Determinants of Capital Structure – A Study of Oil and Gas Sector of Pakistan

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Abstract
Capital structure decisions have been the most significant decisions to be taken by the finance experts in a corporate sector organization. The study intends to analyze the effect of profitability, tangibility, size and liquidity on capital structure decisions of the listed companies in oil and gas sector of Pakistan. The study attempts to provide information that may help in taking capital structure decisions in listed companies of oil and gas sector of Pakistan, which will ultimately support in maximization of the value of firms on the one side and the minimization of cost of capital on the other side. The results indicated that profitability is the only variable that showed negative relationship against the dependent variable leverage, whereas the other three variables, liquidity, size and tangibility have positive relationship with leverage. The study concludes that capital structure decisions in listed oil and gas sector companies are mostly determined by the factors studies. The study substantiates the findings of most of the researches conducted on capital structure, concluding that there is an optimal capital structure that is affected by a variety of internal and external factors.

Keywords: Profitability, Liquidity, Size, Tangibility, Liquidity

1. Introduction
Capital structure decisions have been the most significant decisions to be taken by the finance experts in a corporate sector organization, since it carry a crucial impact on the overall cost of capital in terms of weighted average and the resultant market value of the shares. The capital structure theories have been comparing the effects of sources of finance, tax advantages associated to leverages, and the investors’ required rate of return on the overall cost of capital and the resultant returns to investors. Most of the researches conducted on capital structure concluded that there is an optimal capital structure that is affected by a variety of internal and external factors. These factors usually differ from country to country, and even from industry to industry within the same country. Most significant of these include taxes, state of industry, macroeconomic indicators, financial, social, legal and managerial factors. This study takes into consideration the effect of financial factors on capital structure decisions, therefore the study attempts to explain the triangular relation among the overall cost of capital, the source of capital, and the value of firm. The study takes Oil and Gas sector of Pakistan to determine the factors affecting the capital structure decisions of the companies taken into consideration.

1.1 Objective of the Study
The study intends to analyze the effect of profitability, tangibility, size and liquidity on capital structure decisions of the listed companies in oil and gas sector of Pakistan.

1.2 Research Question
To what extent profitability, tangibility, size and liquidity affect the capital structure decisions of the listed companies in oil and gas sector companies of Pakistan?
1.3 Significance of the Study

The emerging economy of Pakistan needs special attention to be given to all sectors in all perspectives. Hence this study attempts to provide information that may help in taking capital structure decisions in listed companies of oil and gas sector of Pakistan, which will ultimately support in maximization of the value of firms on the one side and the minimization of cost of capital on the other side. This will make the oil and gas sector of Pakistan an attractive investment that will ensure the growth of the sector in itself and the resultant growth of economy.

2. Literature Review

Capital structure decisions have a crucial impact on the weighted average cost of capital and the market value of the companies (Shah & Khan, 2007). Various studies have been comparing the effects different factors on the overall cost of capital and the resultant returns to investors (Myers & Stewart, 1984). Most of the studies have evaluated the capital structure theories and found that the fewer of the theories have much advocacy (Frank & Goyal 2009). It has been found that the firms in their initial years rely more on debt financing than on equity financing (Robb & Robinson, 2010). Moreover the capital structure decisions of private firms are significantly different as against the public firms, as the private firms have been found to be relying more on debt financing. (Brav, 2009). The choice of capital structure also varies from country to country basis, (Muzir, 2011) and it also varies from industry to industry basis, even in the same country. The factors exclusively affecting the choice of capital includes taxes, solvency risk, assets’ classification, financial costs, macroeconomic indicators, state of industry, financial limitations, social and cultural issues, legal issues, behavioral and agency aspects (Leland 1998, Berger, Ofer & Yermack, 1997), size of firms, tangibility, profitability, hedging prospects (Graham and Rogers, 2002). Tax benefit on debt financing has been the most significant determinant of capital structure (Modigliani and Miller, 1963). Moreover debt financing is also considered as an indication of firm’s quality (Ross, 1977). On the other side, more leveraged firms have more tendency to face bankruptcy (Altman, 1984) and financial distress (Opler and Titman, 1994), thus it make the debt financing a lesser attractive option to generate funds. The optimal capital for a firm is usually achieved when the financial benefits of debt financing exceed the financial costs of debt charged by debt providers (Myers & Majluf, 1984). The companies adjust their capital structures depending on the surplus or deficit they are facing, keeping in view cost of funds and the resultant returns (Byoun, 2008). The liquidity of a company and its effect on optimal capital structure has been showing various trends. It has been found that liquidity of assets has both positive (Williamson 1988, Shleifer & Vishny 1992) and negative (Morellec, 2001& Myers and Rajan, 1998) effects on leverage. There are strong evidences of sizeable and substantial costs of distress in relation to changes in leverage and the associated cost and benefits of the leverage (Sibilkov2009). The interacting effect of capital structure and profitability cannot be overlooked, since the capital structure decisions alters the returns of the firms and the ability of firm to interact with the competitive environment. This entails the need to improve the profitability for the long term survival of the firm (Gill, Biger & Mathur 2011). Studies have also found the association between incentive conflicts among firms and their creditors in relation to their debt financing decisions (Roberts & Sufi, 2009). There are evidences that debt financing has been changing as per the market trends of debt issues in terms of hot debt market and cold debt market (Doukas, Guo & Zhou 2011).

3. Research Methodology

3.1 Hypotheses

On the basis of the review of literature above following hypotheses have been developed

H1: Firms with lower profitability will have higher debt financing ceteris paribus
H2: Higher liquidity leads to more usage of debt financing ceteris paribus
H3: Higher sized companies tend to more rely on debt financing ceteris paribus
H4: Higher tangibility leads to higher debt financing ceteris paribus
3.2 Population & Sampling
The population of the study is listed oil and gas sector companies of Pakistan. Convenience sampling technique has been used to identify and select the 5 oil and gas sector companies for which data were available for the period of study. The companies include Pakistan State Oil, Shell Pakistan, Attock Petroleum, Sui Northern Gas, Sui Southern Gas.

3.3 Data Collection
The data collected for this study was taken from annual reports of the selected companies. The data has been taken from year 2005 to 2010.

3.4 Variables of the Study
3.4.1 Independent Variables
PF = Profitability of firms
CR = Current ratio
SZ = Firm size
TN = Tangibility of firms

3.4.2 Dependent Variable
LG = Leverage of firms

4. Data Analysis
Panel data analysis is used to generalize the results (Eriotis, Vasiliou & Neokosmidis 2007). It enables the researcher to consider the effects of such data to estimate the results. Pooled least square is used to estimate the association between the studied variables. The following model is thus developed for testing.

\[ L_{Gi,t} = \beta_0 + \beta_1PF_{i,t} + \beta_2CR_{i,t} + \beta_3SZ_{i,t} + \beta_4TN_{i,t} + \epsilon \]

Where:
\( L_{Gi,t} \) = the leverage of the firm i at time t
\( PF_{i,t} \) = profitability of the firm i at time t
\( CR_{i,t} \) = current ratio of firm I at time t
\( SZ_{i,t} \) = the size of the firm i at time t
\( TN_{i,t} \) = tangibility of the firm i at time t

The results are shown in Table I below:
The results provided by Table I below provide us with useful insights regarding the theoretical model and can be expressed as:

\[ LG = 0.17 - 0.46*PF + 0.02*CR + 0.09*SZ + 0.14*TN + \epsilon \]

All the variables proved to be significant, three are significant at five percent confidence level, and only one variable is significant at ten percent. The value of F-statistic is significant thus it shows reliability of the model. Adjusted R² shows that the independent variables explain the 0.53 of the leverage. R² shows overall model perfectness, it explains that almost 61% of the variation in the leverage is due to changes in the explanatory variables. The remaining 39% variation is owing to the unknown variables. Durbin-Watson stat is 1.50319, that shows the positive correlation and predicts that there is no alarming situation in the model due to errors. Profitability, with coefficient of -0.4639 is significant at 5% level. It has second highest t-statistics of -2.4885. The negative sign and the significant statistics show that the profitability is a major determinant of leverage in oil and gas sector of Pakistan. The results substantiate the acceptance of H1. Current ratio, with coefficient of 0.0157 is significant at 5% level. It has t-statistics of 2.623. The positive sign and the significant statistics show that the liquidity is a determinant of leverage in oil and gas sector of Pakistan.
sector of Pakistan. The results substantiate the acceptance of H2. Size, with coefficient of 0.089 is significant at 5% level. It has the t-value 2.194. It shows that size is one of the determinants of leverage in oil and gas sector of Pakistan. Thus H3 is confirmed as shown by the statistics. Tangibility, with coefficient of 0.144 is significant at 10% level. It has the t-value 1.955. It shows that tangibility is one of the important determinants of leverage in oil and gas sector of Pakistan. The results substantiate the acceptance of H4.

Table I

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.171070</td>
<td>0.321745</td>
<td>0.531695</td>
<td>0.5998</td>
</tr>
<tr>
<td>PF</td>
<td>-0.463997</td>
<td>0.186426</td>
<td>-2.488910</td>
<td>0.0201</td>
</tr>
<tr>
<td>CR</td>
<td>0.015759</td>
<td>0.006006</td>
<td>2.623750</td>
<td>0.0149</td>
</tr>
<tr>
<td>SZ</td>
<td>0.089706</td>
<td>0.040887</td>
<td>2.194009</td>
<td>0.0382</td>
</tr>
<tr>
<td>TN</td>
<td>0.144238</td>
<td>0.073741</td>
<td>1.955994</td>
<td>0.0622</td>
</tr>
</tbody>
</table>

R-squared 0.614766
Adjusted R-squared 0.534509
S.E. of regression 0.069844
Log likelihood 40.62383
Durbin-Watson stat 1.503193

5. Conclusion

The study determines that almost 61% of the variation in the leverage is due to changes in the explanatory variables, in listed oil and gas sector companies. The remaining 39% variation is owing to the unknown variables. Profitability is the only variable that showed negative relationship against the dependent variable leverage, whereas the other three variables, liquidity, size and tangibility have positive relationship with leverage. The study concludes that capital structure decisions in listed oil and gas sector companies are mostly determined by four factors i.e. profitability, liquidity, size and tangibility of the companies. These factors have a crucial impact on capital structure decisions which affects the overall cost of capital in terms of weighted average and the resultant market value of the shares. The study substantiates the findings of most of the researches conducted on capital structure, concluding that there is an optimal capital structure that is affected by a variety of internal and external factors.
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