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Capital Structure as Driving Force of Financial Performance: Case of Energy and Fuel Sector of Pakistan

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Abstract

Choosing the appropriate mix of various short and long-term sources of funds, stands among

the acute decisions to be taken by management of the firms to form elementary suitability for investment and other decisions. Literature is lacking in consensus pertinent to impact of capital structure on financial performance of the firms. This study intends to investigate the impact of capital structure on financial performance of fuel and energy sector of Pakistan taking into account secondary data from 2006-14. Empirical results of renowned econometric model multiple regression revealed that there is a significant negative impact of capital structure on ROA and ROE of firms in fuel & energy sector of Pakistan, while EPS is least driven by capital structure parameters, only the size has significant positive bearing on EPS. The research findings provide suggestions to policy makers and administrators to rely on equity financing rather debt ethos in order to mitigate the default risk exposure.

Keywords: Capital structure, Financial performance, Multiple regression, Return on assets, Return on equity, Earnings per share

1. Introduction

1.1 Background

Choosing the appropriate mix of various sources of short and long term funds, is among one of the critical decision needs to be taken by governing body of an organization. Financing decision serves as basis for investment decision and firm's financial performance is greatly affected by the proposition of financing mix. The mix of long-term financing termed as Capital structure that got great importance after the seminal views of Miller and Modigliani (MM). Prior to this study, organizations usually depend upon sole source of financing but paradigm has shifted towards the appropriate combination of both the equity and debt capital as each bears varying cost of acquiring and other considerations. Debt financing though least costly because of tax exemption but subject to some obtaining constraints as well as expose unit to default risk. Equity financing at other end is most relying source with high service charges than debt, while creating challenges to administration due to voting rights, residual claims and proxy fights.

Capital structure implies propositional bearing on firm's financial performance of decision-making units. Including debt as major part, magnify financial performance while equity enhances solvency although it is comparatively costly. Cost reduction and assurance of appropriate solvency have always been the key challenges to the organizations. Considering this phenomena the study aims at exploring the magnitude by which capital structure drives the financial performance.

The results of the study will extend the literature and expected to provide insight to many organizations in developing their best fitted capital structures policies. Furthermore, the study will assist the researchers and interested students in understanding the relationship of capital structure with financial performance.

This study intends to investigate the impact of capital structure on financial performance of fuel and energy sector of Pakistan.

2. Literature Review

The roots of capital structure theory refers to more than fifty decades back, since the seminal work which presented by Modigliani and Miller (1958). They proved, under restrictive assumptions (no taxes and transactions costs) that cost of capital does not effect on capital structure, particularly debt then not effect on firm value where this theory called irrelevancy preposition. In other words, the value of levered firm equals the value of unlevered firm. Latterly Modigliani and Miller (1963) came with a new proof that cost of capital do effect on any firms capital structure and therefor effect on the value of firm with assumption that borrowing gives tax advantages. According to Brigham and Daves (2012) capital structure is a way through which a firm finances its operations.

Holz (2002) examined that capital structure positively correlated with firm performance. Berger and Patti (2002) concluded that the better a company's operating performance the higher the debt equity. Dessi and Robertson (2003) highlighted that financial leverage results positively on the expected performance. They explained this result to that low growth firms tries to depend on borrowing for utilizing expected growth opportunities and investing borrowing money at the profitable projects. Mwangi (2010) proposed that there is a strong positive relationship between leverage and ROE, liquidity, and return on investment. Nirajini and Priya (2013) claimed that there is a significant positive relationship between capital structure and financial performance.

Gleason, Mathur and Mathur (2000) came with the results that capital structure is negatively co-related with financial performance. Majumdar and Ghosh (2007) reached the conclusion that level debt (capital structure) affects negatively on firms performance. They describe that creditor impose restrictions on firm as in distributing earnings among shareholders or increasing interest rates imposing sufficient collaterals on loans, thus these restrictions will lead firm to focus on how pay the burden of debt concerning in achieving earning and reflect adversely on firm performance. Abor (2005) pointed that long-term debt associated negatively and statistically with firm performance. The conclusion refers to that firms rely on borrowing extremely, it will not achieve tax shields and then it lead to increase borrowing cost of which the firm exposes to the bankruptcy risks and reduce the return. Zaitun and Tian (2007) explored that capital structure puts negative impact of any firm's financial performance and if any firm underestimates to bankruptcy cost then it will force the firm to borrow excessively and carry high debt in their capital structure. Ebaid (2009) deduced by using regression model taking ROA, ROE, GPM as dependent proxies that capital structure is negatively correlated with financial performance.

Azhagaiah and Gavoury (2011) narrated that too much debt in capital structure may result in high gearing ratio, high risk of bankruptcy and may be worse for profit. Salim and Yadav (2012) investigated by using multiple regression model that capital structure has a significant negative relationship with financial performance. Marobhe (2014) narrates through using regression model that there is a significant negative relation between capital structure and ROA and weak relation with ROE and EPS. Mwangi, Makau and Kosimbei (2014) examined that increased leverage results negatively in financial performance by using ROE as an

accounting measure.

McConnell and Servaes (1995) reached at a decision that capital structure has a negative co-relation with the performance of high growth firms while positive relationship with low growth firms. Weill (2008) tested financial leverage's effect on financial performance in seven countries of Europe. He investigated that in Spain and Italy financial leverage has a significant positive relation with financial performance while in Germany, France, Balgium, and Norway is negatively co-related. Cheng, Liu and Chien (2010) suggested that when debt ratio in capital structure is 53% to 70%, it puts positive impact on financial performance but more than 70% contribution of debt relates capital structure with performance negatively. After a long time, Li et al. (2008) reached at a decision that financial leverage has negative impact on return on assets and positive on return on equity.

Thus we conclude that literature is contradicting and more evidence are desirable at this proposition of capital structure and its bearings upon financial performance of manufacturing sector of Pakistan.

3. Methodology

3.1 Model of the Study

$$ROA= \beta_0 + \beta_1 LTD + \beta_2 T + \beta_3 S + \beta_4 TD + \beta_5 STD + €$$

$$ROE= \beta_0 + \beta_1 LTD + \beta_2 T + \beta_3 S + \beta_4 TD + \beta_5 STD + €$$

$$EPS=\beta_0 + \beta_1 LTD + \beta_2 T + \beta_3 S + \beta_4 TD + \beta_5 STD + €$$

Where, ROA= Return on assets; ROE = Return on equity; EPS =Earnings per share; LTD = Long term debt; T =Tangibility; S=size; TD =Total debt and STD =Short term debt. In figure 1 relationship of IV and DV with respective proxies are portrayed. In our model Capital Structure (CS) is independent variable having LTD, T, S, TD and STD its measures to observe the relationship on dependent variable Financial Performance (FP) that is measured through ROA, ROE and EPS.

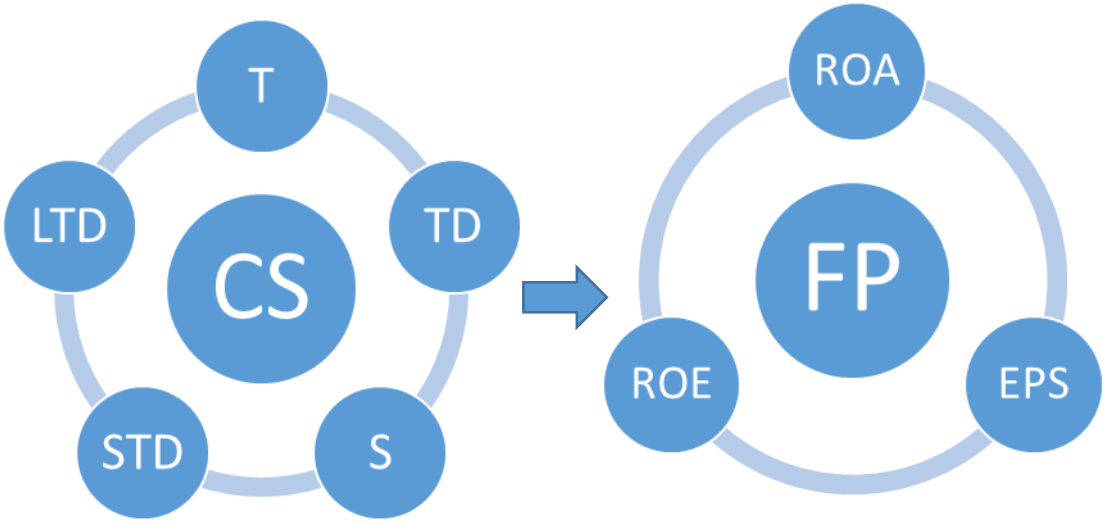

Figure 1 Graphical presentation of IV and DV with proxies

3.2 Significance of Model

Multiple regression model has been used to estimate the cause and effect relationship. This model is a powerful technique through which impact on financial performance of capital structure has been examined and used by many researchers like; Salim, 2012; Memon et al., 2012; Salim, 2012; and Marobhe, 2014.

3.3 Population and Sample

The population of the study comprised upon all manufacturing sector companies listed with Karachi stock exchange out of which 15 fuel and energy sector companies have accounted for the sample on the basis of market capitalization and size.

3.4 Data Source and Analysis

The study used secondary data reported in audited annual financial statements of the sample companies that is analyzed using inferential and descriptive statistics along with SPSS.

4. Results and Discussion

In this section the results of the study are discussed below.

4.1 Results of Correlation

Table 4.1 portrayed inter and intra relationship of all proxies. Return of asset has significant positive relationship with Return on Equity, Earnings per Share and size but insignificant positive relationship with tangibility. However, ROA is negatively significantly correlated with short term debt and negatively insignificantly with long term debt and total debt. ROE is positively significantly correlated with EPS. Earnings per share have positive significant association with size. Long term debt has significant positive affiliation towards size, short term debt and total debt while size reveals significant positive relationship with short term and total debt. The strongest significant positive association is observed between short term debt and total debt.

4.2 Regression Analysis

This study was conducted to check the impact of capital structure on financial performance of the firms in fuel and energy sector of Pakistan. The findings of the study are tabulated and discussed below:

4.2.1 Econometrics for ROA

Following econometrics model for ROA was tested:

$[ROA= \beta_0 + \beta_1 LTD+ \beta_2 T+ \beta_3 S+ \beta_4 TD+ \beta_5 STD+€]$

The results of econometrics model for ROA are reported in table 4.2 to 4.4 and indicate a significant positive translation in ROA by translating proxies of capital structure as adjusted R-square is .441 with significant P-value (.000) that infers 44% of financial performance of the firms in the fuel and energy sector of Pakistan can be explained by capital structure.

Positive effect was reported for tangibility (1.825), size (6.561), long term debt (1.623), while negative results for short term debt (-8.525) and total debt (-13.102). P-value size, short term debt and total debt are within significant level range whereas, long term debt and tangibility do no influence the financial performance (ROA).

4.2.2 Econometrics for ROE

The following model was used to check the impact of capital structure on ROE:

$[ROE= \beta_0 + \beta_1 LTD+ \beta_2 T+ \beta_3 S+ \beta_4 TD+ \beta_5 STD+€]$

The findings of the model regarding ROE econometrics are respectively presented in table 4.5, 4.6 and 4.7, expressed positive but only 17 % change is translated by the model. The positive effect was observed pertaining to size (7.823), tangibility (1.172), and total debt while negative results for short term debt (-13,123) and long term debt. Adjusted R square is .112 that indicates that 11% variability in dependent variable ROE is explained by the model. P value in ANOVA table is .009 that signifies that model has predicting power to measure the effect of size, tangibility, long term debt, short term debt ant total debt. In coefficient table, B reports that one unit increase in long term debt brings negative -88.469 changes in ROE and P value (.013) that is lesser than (.05) indicates a statistically significant Impact. Size brings a positive change of 7.833 and its P value .02<.05 has a significant impact. Tangibility has shown a positive impact of 1.172 but its P value .932 >.05 and has an insignificant impact. One unit change in short term debt decrease ROE by 13.123 and corresponding P value is .164 that is greater than .05 puts an insignificant impact. One unit increase in total debt has a positive but it is statistically insignificant as its P value is greater than .05.

4.3 Econometrics for EPS

To examine the effect of capital structure on EPS below model was used.

$[EPS= \beta_0 + \beta_1 LTD+ \beta_2 T+ \beta_3 S+ \beta_4 TD+ \beta_5 STD+€]$

The findings of the study about what impact capital structure has on EPS are discussed in

table no. 4.8, 4.9 and 4.10 as under.

Adjusted R-square is .138 that shows that model has the predicting power to measure the effect of independent variables on EPS as P-value is significant. In coefficients table under un-standardized coefficients B value of long term debt shows that an increase of 1 unit in long term debt decrease EPS by 4.50 and corresponding P-value is .80>.05. If we look at size it positively increases in EPS and its P-value is 000 that is statistically significant.

5. Conclusion and Recommendations

5.1 Conclusion

The study has concluded that there is a significant negative impact of capital structure on ROA of firms in fuel & energy sector of Pakistan that is consistent to the Salim (2012); Zingales (1995); and Abor (2005) findings that capital structure has significant negative impact on ROA. From ROE equity point of view capital structure also has significant negative impact on it as long term debt and short term debt decreases the financial performance. Refer to capital structure and EPS only the size has positive impact on it while rest of the independent proxies place insignificant impact. Aggregately capital structure poses significant negative impact upon two major proxies of financial performance that negates the research findings of Ross (1977); and Holz (2002) which claimed that capital structure has positive impact on financial performance.

5.2 Policy Recommendations

Debt does not always result in an improvement in financial performance. Our findings are least supportive to debt financing ethos. It has many complications like; openness to default risk; high service charges; and adverse impact upon financial performance. It creates agency problems between stockholders and creditors. This study suggests that Pakistan fuel and energy sector firms may prefer internal financing rather than increasing more leverage in capital structure that consumes high cost of capital because of default risk. Equity financing also safeguards firms from bankruptcy to great extent.

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Appendices

Table 4.1 Correlations

		Return on Assets	Return on Equity	Earnings Per Share	Long Term Debt	Size	Tangibility	Short Term Debt	Total Debt
Return on Assets	Pearson Correlation	1	.441**	.594**	-.051	.449**	.027	-.368**	-.156
	Sig. (2-tailed)		.000	.000	.560	.000	.753	.000	.072
	N	134	134	134	134	134	134	134	134
Return on Equity	Pearson Correlation		1	.329**	-.212*	.156	-.036	-.151	-.078
	Sig. (2-tailed)			.000	.014	.071	.676	.082	.371
	N		134	134	134	134	134	134	134
Earnings Per Share	Pearson Correlation			1	-.113	.269**	.010	-.199*	-.117
	Sig. (2-tailed)				.195	.002	.910	.021	.179
	N			134	134	134	134	134	134
Long Term Debt	Pearson Correlation				1	.273**	.145	.325**	.557**
	Sig. (2-tailed)					.001	.094	.000	.000
	N				134	134	134	134	134
Size	Pearson Correlation					1	.054	.236**	.502**

	Sig. (2-tailed)						.534	.006	.000
	N					134	134	134	134
Tangibility	Pearson Correlation						1	.113	.011
	Sig. (2-tailed)							.193	.902
	N						134	134	134
Short Term Debt	Pearson Correlation							1	.698**
	Sig. (2-tailed)								.000
	N							134	134
Total Debt	Pearson Correlation								1
	Sig. (2-tailed)								
	N								134

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4.2 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.680[a]	.462	.441	14.23406	.462	21.990	5	128	.000

a. Predictors: (Constant), Total Debt, Tangibility, Size, Long Term Debt, Short Term Debt

Table 4.3 ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22276.616	5	4455.323	21.990	.000[a]
	Residual	25933.896	128	202.609		
	Total	48210.512	133			

a. Predictors: (Constant), Total Debt, Tangibility, Size, Long Term Debt, Short Term Debt

b. Dependent Variable: Return on Assets

Table 4.4 Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-25.072	4.821		-5.201	.000
	Long Term Debt	1.825	8.205	.018	.222	.824
	Size	6.561	.777	.647	8.444	.000
	Tangibility	1.623	3.232	.034	.502	.616
	Short Term Debt	-8.525	2.200	-.365	-3.876	.000
	Total Debt	-13.102	6.559	-.236	-1.997	.048

a. Dependent Variable: Return on Assets

Table 4.5 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.334[a]	.112	.077	60.65584	.112	3.216	5	128	.009

a. Predictors: (Constant), Total Debt, Tangibility, Size, Long Term Debt, Short Term Debt

Table 4.6 ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	59165.302	5	11833.060	3.216	.009[a]
	Residual	470928.696	128	3679.130		
	Total	530093.998	133			

a. Predictors: (Constant), Total Debt, Tangibility, Size, Long Term Debt, Short Term Debt

b. Dependent Variable: Return on Equity

Table 4.7 Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-22.875	20.543		-1.113	.268
	Long Term Debt	-88.469	34.964	-.260	-2.530	.013
	Size	7.823	3.311	.233	2.363	.020
	Tangibility	1.172	13.774	.007	.085	.932
	Short Term Debt	-13.123	9.373	-.170	-1.400	.164
	Total Debt	12.649	27.952	.069	.453	.652

Table 4.6 ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	59165.302	5	11833.060	3.216	.009[a]
	Residual	470928.696	128	3679.130		
	Total	530093.998	133			

a. Predictors: (Constant), Total Debt, Tangibility, Size, Long Term Debt, Short Term Debt

a. Dependent Variable: Return on Equity

Table 4.8 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.413[a]	.171	.139	9.35640	.171	5.277	5	128	.000

a. Predictors: (Constant), Total Debt, Tangibility, Size, Long Term Debt, Short Term Debt

Table 4.9 ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2309.810	5	461.962	5.277	.000[a]
	Residual	11205.407	128	87.542		

Total	13515.217	133			

a. Predictors: (Constant), Total Debt, Tangibility, Size, Long Term Debt, Short Term Debt

b. Dependent Variable: Earnings Per Share

Table 4.10 Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-5.572	3.169		-1.758	.081
	Long Term Debt	-4.501	5.393	-.083	-.834	.406
	Size	2.217	.511	.413	4.340	.000
	Tangibility	.471	2.125	.018	.222	.825
	Short Term Debt	-1.867	1.446	-.151	-1.292	.199
	Total Debt	-5.070	4.312	-.173	-1.176	.242

a. Dependent Variable: Earnings Per Share

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