

# Capital Structure and EPS: A study on Selected Financial Institutions Listed on Colombo Stock Exchange (CSE) in Sri Lanka

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## Abstract

The main objective of this study is to find out the impact of capital structure on earnings per share (EPS) in selected financial institutions listed on Colombo Stock Exchange in Sri Lanka during 2006 to 2010. To attain this objective, distinctive methodologies consistent with the previous research studies have been used. The study employs correlation and regression model to test the operational hypotheses. The results revealed that Equity and debt ratio have a negative association with EPS, whereas leverage ratio has a positive association according to correlation analysis ( $r = -.244, -.326$  and  $.389$  respectively). In addition, capital structure ratios have an impact which is approximately ( $R^2$ ) 22.6 % on EPS at 0.05 significant levels. This study would hopefully benefit to the academicians, researchers, policy makers, and practitioners of Sri Lanka as well as other similar countries.

**Keywords:** Capital structure, Colombo Stock Exchange, Capital Structure Ratios, Financial Institutions, EPS.

## 1. Introduction

Capital structure is one of the most important activities which affect the firm value. Abor (2006) defined the capital structure as specific mixture of debt and equity that a firm uses to finance its operations. Sound financing decisions of a firm basically should lead to an optimum capital structure. The role of the financial management has become important than merely a fund raiser. A prudent manager should also monitor the financial position of the business regularly and attempt to maintain an appropriate mix of debt and equity. The greater the debt in relation to the equity (the debt/equity ratio) is the greater the financial risk. The managers should always try hard to keep the debt/equity ratio within the recommended range to maximize their firm's value. The modern theory of capital structure began with the introduction of Modigliani and Miller (1958), Rajan and Zingales (1995), Harris and Raviv (1991). Four theoretical approaches can be distinguished namely the irrelevance theory of Modigliani and Miller (1958), the trade off theory (Bradley *et al.*, 1984), agency cost theory (Jensen and Meckling, 1976) and pecking order theory (Myers and Majluf, 1984). The three conflicting theories of capital structure such as trade-off theory, agency cost theory and pecking order theories have been developed after the establishment of Modigliani and Miller's theory. Capital structure affects Cost of capital, Net profit, Earning per Share, Dividend payout Ratio, and liquidity position of the firm. All of these affect market value of the firm and these variables coupled with a number of other factors determine the value of the firm. Therefore, capital structure is a very important to the value of the firm.

This study examines how capital structure influences earnings per share based on panel data from 2006 -2010 consisting of ten financial institutions listed under the sector of Bank, finance and Insurance on Colombo Stock Exchange in Sri Lanka.

## 2. Research Problem

Substantial parts of the literature concerning capital structure have dealt with issues relating to capital structure ratios. These ratios have been analyzed in many different ways. This research problem will also be dealt with these ratios in a new manner. This study attempts to investigate the relationship between capital structure and EPS of the financial institutions listed on Colombo Stock Exchange (CSE) under the sector of bank, finance and insurance and how the changes in capital structure affect the market value of the firm.

## 3. Objective of Study

This research attempts:

- To identify the optimum capital structure of the financial institutions listed on the CSE
- To identify the relationship between capital structure and EPS.

#### 4. Review of Literature

Theoretical and empirical capital structure studies have generated many results that attempt to explain capital structure and its determinants. Modigliani & Miller (1958) explained that capital structure doesn't have influence on the market value of the company, which will be settled by the composition of its assets. Hite (1977) stated that an increase in financial leverage of a firm will reduce the "user cost of capital" and therefore, lead to an increase in the optimal output level of that firm. Brander & Lewis (1986) provided the theoretical framework that links capital structure and market structure. Contrary to the profit maximization objective postulated in industrial organization literature, these theories, like the corporate finance theory, assume that the firm's objective is to maximize the wealth of shareholders and show that market structure affects capital structure by influencing the competitive behavior and strategies of firms.

According to Brander & Lewis (1986), firms in the oligopolistic market will follow the strategy of maximizing their output for improving profitability in favorable economic conditions. In unfavorable economic conditions, they would take a cut in production and reduce their profitability. The implied prediction of the output maximization hypothesis is that capital structure and market structure have positive relationship. Fischer *et al.* (1989) developed a model of dynamic optimal gearing choice and demonstrate that debt ratios are characterized by wide swings. While Flannery & Rangan (2006) find that US firms have target gearing ratios, they also find that the sample average debt ratio over the period 1966-2001 is very volatile. Further, Bunn & Young (2004) find that UK firms allow their gearing ratios to vary significantly around the target. These findings suggest that firms do not identify a strict, single optimal capital structure ratio as such, but rather a range over which their capital structures are allowed to vary.

Stulz (1990) argued that debt can have both a positive and negative effect on the value of the firm (even in the absence of corporate taxes and bankruptcy cost). He develops a model in which debt financing can both alleviate the overinvestment problem and the underinvestment problem.

Ronald W. Masulis (1983) estimated impact of a change in debt level on value of the firm. Two forms of capital structure change were examined: issues exchange offer, and values are positively related to changes in debt level and leverage. Senior security prices are negatively related to these capital structure change variables. Raj and Ajit (1996) found that no significant relationship between change in capital structure and value of the firm, at the micro level. Love and Wickramanayake (1996) analyzed using Australian data, show that capital structures varies among industries and Australian industries recognize benefits of optimal capital structure for maximization of firm value. In the study of Kinsman and Newman (1998), Firms have increased their level of debt relative to their profit. As a result, firm debt in general has risen substantially. They found that those firms having lower debt have higher value than the firm, which has high debt. Thus, firm can maximize its value by choosing low debt or zero debt.

Velnampy and Aloy Nireesh (2012) in their study on relationship between capital structure and profitability indicated that there is a negative relationship between capital structure and profitability. Further 89% of total assets in banking sector are represented by the debt. Several studies have been conducted related to profitability and earnings per share (Velnampy, 2005 & 2005, 2013, Velnampy & Nimalathan (2010) and Velnampy and Pratheepkanth, 2012.

#### 5. Methodology

The Colombo Stock Exchange (CSE) has 272 companies representing 20 business sectors listed on it as at 31<sup>st</sup> January 2012. The sample selected includes all financial institutions listed and the number of the sample consists of ten companies which are from Bank, Finance and insurance sector. The five year data from 2006–2010 are used for this study. Selection criterion is based on the availability of the data.

The secondary data were collected for the study during the period of five years (2006 -2010) and the data used for the empirical analysis was derived from the data base maintained by Colombo Stock Exchange (CSE). This data base contains balance sheet, profit and loss account and investor guide. The data were averaged over five years to smooth the variables. While Titman and Wesseles (1988) adopted three year averages, Rajan and Zingales (1995) used five year averages. Following Rajan and Zingales, this study used five year averages and some necessary data were hunted from online (official website of CSE). Further, annual reports of the companies, books, journals, magazines, and research reports were also used for data collection.

In this study, various statistical methods have been employed to analyze data collected from 10 companies listed on CSE. A well know statistical package called "SPSS" (Statistical Package for Social Science) version 16 has been used to analyze the data researcher collected. The upper level of statistical significance for hypotheses testing was set at 5%. All statistical test results were computed at the 2-tailed level of significance. Statistical analysis involves both descriptive and inferential statistics.

According to research objective and research questions, this study has set the variables and their measurement is largely adopted from existing literatures. The following table shows the variables and their measures.

**Table 1: Operationalization**

Concept	Variable(s)	Indicator(s)	Measurement
Capital structure	Equity ratio (ER) Long term Debt ratio (DR) Leverage Ratio (LR)	Total Equity/ Total Assets Long term Debt/ Total Assets Debt / Equity	Ratios
Value of the Firm	EPS	Net income / No of Equity shares	Ratios

The general form of the panel data model can be specified more compactly as follows:

$$Y_{it} = \alpha + \beta X_{it} + e_{it}$$

The subscript  $i$  representing the cross-sectional dimension and  $t$  denoting the time-series dimension. The left-hand variable  $Y_{it}$  represents the dependent variable in the model and  $X_{it}$  contains the set of independent variables in the estimation model, is taken to be constant overtime  $t$  and specific to the individual cross-sectional unit  $i$ . If  $\alpha$  is taken to be the same across units, ordinary least squares (OLS) provides a consistent and efficient of  $\alpha$  and  $\beta$ . Researchers use multiple regression model to test the impact of independent variables on dependent variable.

$$EPS_{i,t} = \beta_0 + \beta_1 ER_{i,t} + \beta_2 DR_{i,t} + \beta_3 LR_{i,t} + \varepsilon$$

Where;

$EPS_{i,t}$  - ratio of net income to number of equity shares for firm  $i$  in period  $t$

$\beta_0, \beta_1, \beta_2, \beta_3$  - Model coefficients

$ER_{i,t}$  - ratio of total equity to total assets for firm  $i$  in period  $t$

$DR_{i,t}$  - ratio of long term debt to total assets for firm  $i$  in period  $t$

$LR_{i,t}$  - ratio of debt to equity for firm  $i$  in period  $t$  and

$\varepsilon$  - Error term.

The following hypotheses have been developed for testing.

H<sub>1</sub>:- There is a negative relationship between the equity ratio and earnings per share.

H<sub>2</sub>:- There is a positive relationship between the debt ratio and earnings per share.

H<sub>3</sub>:- There is a positive relationship between the debt to equity ratio and earnings per share.

## 6. Empirical Results

### 6.1. Descriptive Statistics

Table 2 provides a summary of the descriptive statistics of the dependent and independent variables and shows the average indicators of variables computed from the financial statements.

**Table 2: Descriptive statistics of Dependent and Independent Variables**

Variables	Mean	Std. Deviation	Minimum	Median	Maximum	Observations
Equity Ratio (ER)	0.27	0.35	0.05	0.12	1.00	10
Debt Ratio (DR)	0.31	0.28	0.01	0.25	0.63	10
Leverage Ratio (LR)	7.82	6.61	0.5	6.43	17.8	10
EPS	8.28	25.00	-47.42	6.52	54.66	10

According to the table, the mean values of ER, DR, LR and EPS ranged from a low of 0.27 to a high of 8.28. The mean equity of the banks is 0.27 which means around 27 per cent of the total assets consists of equity. The average of long term debt ratio suggests that it represents approximately 31 percent of the capital measured by total assets. The mean leverage ratio is 7.82 with standard deviation of 6.61 and minimum of 0.5 to a maximum of 14.8. The average earnings per share is 8.28 which were measured by net income/number of shares.

### 6.2. Correlation and Regression Analysis

The results of correlation between three independent and dependent variables are reported in table 3. The results indicate a negative relationship between equity ratio, debt ratio and earnings per share. Earnings per share have a positive and not statistically significant relationship with leverage ratio at 0.05 significant levels.

**Table 3: Correlation Matrix**

Variable	Equity Ratio	Debt Ratio	Leverage ratio
Earnings per (Correlation) Share	-.244	-.326	.389
Earnings per (Sig. 2-tailed) Share	.497	.358	.267

The multiple regression analysis is carried out in order to investigate the simultaneous impacts of all the independent variables on the dependent variable. The results of regression, three (03) indicators of capital structure (independent variables) against the dependent variable are shown below.

**Table 4: Regression Model Results (dependent variable: earnings per share)**

Variables	Coefficient	t-Statistic	Prob.
ER	2.173	.089	.932
DR	-18.993	.758	.477
LR	1.053	.825	.441
$R^2 = .226;$		<i>Probability = .648 (overall)</i>	

The specification of an independent variables in this model reveals that the ability to predict the earnings per share. R square value of .226, which is in the model, denotes that 22.6% of observed variability in earnings per share can be explained by the differences in the independent variables. Remaining 87.4% variance in the earnings per share is related to other variables. Further, negative beta coefficient of debt ratio means that an increase of this variable brings about decrease in earnings per share, while positive beta coefficients of the equity ratio and leverage ratio show an increase in earnings per share. However, the relationships among them are statistically insignificant ( $p > 0.05$ ).

Three hypotheses have been formulated in this study and table given below provides the detail of the acceptance or rejection of them.

**Table 5: Testing of Hypotheses**

Hypothesis	Beta Coefficient	Results	Statistical Significant
H <sub>1</sub>	2.173	Rejected	Not significant ( $p > 0.05$ )
H <sub>2</sub>	-18.993	Rejected	Not significant ( $p > 0.05$ )
H <sub>3</sub>	1.053	Accepted	Not significant ( $p > 0.05$ )

## 7. Conclusion

In this paper, the relationship between capital structure ratio and Earnings per Share (EPS) and the impact on EPS have been studied. Due to the availability of the data sample, 10 companies were selected for this analysis. The study employed multiple regression model, Bivariate analysis and descriptive analysis to derive the conclusion. The study revealed that Equity and debt ratio have a negative association with EPS, whereas leverage ratio has a positive association according to correlation analysis ( $r = -.244, -.326$  and  $.389$  respectively). Further, the model has an impact on earnings per share at the rate of 22.6. This finding is corroborated with what was reported by Schwartz (1959), Ronald, W. (1983), Kinsman and Newman (1998), Rajan *et al.* (1995). The findings of this research have both theoretical & practical significance. As this research model proves to be an explanatory model about capital structure ratios and EPS, findings are of importance to improve the leverage decisions which maximize firm value.

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