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The Effect of Firm Specific Factors on Capital Structure Decision: Evidence Frompower and Energy Sector of Pakistan

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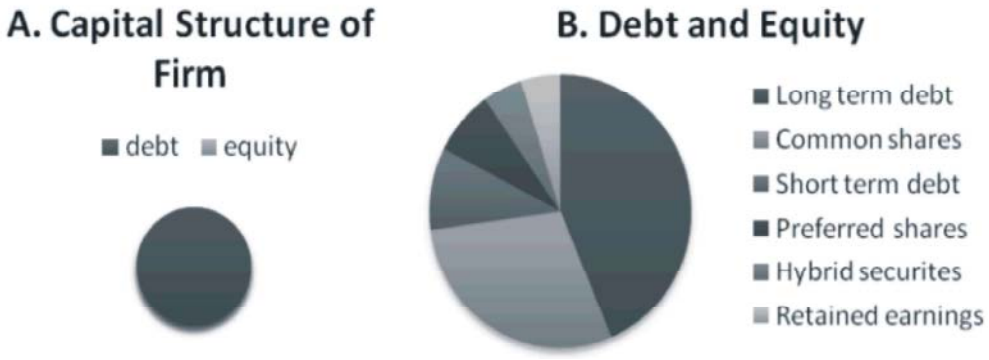
Abstract: This study investigates the effect of firm specific factors on capital structure decision (leverage)for a sample of 19 firms of power and energy sector of Pakistan. The secondary data is extracted from the "Balance sheet analysis" for the period of 2001-2012 of the 19 firms which are listed on Karachi stock exchange. Generalized least square method, correlation analysis are employed on panel data and results revealed that profitability having negative and significant relationship with leverage while tangibility positively related with leverage but not significant. Firm size and firm growth both are also positively related with leverage and also significant.Our results also show that large firms do long term financing through debt as compare to small firms of power and energy sector.

Key words: Profitability · Firm size · Firm growth · Leverage · Pakistan

INTRODUCTION

The several financing decisions have a vital and crucial role in the *financial welfare/well-being* of a business. Capital structure includes issuance of debt, equity and hybrid securities in a manner to finance its assets, organized operations and expected growth. Company obtains equity from issuance of common stock, preferred stock and retained earnings while debt is classified into two categories. First, long term debts which are debentures, bonds and long term note payable. Second, short term debts which are short term bank loans and short term account payable etc. firms may issue hybrid securities which have characteristics of both debt and equity. Capital structure is a mix of debt and equity as shown in following figure:



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There is a significant influence of capital structure of a firm on its profitability and stability. An inaccurate decision regarding the capital structure of a firm may result in financial distress and bankruptcy. To maximize the firm's value the management of that firm is to set its capital structure in an appropriate way. However, the firms select different financial leverage levels in their *exertion/struggle* to achieve an optimum capital structure. Even though the empirical and theoretical research points out that there is an optimal capital structure, there is no particular/certain methodology, yet, which can be used by financial managers to attain an optimum debt level. However, financial theories help in understanding the affects of financial mix on value of firm.

Objectives of the Study:

- Find the effect of firm specific factors on capital structure decision (leverage) in power and energy sector of Pakistan.
- Find the most important and significant factors/determinants which relate to leverage in power and energy sector of Pakistan.

This study will try to answer the following questions. What type of capital structure is adopted by power and energy sector of Pakistan? What are the determinants of capital structure in this sector?

Literature Review

Theoretical Justification: In the contemporary corporate finance, theory presented by Modigliani and Miller (M and M) is viewed as basic corporate structure model. By examining the impact of capital structure on the value of firm, Modigliani and Miller presented "Capital Irrelevance Theory". They developed the foundation to think about the capital structure. They proposed that firm's capital structure is not influenced by issuing stock or selling debt rather cost of capital remains fixed and constant. In other words, the organization's value is not influenced by selected capital structure under perfect market [1].

According to Trade-off theory presented by [2], after viewing the environment and requirements of a business the firm should set and interpret the target the ratio of debt and equity. This theory proposed that debt financing offers are more beneficial than equity financing offerings to an organization as it receives tax sheild on interest paid on equity whereas tax is charged on equity income.

The Pecking Order theory (POT) which was *generated/created* by [3] suggests that most of the organizations do not feel comfortable and easy while issuing equity due to disagreeable problem of issuance. According to this theory, specific hierarchy should b followed by the firm for financing its assets. Preliminary, the fims makes use of internally generated fund such as retained earnings and afterwards debts. In the case of more requirement of funds, assets are financed by equity.

Jensen and Meckling [4] were introducing the Agency theory. Agency theory described that shareholders give all the authority to the manager to organize the firm in a way by which shareholder's wealth and firm's welfare should be maximum.The amount used by the firms on techniques to arrange management objectives with organization objectives in a right position that it maximize the shareholders' wealth is termed as agency cost. Two main sources of agency costs are separation of ownership fron management and cost related with using agents. An agency problem occurs in separation of ownership from management that is conflict between shareholders and managers. The conflict is that instead of increasing the worth and wealth of shareholders, the managers will use resources of organization for their own benefits.

M. Jensen [5] gave the free cash flow theoryto limit the managerial decision. He explained free cash flow is the amount of cash available after financing it to the all projects which can be further more invest into those projects which are treated as problem. This theory also tells that debt reduces the free cash flows because firm should have to pay principal amount and interest to their shareholders. Moreover, stakeholders can be able to get more dividends which bound and reduce the skill of the managers to pursue profligate activities.

Empirical Justification: Research related to the capital structure is very limited in Pakistani context. Only few studies are conducted on determinants of capital structure on non-financial firm's e.g[6] and[7]. Shah and Hijazi [6] found the positive relationship between tangibility and capital structure while firm growth is negatively related to the capital structure but not statistically significant.They also explained very weak and insignificant relationship between firm size and capital structure. Moreover, non-tax shield and earning volatility showed negative relationship with capital structure. They also found no relationship between tangibility and leverage but there is negative relationship exist between growth and profitability.

Ilyas[7] conducted research on capital structure and elaborate that profitability, firm size and growth having negative relationship with leverage. He also found positive relationship between non-debt tax shield and leverage but capital structure have negative relationship with leverage.

Rafiq *et al.* [8] conducted research on determinants of capital structure in chemical sector of Pakistan. They used panel data for the period of 12 years from 1993 to 2004.They found that profitability, non-debt tax shield, firm size, income variations and growth are the significant determinants of capital structure in chemical sector of Pakistan.

Cheema *et al.* [9] conducted research on Pakistani corporate growth history and explained the financial market and ownership and its changing aspects. They explained the ownership structure of top 40 listed companies of Pakistan. They concluded that most of the companies are family owned businesses which are following the state and affiliates with multinationals [9], [10] and [11]. This type of ownership concentration, on one hand provides external finance to the financial markets and on the other hand encourages firms to rely on retained earnings and debt from informal sector [12].

Both energy and chemical sectors are relying on external financing by issuing equity and short term debt. Booth *et al.* [13] explained in their research that people are relying more on short term financing rather than long term financing in developing countries especially in Pakistan.

In pakistan, there have been lot of research and study to explore the determinants of capital structure of non-financial firms of pakistan. However, to the best of author's enlightenment, no particular research has been conducted trageting power and energy sector of pakistan. In all sectors of pakistan, there is a need of special attention to be given in the disasterous economy of Pakistan. Hence, this study aims at investigation of determinants of capital structure of power and energy sector of pakistan for the period of 12 years from 2001 to 2012.

Hypothesis of the Study: The following hypothesis are developed on the bases of relevent different theories and past studies.

H1: There is negative and significant relationhsip between profitability and leverage.

H2: There is positive and significant relationhsip between tangibility and leverage.

Table 1: Sampling

Years	Industry	Frequency (Firms)	Observations
2001 to 2012	Power and Energy	19	1140

H3: There is positive and significant relationhsip between firm size and leverage.

H4: There is positive and significant relationhsip between firm growth and leverage.

Data and Methodology of the Study: Most of the finance studies used the bebt and equity ratios depend on the different charachteristics of the industry which is being taken. In this study secondary data is used which is extracted from the "Balance Sheet Analysis"is annualy published by the State bank of Pakistan. The sample consisted of 19 firms of power and energy sector of pakistan and these all non financial firms are listed on Karachi Stock Exchange. By using Pannel data in Eviews 6.0 for the year 2001 to 2012, pooled regression analysis and corelation analysis are employed to check the effect of firm specific factors on capital structure decision (leverage) in power and energy sector of Pakistan.The issue of multicollinearity is also addressed in this study.

Firm Specific Factors-Determinants of Capital Structure: Every kind of business enterprise whether small, medium or big needs finance and capital resources for continuous his operations. These types of financial resources could be owned self and borrowed in term of debt from different creditors. Capital structure of any firmis based on definite characteristics or cost and benefit analysis of equity or debt [14].

Different studies related to determinants of capital structure have been conducted in the past but only few studies conducted on non-financial firms. This study will check the effect of firm specific factors on capital structure decision.

Dependent and Independent Variables: Firm specific factors or determinants of capital structure can be classified in to dependent and independent variables. Leverage used as dependent variables related to debt and equity. Profitability, tenability, size and growth are used as independent variables.

Leverage: The basic purpose of every business entity is to maximum his profit. So every finance manager of any firm should take the responsibility to maximize the wealth of his stake holders. Only the efficient manager can

achieve his goals after encountering tough spots and well decision making. Every organization has to rely on mix debt and equity referred to as leverage. In this study leverage (gearing ratio) is taken as dependent variables which is calculated through debt to equity ratio.

Profitability: Pecking order theory suggests that profitable firms will finance their internal resources rather than external ones. Hence, theseprofitable firms hold less debt because they are able to produce efficient funds through internal resources for satisfy cost of project and other expenditures that shows the negative relationship between profitability and leverage. But some studies show the positive relationships between profitability and leverage like [15], [16], [17], [18] and [19]. In this study we measure profitability as net income divided by total assets.

Tangibility: The firm which has owned more fixed assets can easily attain external finance at a very less cost since it uses assets to secure debt [15],[20] and [21]. Rajan and Zingales [15] found positive relationship between tangibility and leverage. While pecking order theory suggests that the firms which have low level of fixed assets face problems and pushing them to increase more debt rather than equity. In this study tangibility is calculated through net fixed assets dividing by total assets.

Size: There are two contradictory theories present in literature related to firm size and leverage. Many researchers e.g.[15], [22] and [23] and bankcruptacy cost theory explained that there is positive relationship between size of firm and leverage. Larger firms can easily access to capital market, gain high credit rating in term of debt issuance and pay low rate of interest on debt [24]. On other hand, some researcher found negative relationship between firm size and leverage e.g [25], [21] and [26]. In this study firm size is calculated by taking log of sales.

Growth: There is also some contradictory theories exist in the literature for expressing the relationship between growth and leverage. One theory explained that the firms which having more growth opportunity have less leverage because these firms avoids assets substitutes and under investment that can arise stakeholders agency conflicts [27]. The reasons behind this the firms have enough resources to meet their operations have not sound grounds to take debt from creditors while on other hand higher growth rate need more demands of fund. In this study growth is measured by taking annual percentage change in total assets.

Econometric Model: Pooled regression analysis is regressed on dependent variable leverage and explanatory variables profitability, tangibility, firm size and firm growth.

Therefore, equation for regression model is following,

$$LG = \beta 0 + \beta_1 (Prof) + \beta_2 (Tang) + \beta_3 (FS) + \beta_4 (FG) + \varepsilon$$

Where,
LG = Leverage
Prof = Profitability
Tang = Tangibility
SZ= Firm Size
Gr = Firm Growth

RESULTS AND DISCUSSION

Interpretations: Table 2 shows the result of pooled regression analysis. Due to the panel data GLS method is used to avoid the heteroscedasticity issue. Adjusted R square is. 6921 which means that there is 69.21% variation in leverage(dependent variable). So, it means that the choice of firm specific capital structure is defined by four independent variables particularly more explained by two variables profitability and firm size.

Table 3 presents the result of hypothesisthat we have tested. Out of 4 independent variables 3 variables are statistically significant with leverage. Tangibility and growth are both positively related with leverage.

Table 4 shows the correlation matrix of variables which explain the presence of multicollinearity between independent variables. The highest correlation exists between profitability and leverage which is negative 53%. The second highest correlation 49% exists between tangibility and leverage. There is weak negative relationship between size and leverage.

Hypothesis Testing and Discussion: Profitability having negative relationship with leverage ($\beta_{1=}$-0.197529) but it is statistically significant (.01<p=.05) at. 05% level. So our research hypothesis H_1 is accepted, “There is negative and significant relationship between profitability and leverage”. Thus, profitability depends upon leverage.

Table 2: Results of Regression Results

Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.672319	0.338230	-1.113351	0.0511
Profitability	-0.197529	0.065156	-2.235143	0.0128
Tangibility	-0.303535	0.026812	-2.612398	0.1469
Size	0.331987	0.012412	1.312178	0.0012
Growth	0.135605	0.231213	0.216111	0.0423
Weighted Statistics				
R-squared	0.747199	Mean dependent var		0.490432
Adjusted R-squared	0.692173	S.D. dependent var		0.402172
S.E. of regression	0.143381	Sum squared resid		1.311222
F-statistic	24.03211	Durbin-Watson		1.412346
Prob.	0.000000			
Unweighted Statistics				
R-squared	0.689832	Mean dependent var		0.239876
Sum squared resid	1.429087	Durbin-Watson stat		1.308765

Table 3: Expected and Observed Results

Determinants	Proxy/Measure	Expected relationship with Leverage	Observed Relationship
Profitability (Prof)	Net Income/Total Assets	Negative	Negative[2]
Tangibility (Tang)	Net fixed Assets/Total Assets	Positive	Positive
Firm Size (FS)	Log of Sales	Positive	Negative[1]
Firm Growth (FM)	Annual %age change in Total Assets	Positive	Positive[2]

1-significant at. 01% level

2-significant at. 05% level

Table 4: Correlation Matrix of Independent Variables

	Leverage	Profitability	Tangibility	Size	Growth
Leverage	1.000000				
Profitability	-0.530588	1.000000			
Tangibility	0.493243	0.137532	1.000000		
Size	-0.057011	0.134711	-0.312730	1.000000	
Growth	0.231221	0.158192	-0.408941	0.01101 9	1.000000

Tangibility is negatively correlated with leverage ($\beta_{2=}$-0.303535) but it is not statistically significant (.15>p) under any three level of significant. 01%,. 05% or. 1%. So our research hypothesis H_2 is rejected, "There is positiveand significant relationship between tangibility and leverage". So our result does not favor the tradeoff theory offered by [4] and [2] that debt tend to increase fixed assets of the firms.

Firm size is positively correlated with the leverage ($\beta_{3=}$0.331987) and it is also statistically significant with leverage (.000<p=.01) at. 01% level. So our research hypothesis H_3 is accepted, "There is positive and significant relationship between firm size and leverage". So the results of Power and energy sector proves the tradeoff static approach that the firms which have larger size, their credit rating will improve, their chance of bankruptcy will reduce and their leverage ratio will high supported by [21], [24],[6] and[23].

Firm growth is positively related with leverage ($\beta_{4=}$0.135605) and it is also statistically significant with leverage (.04<p=.05) at. 05% level. Hence, our research hypothesis is accepted, "There is positive and significant relationship between firm growth and leverage". This proves that the growth of firms is very high in power and energy sector of Pakistan and they used more debt for financing new product instead of equity. The only reason is that the firms need more cash flow for growing and they have to rely on debt because they do not able to meet their financing through internal resources.While on the other side negative relationship is found by [6].

CONCLUSION

This study has examined the effect of firm specific factors on capital structure decision (leverage) of 19 firms of power and energy sector of Pakistan by applying GLS method on panel data for the period 2001-2012. We found that there characteristics profitability firm size and firm growth are statistically significant with leverage in power and energy sector of Pakistan. Profitability is negatively related with leverage while tangibility, firm size and growth are positively related with leverage. The results of this study justify the static trade off theory which expects the positive relationship between firm size and leverage.

This study investigate that, in power and energy sector, large firms do more financing through debt as the small firms do. The rate of growth of assets ishigh because all assets are financed by debt. One of the major reasons is that, more growth of assets needs more cash flow so firms cannot meet their financing through only internal resources so firms borrow. Out of four hypotheses, our three hypotheses are accepted. Profitability, firm size and firm growth ishaving positive and significant relationship with leverage while tangibility is positive related with leverage but insignificant.

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