue that large firms are more diversified so they have lesser bankruptcy cost that would increase the firm's capacity to take more debt. On the other hand, Rajan and Zingales (1995) stated that in case of large firms, there are less chances of asymmetrical information, so there are less chances of undervaluation of new equity so large firms will prefer to use equity. To measure the size, sales is considered a sound measure. So, the log of sales is taken to measure the size as used in some previous studies (Titman and Wessels, 1988; Whited, 1992; Rajan and Zingales, 1995). Size and leverage are expected to be negatively correlated.

Assets tangibility

Assets tangibility (Tang) is considered to have a great impact on leverage because a firm with more fixed assets has more chances to get loans because in case of default lender have a better opportunity to recover his amount (Jensen and Meckling, 1976). In case of default, lender has more chances to recover his amount by liquidating the assets. Fixed assets to total assets ratio has been taken as a proxy measure of assets tangibility.

Descriptive statistics

Table 1 shows descriptive statistics of the data. Statistics of three sectors have been presented separately in the table.

REGRESSION ANALYSIS AND RESULTS

To Identify the impact of independent variables on leverage regression analysis is used. We run separate regression for each of the sector in our study. Regression results of textile sector as shown in Table 2 suggests that profitability is negatively correlated with leverage and this relation is statistically significant as well. These results are consistent with previous researches in Pakistan (Shah and Hijazi, 2004; Shah and Khan, 2007). Size is also significantly negatively correlated with leverage. This thing proves the argument of Rajan and Zingales (1995) that large firms have less chances of undervaluation of

Table 1. Descriptive statistics for the firms from 2005 to 2009.

Sector	Statistic	Size	Lvrg	Prft	Grow	Tang	NTDS
Cement	Mean	3.1396	0.5590	0.0671	0.3603	0.6835	0.0412
	Std. Error of Mean	0.1093	0.0296	0.0115	0.0893	0.0233	0.0028
	Median	3.4658	0.5500	0.0472	0.1277	0.7557	0.0324
Power and energy	Mean	3.8051	0.5666	0.0987	0.4828	0.4374	0.0415
	Std. Error of Mean	0.1265	0.0263	0.0151	0.3287	0.0216	0.0028
	Median	4.3351	0.6418	0.0652	0.0915	0.4193	0.0325
Textile	Mean	2.7158	0.8460	0.0464	1.7698	0.5603	0.0426
	Std. Error of Mean	0.0381	0.0252	0.0103	1.2469	0.0076	0.0028
	Median	2.9388	0.7392	0.0475	0.0294	0.5878	0.0337

Table 2. Regression results of textile sector.

Variables	Unstandardized coefficients		Standardized coefficients	t	Sig.
	Beta	Std. Error	Beta		
(Constant)	1.381	0.086		15.983	0.00
Size	-0.243	0.022	-0.363	-11.205	0.00
Prft	-0.747	0.079	-0.306	-9.488	0.00
Grow	0.000	0.001	-0.011	-0.342	0.732
Tang	0.279	0.109	0.085	2.564	0.011
NTDS	0.12	0.298	0.013	0.404	0.686
R square			0.235		
Adj R square			0.230		
F Stat			45.194		
Prob of F			0.00		

new equity. So, large firms prefer equity instead of debt. Assets tangibility is significantly correlated with leverage. It proves that firm with more fixed assets have more chances to get loans because in case of default lender has a better opportunity to recover his amount (Jensen and Meckling, 1976). Non-debt tax shield is positively correlated with leverage but this relation is insignificant.

Growth shows almost no relation with leverage; these results contradict the Drobetz and Fix (2003) view that firms in growth phase needed huge amount of finance so they would have higher leverage.

By analyzing the regression results of cement sector (Table 3), profitability is again significantly negatively correlated with leverage these results are consistent with Hijazi and Tariq (2006) who find the same results for Pakistan cement industry. Size is positively but insignificantly correlated with leverage which is different from textile sector where size was negatively significantly correlated with leverage. Assets tangibility is positively significantly correlated with leverage. This time relation is significant at 1% level of significance which was in textile at 5%. Non-debt tax shields is significantly positively correlated with leverage which contradicts DeAngelo and

Masulis (1980) argument that non-debt tax shield is a source of tax advantage so it could substitute the interest expenses and decrease the leverage. As textile sector growth is again almost uncorrelated with leverage, these results contradict the results of Hijazi and Tariq (2006) for cement sector of Pakistan as they found a significant positive correlation among growth and leverage.

Analysis of power and energy sector (Table 4) shows that profit is again negatively significantly correlated with leverage as it was in textile and cement sector. Different from textile sector in power sector, size is significantly positively correlated with leverage which negates the argument of Rajan and Zingales (1995) that large firms have less chances of undervaluation of new equity. These results confirms the statement of Titman and Wessels' (1988) that large firms are more diversified so they have lesser bankruptcy cost that would increase the firm's capacity to take more debt. In power and energy sector, growth is significantly positively correlated with leverage which was almost uncorrelated in case of textile and cement sector. It is consistent with the statement that firms in growth phase needed huge amount of finance so they would have higher leverage (Drobetz and Fix, 2003).

Table 3. Regression results of cement sector.

Variables	Unstandardized coefficients		Standardized coefficients	t	Sig.
	Beta	Std. Error	Beta		
(Constant)	0.160	0.078		2.044	0.043
Size	0.032	0.024	0.136	1.308	0.193
Prft	-0.569	0.238	-0.201	-2.390	0.018
Grow	-0.003	0.030	-0.008	-0.092	0.927
Tang	0.337	0.115	0.267	2.924	0.004
NTDS	3.896	1.705	0.21	2.285	0.024
R square			0.224		
Adj R square			0.194		
F Stat			7.448		
Prob of F			0.00		

Table 4. Regression results of power and energy sector.

Variables	Unstandardized coefficients		Standardized coefficients	t	Sig.
	Beta	Std. Error	Beta		
(Constant)	0.054	0.08		0.675	0.501
Size	0.138	0.016	0.663	8.370	0.000
Prft	-0.908	0.138	-0.52	-6.575	0.000
Grow	0.013	0.006	0.168	2.413	0.017
Tang	0.161	0.089	0.132	1.802	0.074
NTDS	3.175	1.344	0.204	2.363	0.020
R square			0.398		
Adj R square			0.380		
F Stat			21.519		
Prob of F			0.00		

As other two sectors assets tangibility is significantly positively correlated with leverage, this time, it is at 10% level of significance which was at 1% in cement and at 5% in case of textile. Cement sector in power sector non-debt tax shield is significantly positively correlated with leverage which is in contradiction with the literature (DeAngelo and Masulis, 1980).

Conclusion

In this study, we take a sample of 199 firms (149 from textile, 23 from cement and 27 from energy sector) and total years of observation is five (2005 to 2009). Empirical analysis proved that profitability and assets tangibility are the most consistent determinants of capital structure in all the three sectors. This is consistent with Shah and Khan (2007) who found the same results for the panel data of non-financial sector of Pakistan. Significant negative relation of profitability with leverage is consistent with pecking order theory that firms with more profits have opportunity of internal finance so they have less leverage

(Myers and Majluf, 1984). These results are also consistent with Shah and Hijazi (2004) who analyzed non financial firms of Karachi Stock Exchange of Pakistan and found the same results for profitability. Significant positive correlation of assets tangibility with leverage confirms the argument of Jensen and Meckling (1976) that firms with more fixed assets could get more debt because in case of default, a lender has a chance to recover his amount by selling the assets. Size showed different results in different industry as it was significantly negatively correlated with leverage in textile industry, positively in case of power industry, insignificantly positive in cement industry. Growth does not show any relation with leverage in textile and cement industry but it is significantly positively correlated with leverage in power industry and confirms the statement of Drobetz and Fix (2003) that firms in growth phase need more funds so would have more leverage. These results of growth contradict the results of Shah and Hijazi (2004) who empirically proved a significant negative relation among growth and leverage. Non-debt tax shield does not confirm DeAngelo and Masulis (1980) who argue that

non-debt tax shield is a source of tax advantage so it could substitute the interest expenses. So, non-debt tax shield could decrease the leverage of a firm as empirical results are showing positive relation among non-debt tax shield and leverage. The study of three different sectors provided the evidences that determinants of capital structure are different across the industries. The reason for this is because in the environment, business risk varies across the industries.

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