

Capital Structure and Profitability of Listed Construction and Engineering Companies in Sri Lanka

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Introduction

The capital structure is crucial for any business organization. This refers to the various financing options of the assets by a firm. A business concern can go for different levels of the mixtures of equity, debt and/or other financial facilities. This may be lease financing, term financing, debentures, direct loans from bank etc with equity having the emphasis on maximizing the firm's value. Not all the firms use a Standardized capital structure they differ in their financial decisions in various terms. It is a difficult decision for the firms to determine the capital structure in which risk and cost is minimum and can give high profits, and therefore can increase the value of share holders. This difference of choices about the financing decisions gives rise to the various capital structure theories.

These theories try to justify and explain the differences of the capital structure across regions and/or over times. The most famous theories which present a clear direction and firm behavior about debt and capital structure are trade off theory and pecking order theory.

According to Tradeoff Theory (TOT) by Miller, (1977) if firms are more profitable they prefer debt financing as compared to equity for the sake of profit. It is driven by three forces. First more debt in a firm's capital structure allows more tax benefits as their tax liabilities come lower and even in some cases it is waived off. So firms having more profits go for more debt rather equity. Secondly if a firm has low profit than there are greater chances of bankruptcy. So, if the firm takes more debt there are more chances that it is bankrupt and as a result of this investor cannot trust on it. Alternatively, if firm have more profits there are less chances of bankruptcy so investor trust and firm tend to be earn more profit. Third force is the agency cost which has to be borne by investor or shareholder. It is a cost which is in form of interest rate because creditor always check the position of the company and monitor the management so if firm has good image than it can get loan at lower cost because creditors are not worry about bankruptcy and there agency cost is very low.

According to Pecking Order Theory (POT), developed by Myers and Majluf, (1984) and Myers, (1984), firms

having high profits they attain low debt because when firms are more profitable their first priority is to generate financing through internal resources which means that companies generate financing through retained earnings because it can maximize the value of existing share holders. If retained earnings are not sufficient, the firms go for debt and if further financing is required, they issue equity. The retained earning is preferred because it almost has no cost, but if the external resources are used for financing like issuance of new shares it may take very high cost. The POT is a result of information asymmetries existing between insiders of the firm and outsiders. The model leads managers to adapt their financing policy to minimize the associated cost. It means that they will prefer internal financing to external financing and risky debt to equity.

In both theories investment opportunities tend firms to use less debt. As the capital structure has many dimensions such as leverage, size, growth, it is very difficult to state that which proportion is the best to maximize the firm's value to the share holders. There is no final decision that profits have positive relations with debt or retained earnings. It is still debatable.

This study is an endeavor to know the relationship between capital structure & profitability of Construction and Engineering companies listed on Colombo Stock Exchange because there are number of studies on the determinants of capital structure but as far as the impact of capital structure on profitability is concerned they are few.

1. Objective of the study

The main objective of the study is to know the relationship between Capital Structure and profitability for listed Construction and Engineering companies for the period from 2003 to 2010 in Sri Lanka.

To achieve the main objective, the relationship of debt financing, long term debt and equity financing on the profitability of Construction and Engineering companies are estimated.

2. Review of Literature

Review of the literature is aimed on grouping and assessment of what endorsed researchers have written on a topic, organized in a manner which addresses the research

objective. Many researchers have studied capital structure from different views and in different environments. The following ones are very interesting and useful for our research:

Christopher, Schafer and Talavera, (2006) focus that there is strong effect of short term and long term debt on profitability and according to them the organization which prefer to financing through long term debt has low profitability and alternatively if firm use short term financing, it earns more profits.

Pandey, (2004) explains the relationship between (capital structure and market structure) and (Capital Structure and Profitability). The results suggest that the capital structure and market structure have cubic relationship that at lower and high range of Tobin Q ratio (sum of market value of equity and book value of long term debt and net current assets divides by book value of equity and book value of long term debt and net current assets) firms are using high debt and at medium range they use less debt. Regarding relationship between profitability and capital structure they conclude that there is a saucer shape relationship between capital structure and profitability because of the interplay of agency costs, costs of external financing and the interest/tax shield.

Andrea and Mateus, (2003) said that the capital structure decisions of firms in developing countries are influenced by the same variables as in the developed countries. They revealed that although these factors are the same but differ to some extent because the ratios are affected by country factors like inflation, status of capital market, growth rates of the country.

Drobtz and Fix, (2005) discuss the determinants of capital structure and two hot issues Trade off theory and Pecking order theory. In trade off theory there are three main factors, agency cost, tax Shields, bankruptcy Cost. Due to these three factors more profitable firms use more debt. In pecking order theory more profitable firms use less debt because firstly they use retained earnings then use debt and at third option they use equity financing.

Eriotis, Frangouli and Neokosmides, (2002) said that those firms who prefer to finance the investment activities using the equity are more profitable than firms who finance by using borrowed capital. They further conclude that firms do compete with each other instead of cooperating each other. Hadlock & James, (2002) conclude that the firms chose bank financing because market interprets the loan as a positive step because companies prefer that financing which results high return. Mesquita and Lara, (2003) concluded that in short run there is a positive relationship while in the long run there is inverse relationship between debt and profitability.

Booth, Aivazian, Demirguc-kunt and Maksimovic, (2001) reveal that the same variables are pertinent in making decisions of capital structure across the countries irrespective of the fact that the countries have different structure of institutions and development stages. However, there are country factors at work which create differences in the outcomes of the decisions of capital structures of the firms. They conclude that however, some modern financial management theories of capital structure are portable across the countries but most of the things are to be done at local levels which are quite different due to the structure and country factors like growth rate, inflation, and others.

Buferna, Bangassa and Hodgkinson, (2005) report that the theories, static trade-off theory and agency cost theory are applicable on the capital structure of the companies in Libya. They conclude that the equity agency cost is the main reason of conflict between shareholders and debtors which is more problematic for private companies. They further support the importance and application of agency cost theory for private companies in their capital structure decisions.

Thus the various studies on capital structure and profitability were done in different countries. But there are no studies in Sri Lankan context specially in listed Construction and Engineering companies. Therefore the present study examine the relationship between Capital Structure and profitability for listed Construction and Engineering companies for the period 2003-2010 in Sri Lanka.

3. Research Methodology

4.1 Data collection

The secondary data was used for the present study during the eight years of 2003-2010. The data was collected from the hand books of listed companies published by Colombo Stock Exchange (CSE), annual reports of the companies, journals and books.

The scope of the study is the Construction and Engineering firms in listed companies in Sri Lanka. Now, there are three listed Construction and Engineering firms operated in Sri Lanka. Therefore, to recognize the relationship between capital structure and profitability, Colombo Dockyard PLC, MTD Walkers PLC and Lankem Developments PLC were taken.

4.2 Reliability and validity

Information was collected from annual reports and hand books of listed companies published by Colombo Stock Exchange. Therefore the researcher satisfied with the content and construct validity, then it was decided to continue the analysis.

4.3 Measurement

Secondary data were used to measure the indicators which are related to profitability. Here the indicators of profitability are as follows,

- Debt Ratio (DR) = Total Debt / Total Assets.
- Long term debt to total liabilities (LTDTL) = Long term debt / Total debt.
- Equity to total liabilities (SHETL) = Share holders equity / Total debt.
- Debt/Equity (DE) = Debt / (Equity capital + reserves)
- Net Profit margin (NPR) = Profits after tax / Sales

4. Hypothesis

The following hypotheses are taken for the research to show the effect of capital structure on the profitability.

H₁: Firms with high percentage of debt are less profitable

H₂: Firms with more long term debt are less profitable

H₃: Firms with high equity to total liabilities are more profitable.

5. Types of Analysis

Descriptive and quantitative analysis is used for this research. Descriptive analysis presents mean, standard deviation, maximum and minimum value for each variable used in the study. In quantitative analysis, Pearson's correlation and regression analysis is used. In regression analysis simple least square is used to investigate the relationship between capital structure and profitability for Construction and Engineering firms and also to prove the hypotheses.

6. Data Analysis & Discussion

The results of descriptive and quantitative analysis are presented below. The first table shows the results of descriptive analysis which include the mean, standard deviation, minimum and maximum value for each variable included in the study. The descriptive Statistics of variables used in this study are presented in Table 1.

Table : 1 Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation
NPR	-11.95	0.15	-1.6339	4.17686
DR	0.62	1.72	0.9060	0.37596
LTDTL	0.00	0.09	0.0518	0.03594
SHETL	0.19	0.72	0.4591	0.18621
DE	0.08	15.59	3.6952	5.12121

Source: Calculations Based on Annual reports of firms from 2003-2010

In the above table Net profit margin has a mean value - 1.63 with a deviation from the mean value by 4.176. The

maximum profitability for a firm in any year is 0.15 while the minimum is -11.95. To check the debt financing and its relationship with the profitability the debt ratio (obtained by dividing the total debt of the company by the total assets) is used. The results of descriptive statistics show that the average debt ratio for the Construction and engineering firms is 0.906 with a standard deviation of 0.375. The maximum debt financing used by a company is 1.72 which is unusual but may be possible if the equity of the company is in negative. The minimum level of the debt ratio is 0.62. The long term debt to total liabilities indicate that on average firms use 0.051 of long term debt in their liabilities with a standard deviation of .0359. The average Equity to total liabilities is 0.459 with a standard deviation of 0.186. The average Debt to Equity is 3.695 with a standard deviation of 5.12.

7.1 Correlation analysis

In this analysis correlation is used as a tool of statistics to see the relationship between capital Structure and profitability. The results of correlation analysis are discussed in Table 2.

Table : 2 Correlation matrix for Construction and Engineering firms

	NPR	DR	LTDTL	SHETL	DE
NPR	1				
DR	-.692** .003	1			
LTDTL	.792** .000	-.454 .077	1		
SHETL	.090 .741	.098 .719	.630** .009	1	
DE	-.138 .609	.161 .551	.475 .063	.796** .000	1

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

The correlation for debt ratio with profitability is -.692** which reveals that the two variables negatively correlated with each other meaning thereby that if one variable increase the other decreases and it is significant at 1%. The result for the relationship of long term debt with profitability is positive and the correlation coefficient is .792** and it is also significant at 1%. The value of correlation between equity to total liability and profitability of Construction and Engineering firms is 0.090 which is not significant at 0.01 level. The value of correlation between equity to debt and profitability of Construction and Engineering firms is -.138 which is not significant at 0.01 level.

7.2 Regression Analysis

This regression is estimated using the simple least squares method. The results are shown in Table 3.

Table : 3 Regression Analysis

Dependent variable: NPR

Independent Variables	Coefficient	Standard error	R ²	t	Sig
DR	-0.133	0.037	0.479	0.692	0.003
LTDTL	2.892	0.597	0.627	4.847	0.000
SHETL	0.230	0.682	0.008	0.337	0.741
DE	-0.052	0.099	0.019	-0.523	0.609

The results of this regression indicate that the coefficient of debt ratio is (-0.133) negative and is significant at level of 1%. It implies that the increase or decrease in debt ratio will significantly affect the profitability of firms. It means that if leverage of the firms increases, it will adversely affect its profitability. R² value of 0.479 for debt ratio denotes that 47.9% of the observed variability on profitability can be explained by the differences in debt financing.

The results for Long term debt to total liabilities (LTDTL) are highly significant. The regression coefficient is (2.892) means there is positive relation between the long term debt and profitability. If the firms will keep on increasing the long term debt it will lead to increase profitability. R² value of 0.627 for long term debt to total liabilities denotes that 62.7% of the observed variability on profitability can be explained by the differences in long term debt.

The result for shareholders equity to total liabilities is not significant and also the results of the regression for debt to equity with profitability are not significant.

7. Conclusion

We conclude that firstly numeric verifications and statistical analysis shows negative relationship between net profit margin and debt ratio which verify first hypothesis and it is accepted.

Secondly there is positive relationship between the long term debt and profitability which means that firms with having more long term debt are more profitable. Therefore second hypothesis is rejected. Thirdly there is no significant between shareholders equity to total liabilities and Profitability. Therefore third hypothesis is rejected.

Therefore if these Construction and Engineering companies want to increase their profitability, they will have to give more consideration to the financing mix. So that they can earn more profit.

The results are consistent to the findings of Mesquita and Lara (2003). So the war between pecking order theory and trade off theory has been won by the first one which is pecking order theory that the firms having more profitability tend to use less debt in their financing decisions and the firms having less profit are influenced to have more debt. Future researches can be done on the determinants, effects of capital structure on ratings of Sri Lankan firms and how to balance the capital structure of Sri Lankan firms.

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