

The Effect of Profit Margin on Capital Structure: A Study of Listed Manufacturing Companies of Colombo Stock Exchange (CSE), Sri Lanka

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ABSTRACT

Profit margin is a way of measuring how well a company is doing, regardless of size of the organizations. The capital structure is how a firm finances its overall operations and growth by using different sources of funds. The successful selection and use of the debt-to-equity ratio is one of the key elements of firms' financial strategy. The profit margin is a key element to determine the capital structure. The firms may have their retained earnings to increase their capital structure. The purpose of this study is to investigate the effects of profit margin on Capital Structure of listed manufacturing companies in Sri Lanka. The present study tries to investigate the relationship between net profit margin on sales and debt - to - equity ratio by taking into consideration in the level of firms' investment. The research question is arisen "What extent the profit margin affects the capital structure?" For this purpose 13 listed manufacturing companies in Colombo stock exchange in Sri Lanka have been selected for the period of 2005 – 2009. The data have been analyzed by using correlation and regression analysis to find out the association between the variables. In our study we may say that the firms finance their investment activities by retained profits are more profitable than those that finance their activities through borrowed capital and it depends on their level of investments.

Key words: Profit Margin, Capital Structure, Debt - to - equity ratio, Net Profit Margin

1 Introduction:

The profitability is the key element to determine the capital structure. The firms may have their retained earnings to increase their capital structure. Capital structure is an important topic in corporate finance for practitioners and academic researchers. A number of capital structure theories have been proposed in the recent years to explain the variation in debt ratios across firms. Capital structure theory suggests that firms determine what is often referred to as a target debt ratio; which is based on various trade-off between the costs and benefits of debt versus equity. The modern theory of capital structure was established by Modigliani and Miller (1958). Following on from this pioneering work of Modigliani and Miller on the capital structure, three conflicting theories of capital structure have been developed. They are namely: static trade-off theory (Bradley et al., 1984), pecking order theory (Myers & Majluf, 1984), and agency cost theory (Jensen & Meckling, 1976). Miller and Modigliani's theorem was first published in 1958 and it was a groundbreaking model in corporate finance. The M&M theorem on capital structure claims that in an efficient market and in the absence of taxes, bankruptcy costs and asymmetric information, the value of a firm is unaffected by how it is financed. That is how the firm decides to raise capital, whether it is by taking on debt or by using existing equity, does not affect the value of the company.

On the other hand, empirical evidence is also not sometime consistent in substantiating a particular capital structure theory. According to the authors' knowledge, it is the first empirical study to be conducted in Sri Lanka in the regard. Though H.Jaman Zubairi has worked on the impact of capital structure on profitability of automobile firms in Pakistan but no one checked the relation conversely before. The capital structure of the firms includes the equity capital, debt capital and revenue reserves and capital reserves. The revenue reserves include the retained earnings which contains the earnings before interest and tax for the year. Most of the firms' capital consists of the retained earnings according to their investment opportunity.

The purpose of this paper is to investigate the effect of profit margin on capital structure of Listed Manufacturing Companies of Colombo Stock Exchange (CSE), Sri Lanka. Most theoretical and empirical studies in capital structure have focused on large listed companies for both developed and developing countries (see e.g, Rajan and Zingales, 1995; Booth et al.,

2001; Demirguc-Kunt and Maksimovic, 1998, 1999). In this study, we examine the association between the profitability and the capital structure of the listed manufacturing companies in Sri Lanka during the period of 2005 - 2009.

2 Problem Statement:

Our purpose is to solve the research questions stated below, which is formulated on the basis of the problem discussion. It concerns the association between the capital structure and the profit margin. The problem statement to be analyzed in this study as the following research question:

RQ: What extent the capital structure depends on profit margin of the firms?

3 Objectives:

The main objective of the study is to find out the association between the profit margin and the capital structure of the Listed Manufacturing Companies in Sri Lanka. In addition to that to identify the impact of profitability on capital structure and to investigate the degree of capital structure depends on profitability.

4 Hypothesis

From the research question the following hypothesis are developed to test and conclude the remarks. The hypotheses to be tested are as follows:

H₁: There is a positive relationship between the profit and the capital structure.

H₂: The Profitability does not significantly affect the capital structure

5 Literature Survey

Although much theoretical work has been done since Modigliani and Miller (1958), no consistent predictions have been reached of the relationship between profitability and capital structure. Tax-based models suggest that profitable firms should borrow more, *ceteris paribus*, as they have greater needs to shield income from corporate tax. However, pecking order theory suggests firms will use retained earnings first as investment funds and then move to bonds and new equity only if necessary. In this case, profitable firms tend to have less debt. Agency-based models also give us conflicting predictions. On the one hand Jensen (1986) and Williamson (1988) define debt as a discipline device to ensure that managers pay out profits rather than build empires. For firms with free cash flow, or high profitability, high debt can restrain management discretion. On the other hand Chang (1999) shows that the optimal contract between the corporate inside and outside investors can be interpreted as a combination of debt and equity, and profitable firms tend to use less debt.

In contrast to theoretical studies, most empirical studies show that Capital structure is negatively related to profitability. Friend and Lang (1988), and Titman and Wessels (1988) obtain such findings from US firms. Kester (1986) finds that Capital structure is negatively related to profitability in both the US and Japan. More recent studies using international data also confirm this finding (Rajan and Zingales (1995), and Wald (1999) for developed countries, Wiwattanakantang (1999) and Booth et al. (2001) for developing countries). Wald (1999) even claims that “profitability has the largest single effect on debt/asset ratios.” In this study, profitability will be defined as earnings before interest and tax (EBIT) scaled by Net Sales.

Quite a large strand of theoretical and empirical research has focused on the area of determinants of capital structure. Titman et al, (1988) investigated that the determinants of capital structure choice using data from United States from 1974 to 1982. They reported that debt levels are negatively related to the “uniqueness” of a firm’s line of business. They found out that firms can potentially impose high costs on their customers, workers, and suppliers in the event of liquidation have lower debt ratios. They conclude that transaction costs may be an important determinant of capital structure choice.

Gau et al, (1990) in their study investigated were amongst the first to apply the theory of capital structure directly to real estate investment decisions at the project level. Based on a sample of 1,423 apartment and commercial property transactions in Vancouver between 1971 and 1985, they observed that the level of debt employed in a property acquisition is directly related to the cost of the investment and inversely to the size of its depreciation tax shield, expected costs of financial distress and market interest rates.

Jean Chen, (2004) developed a preliminary study to explore the determinants of capital structure of Chinese-listed companies using firm-level panel data. The findings reflect the transitional nature of the Chinese corporate environment. They suggest that some of the insights from modern finance theory of capital structure are portable to China in that certain firm-specific factors that are relevant for explaining capital structure in developed economies are also relevant in China. However, neither the trade-off model nor the Pecking order hypothesis derived from the Western settings provides convincing explanations for the capital choices of the Chinese firms. The capital choice decision of Chinese firms seems to follow a “new Pecking order”—retained profit, equity, and long-term debt. These significant institutional differences and financial constraints in the banking sector in China are the factors influencing firms’ leverage decision and they are at least as important as the firm-specific factors.

Boopen Seetanah, Kesseven Padachi, and Rishi Ronoowah (2006) attempted to supplement the existing literature by bringing new evidences on the determinants of capital structure for the case of companies listed on the Stock Exchange of the small island developing state (SIDS) of Mauritius. Results from the study reveal that certain firm specific factors which explain capital structure in developed countries are also relevant in a small island economy like Mauritius. Using panel estimations techniques for the case 38 firms of the stock exchange of Mauritius (SEM) for the period 1994-2004, the regression results show that the most important firm specific factors that influence capital structure choice in Mauritius are profitability, size, tangibility and liquidity. Other factors like business risk, Non Debt Tax Shield effects and growth opportunities do not appear to affect capital structure.

6 Methodology:

6.1 Sources of Data

The study is based on the data from the listed manufacturing firms (CSE) "Financial Analysis" of the firms from 2005 to 2009. The information gathered on key accounts of the financial statements of all listed manufacturing firms of CSE for five year period.

6.2 Sample

The study focused on the manufacturing sector of Sri Lanka. 13 manufacturing firms listed on Colombo Stock Exchange (CSE) were selected. The study used the financial data of these firms over years 2005 to 2009 and 65 firm-year observations. Thirteen companies are listed under the manufacturing sectors under the headings of Plastic & rubber, Aluminum and Electronics. ACL Plastic, Central Industries Ltd., Kelani Cables Ltd., Kelani tyres and Samson International are included under the Plastics & rubber manufacturing, Aluminium includes ACME Printing and packaging, Alufab Ltd., Lanka aluminium and Parquant Ltd., and Abans Ltd., ACL Cables, Sierra Ltd., and Regnis Ltd., are included under the Electronic Manufacturing sector.

6.3 Variable Description:

According to the research objectives and research questions, this study has set the variables used in this study and their measurements are largely adopted from existing literature. The following capital structure which is dependant variable and the profit margin which is the independent variable taken into accounts are as follows:

Dependent and Independent Variables:

In this study, Profit margin is the independent variable and Capital Structure is the dependent variable. Profitability is defined as the ratio of net profit before interest and tax to net sales. Capital structure is represented by the debt to capital ratio. It can be explained by the following determinants.

Profit Margin:

We measure the profit margin as the ratio of net profit before interest and tax divided by Net sales. Previous studies have used earnings before interest and taxes (EBIT) divided by total assets, as a measure of profit Margin.

$$\text{Profit Margin} = \text{Net profit before interest and tax} / \text{Net Sales} * 100$$

Capital Structure:

In this study, capital structure has been uniquely taken as the dependent variable. It includes the share capital and reserves showed in the company's balance sheet. In previous studies, it has never been taken as a dependent variable except one research. The typical debt to equity ratio has been used here as proxy for capital structure measurement.

$$\text{Debt to equity ratio} = \frac{\text{long term debt}}{\text{Total equity (Share capital + Reserves)}}$$

6.4 Mode of Analysis

6.4.1 Correlation coefficient

The most common measure of “correlation” or “predictability” is Pearson’s coefficient of correlation, although there are certainly many others. Pearson’s r , as it is often symbolized, can have a value anywhere between -1 and 1. The larger r , ignoring sign, the stronger the association between the two variables and the more accurately we can predict one variable from knowledge of the other variable. At its extreme, a correlation of 1 or -1 means that the two variables are perfectly correlated, meaning that we can predict the values of one variable from the values of the other variable with perfect accuracy. The sign of the correlation implies the “direction” of the association. A positive correlation means that relatively high scores on one variable are paired with relatively high scores on the other variable, and low scores are paired with relatively low scores. On the other hand, a negative correlation means that relatively high scores on one variable are paired with relatively low scores on the other variable.

6.4.2 The Regression Model

Regression models are used to predict one variable from one or more other variables. This study uses regression analysis to find out the impact of profitability on capital structure. The equation for our regression model will be:

$$CS = \beta_0 + \beta_1 (PF) + e$$

Where

CS = Capital structure

PF = Profitability

e = the error term

β_0 = the intercept of equation

β_1 = the change of co-efficient for profitability

7 Results and discussion

This section presents the results of descriptive statistics, correlation coefficient and the regression analysis. The interpretation of the empirical findings is also reported in this section. Finally, important conclusions about the results of the study have been drawn.

7.1 Descriptive Statistics:

Prior to start of formal analysis, we present descriptive statistics in Table 1. The table shows the information at the level of the variables. Table 1 presents the minimum, maximum, mean, and standard deviation for the variables.

Table 1: Descriptive Statistics:

	N	Minimum	Maximum	Mean	Std. Deviation
DER	13	.04	.76	.1885	.19739
NP	13	-1.83	120.96	14.9746	32.10140
Valid N (listwise)	13				

Source: Survey data

From the above table the std deviation of Profit Margin is 32.10 which affect the capital structure. It focuses the minimum of -1.83 as some firms have loss in some years.

7.2 Correlation Coefficient

To check for the possible multi-co-linearity among the independent variable, we calculate the Pearson's co-efficient of correlations for the independent variable. Table 2 presents the results.

Table 2: Correlation between Debt to Equity Ratio and Profit Margin

Variables	DER	NP
DER	1	-.224
NP	-.224	1

Source: Survey data

As we can see from the table, the correlation between the dependent and the selected independent variable is -.224. Capital structure and Profitability are negatively correlated. As firm's Profitability increases, a debt to equity ratio decreases. Hence as the debt structure increases, so does the financial payable burden on the firm's assets.

7.3 Regression analysis:

Using regression technique, we ran the regression of the capital structure on the degree of the profitability of the firm with the aim to investigate whether this variable have significant explanatory power. Tis estimated results are reported in Table 3.

Table 3

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.224(a)	.050	-.036	.20093

a Predictors: (Constant), NP

It can be observed from the table that the estimated value of the R-squared is approximately 5%. This implies that the 5% of capital structure of the firm is determined by the said variable of profit margin. It shows that only as the percentage of 5 of the variations in the dependent variable (Capital Structure) are explained by the given independent variable (Profit Margin).

Regarding the significance of individual variables, the empirical results show that the firms' capital structure is negatively associated with profitability. This implies that the hypothesis (H₁: There is a positive relationship between the profit and the capital structure) is not accepted. Hypothesis 2 (H₂: Profitability does not significantly affect the capital structure) is accepted because approximately 5 percentage of capital structure is determined by the profitability and other 95 % is determined by other factors such as debt capital, equity, and working capital etc.,

8 Conclusion:

It can be concluded that though firm's profit Margin is not strongly positively related to capital structure. Therefore, it can be said that in manufacturing firms of Sri Lanka, profit Margin of firms are insignificant in bringing about any changes in their capital structure. The capital structure of the firms is determined by other factors such as debt capital, working capital and equity financing etc.

From this study we may say that the firms finance their investment activities by retained profits are more profitable than those that finance their activities through borrowed capital and it depends on their level of investments. Because, if firms will finance their activities from borrowed capital they have to impose interest expenses then the financial burden to be them.

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