



**IMPACT OF CAPITAL STRUCTURE ON FIRM PERFORMANCE IN  
MANUFACTURING FIRMS LISTED IN COLOMBO STOCK EXCHANGE**

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**ABSTRACT**

The purpose of this paper is to empirically investigate the impact of capital structure on firm performance in Manufacturing Firms listed in Colombo Stock Exchange. Panel data regression model was used to analyze the impact of leverage on firm performance for the period of 2013 to 2018. The results revealed that most of the Sri Lankan manufacturing firms depend on short term debt capital to that of long-term debt capital to finance their operations. Further the results showed there is a negative relationship between leverage and firm performance. ROE is negatively impacted by short term debt. Significant relationship between ROE and long-term debt was not observed because most of the firms use low levels of long-term debt. The study is useful in assisting finance managers in making policy decisions related to capital structure and the maturity mix.

**Keywords** - Capital Structure, Firm Performance, Leverage, Sri Lanka, Emerging Markets

**1. Introduction**

“Does the choice of the capital structure have an impact on firm performance?” This is the question the researcher seeks the answer in related to Sri Lankan manufacturing firms.

Capital structure is still a puzzle even though it is one of the most researched topics in finance for decades. The firms use combination of debt and equity instruments to finance its operations. The managers have the option of issuing different types of debt securities and equity securities such as; common shares, corporate bonds, hybrid securities, short term debt instruments. Even after decades of research we are still not been able to identify what exactly determine the managers’ capital structure choices and how the manger’s choice of capital structure impacts the firm performance.

There are many theories that have been developed overtime which attempt to explain the capital structure choices. In 1958 Modigliani & Miller published seminal paper which depicts under perfect capital market conditions the choice of capital structure is irrelevant in determining firm value. However, the same researchers in the seminal paper in 1963 concluded the capital structure is relevant in determining firm value when the tax shield is considered (Modigliani and Miller, 1963)

Agency cost theory (Jensen and Meckling, 1976) describes due to the separation of “ownership and control” of the firms the conflicts between shareholders and managers arise where managers do not function according to the interest of the shareholders. Thus, issuing debt may alter this behavior of the managers, consequently lowering the agency cost. (Grossman and Hart, 1982; Harris and Raviv, 1991)

Another theory which attempts to describe the capital structure choices is pecking order theory with information asymmetry (Myers and Majluf, 1984) which states the investors prefer internal equity and debt over external equity. Myers also supported static trade of theory in which the firm is viewed as setting a target debt-to-value ratio and gradually moving towards it (Myers, 1984).

Building up on these theories numerous researches were carried out to identify the impact of capital structure on firm performance. These researches provide mixed and contradictory results; where some supports debt positively impacts the firm performance (Taub, 1975; Grossman and Hart, 1982; Roden and Lewellen, 1995; Hadlock and James, 2002; Margaritis and Psillaki, 2010) and some supports debt negatively impacts the firm performance (Rajan and Zingales, 1995; Booth et al., 2001; Goddard et al., 2005; Rao et al., 2007)

Most of these researches which have been conducted are based on developed economies. Since different financial, economic and political landscape exist in emerging markets whether the impact of capital structure on firm performance is similar in emerging markets to that of developed economies should be examined. Consequently, some studies have been conducted based on the evidence of emerging markets which also shows mixed and contradictory results. (Booth et al., 2001; Rao et al, 2007; Abor, 2005; Zeitun and Tian, 2007; Ebaid, 2009) Further few researches have been conducted in Sri Lankan context on this topic which also provide contradictory results. (Manawaduge et al., 2011; Pratheepkanth, 2011; Sivathaasan, 2013; Samarakoon, 1997; Samarakoon, 1999; Senaratene, 1998)

Since the capital structure choices still remains a puzzle and the finance literature on Sri Lankan context is limited, this is an area that should be further researched. Adding to that Kinsman and Newman (1999) identified (cited in Ebaid, 2009) the examination of the

relationship between capital structure choice and firm performance is very important for many reasons. The most important reason is studying the relationship between firm performance and debt level is studying the association between shareholder wealth and debt level, since the primary goal of a firm is to shareholder wealth maximization.

Through this paper the researcher aims to empirically examine the impact of capital structure on firm performance of manufacturing companies listed in the Colombo Stock Exchange during the period of 2013 to 2018.

The rest of the paper is organized as follows. The following section describes the literature review, justification of selection of variables and the model. The next section is the analysis and the discussion of the results.

## **2. Literature Review**

Capital structure puzzle is tougher than the dividend one (Myers, 1984). The impact of the capital structure on firm value is a debated topic through decades. Many researches have been done and many theories have been developed to discover whether capital structure is relevant on determining firm value.

In 1958 in a seminal paper of Modigliani and Miller argued capital structure is irrelevant in determining firm value under perfect capital market conditions; homogenous expectations, no taxes, no transaction cost, no bankruptcy cost and symmetric information. Stiglitz (1969) confirming the theory stated in a perfect capital market the firm value is independent of its capital structure. However, in the real-world perfect capital markets do not exist.

In 1963 after considering market imperfections Modigliani and Miller revised their earlier prepositions concluding capital structure is important in determining firm value when tax shield is considered. Kraus and Litzenberger (1973) argued the taxation on corporate profits and the existence of bankruptcy penalties are the major market imperfections and they effect of capital structure valuation. In this paper the researcher mainly uses three theoretical models in explaining the impact of capital structure on firm performance. The Agency Theoretic Framework, The Pecking Order Hypothesis and The Static Trade-off Model.

### *2.1 The Agency Theoretic Framework*

Jensen and Meckling (1976) introduced the concept of agency cost: when the “ownership and control” of a firm is separated the managers might not always work in the interest of the owners. Further Jensen (1986) through extension of the research suggested holding debt in the capital structure is an inexpensive way of eliminating or mitigating the agency cost of the debt.

Grossman and Hart (1982) explained if the firm is all equity financed the managers do not have a strong incentive to maximize the profits. They would use the cashflows of the firm for the “enjoyment of their perquisites” and to “maximize their own income”. However, with the debt in the capital structure if the managers do not seek to maximize the profits the probability of bankruptcy increase. Eventually result in managers losing their perquisites in an event of bankruptcy. Hence managers prefer to maximize the wealth come or close to it rather than to risk sacrificing their perquisites.

Therefore, this theory argues debt level and firm performance has a positive relationship.

### *2.2 The static Trade-off Model*

According to Roden and Lewellen (1995) Leverage result in both benefits and costs. The benefits include reduction of the agency cost and the tax shield and costs are the possible financial distress. The managers seek to balance off the leverage related costs and benefits. According to Abor (2005) the examples for direct bankruptcy cost are legal and administrative costs in bankruptcy process. Titman (1984) identifies indirect bankruptcy costs associate with firm going out of business.

Based on imperfect capital market argument where tax shield and bankruptcy costs impact the value of the firm, Myer (1984) supports static trade off model. He argues that a firm has an optimal capital structure. The firm balance off the tax shield and cost of bankruptcy to achieve it. According to this argument at the lower levels of leverage present value of interest tax shield exceed the present value of bankruptcy penalties and higher levels of leverage the opposite occurs.

The more profitable is the firm higher the tax shield, therefore profitable firms obtain more debt to take the benefit of the higher tax shield. Their optimal capital structure can be achieved at higher levels of leverage whereas less profitable firms have a smaller tax shield which will result in optimal capital structure at lesser level of leverage. Consequently, the static trade off models suggest that firm performance and the debt level has a positively relationship.

### *2.3 The Pecking Order Hypothesis*

Myers and Majluf (1984) states the managers of the firms prefer internal equity to other forms of financing. If they are to obtain external financing, they prefer debt to external equity. This they explain according to the pecking order hypothesis. They further state this preference arise due to the information asymmetry between the managers and external parties of the organizations.

The firms will initially rely on internal equity or retained earnings, where there is no existence of information asymmetry, to finance the projects. Then to cover up the additional fund need they will prefer debt and finally external equity. The reason is; due to the information asymmetry the new shareholders will require a higher rate of return or they will undervalue the shares which result in transferring the value from old shareholders to new shareholders. According to the pecking order theory we assume that management acts in favor of old shareholders interest. Therefore, they will not issue external equity unless market overvalues it (Myers, 1984)

According to Chittenden et al. (1996) apart from that underpricing of the stocks the cost incurred in stock market flotation is quite considerable. They further state with the stock market flotation wider share ownership may result in loss of control of old shareholders and possibility of takeover. Hence after consideration of relative cost of different sources of financing external equity can be identified as least favored option of the managers.

According to this theory we can identify if the firms are profitable they will have enough retained earnings to invest in the new projects. Therefore, large profitable firms with less investment opportunities will have a lesser level of debt. The less profitable firms who do not have enough retained earnings will borrow more to finance their investments. Therefore, less profitable/small firms with more investment opportunities have more debt in their capital structure. (Ebaid, 2009) Therefore in conclusion this theory depicts firm performance and the debt level are negatively correlated.

#### *2.4 Empirical Evidence*

Number of empirical studies have been conducted in different time periods in different countries using different data sets to examine the nature of relationship between capital structure and the profitability. These have provided mixed and contradictory results.

Kester (1986) finds a negative relationship between two variables. Rajan and Zingales (1995) conducted research using data of G-7 countries (The U.S., Japan, Germany, France, Italy, The U.K. and Canada). Through their study they find profitability is negatively correlated to the debt level and leverage of the large firms are considerably more negatively correlated with the profitability to that of smaller firms. Gleason et al. (2000) conducted research Retail firms of on 14 European countries and concludes negative relationship exist between capital structure and firm performance. Goddard et al. (2005) also concludes negative relationship between the variables in manufacturing and service firms in four European countries.

Also, some of the studies conducted in emerging markets also provide evidence on negative relationship between capital structure and firm performance. Through analysis of data of 10

developing countries Booth et al. (2001) concludes the finding are consistent with pecking order hypothesis; that is profitable firms use less leverage. Rao et al. (2007) suggest contrary to static trade-off theory capital structure negatively impacts Omani firms. Sadeghian et al., (2012) claim firm performance is negatively impacted by the debt level in Tehran Stock Exchange Companies. Dawar (2014) concludes the capital structure negatively impacts on the performance of Indian listed companies. Apart the above-mentioned number of empirical studies provide evidence on negative relationship between debt level and firm performance (Friend and Lang,1988; Titman and Wessels, 1988; Wald, 1999; Majumdar and Chhibber, 1999; Zeitun and Tian, 2007)

Some empirical studies support the positive relationship between capital structure and the firm performance. Taub (1975) through research on determinants of the capital structure concluded returns of the firm, long term interest rate and firm size have a positive impact on the debt to equity ratio. Grossman and Hart (1982) and William (1987) able to establish that use of debt in the capital structure enhance the value of the firm through reduction of agency cost. Consequently, debt has a positive impact on firm performance. Roden and Lewellen (1995) through analysis of leverage buy outs in The U.S. for period of 10 years find that firms with high level of free cashflows are the once who benefit the most from the reduction of agency cost due to debt. Therefore, firm performance and the capital structure have a positive relationship.

Hadlock and James (2002) stipulate the borrowings increase the financial performance of the firm; therefore, sends a positive message to investors. Berger and Bonaccorsi di Patti (2006) finds that their results are consistent with Agency Cost Hypothesis. Margaritis and Psillaki (2010) documents similar results for a sample of French firms.

Similarly, some studies report both positive as well as negative effects on the firm performance. Berger and Bonaccorsi di Patti (2006) stipulate findings may not consistent with Agency Cost Hypothesis at very high levels of leverage. Abor (2005) reveals Ghanaian firms have a significant positive relationship between short term debt and firm performance. But a negative relationship exists between long term debt and firm performance. Margaritis and Psillaki (2007) using a sample of New Zealand firms finds the effect of leverage on firm performance is positive in low to mid-leverage level and negative at high-leverage level. Ebaid (2009) reports capital structure of Egyptian listed firms have weak or no impact on firm performance.

By looking at the past literature it is apparent after decades of studies researchers still try to figure out the impact of capital structure on firm performance. Empirical studies have

provided contradictory results. According to Abor (2005) there is no universal theory of the debt and equity choice.

### **3. Methodology**

#### *3.1 Data and Sample*

The study was conducted to investigate the performance of Manufacturing firms listed in Colombo Stock Exchange for the period of 2013 to 2018. 28 firms were qualified to be included in the study sample. The researcher screened out some listed manufacturing companies because non-availability of required data for the sample period. The data was taken from the audited financial statements of the companies in Colombo Stock Exchange website.

#### *3.2 Variable Measurement*

*3.2.1 Firm Performance:* Accounting based measures as Return on Equity (ROE) , Return on Assets (ROA), Return on Investment (ROI), Gross profit margin(GP) using balance sheet and income statement figures (e.g.: Rajan and Zingales, 1995; Wald, 1999; Gleason et al., 2000; Booth et al., 2001; Abor, 2005; Rao et al., 2007; Ebaid, 2009; Sadeghian et al., 2012; Dawar, 2014) and market base measures as Tobin's Q (e.g.: Cole and Mehran, 1998; Abor, 2007; Manawaduge et al., 2011; Sadeghian et al., 2012) and measure of profit efficiency i.e. managerial efficiency computed using a profit function(Berger and Bonaccorsi di Patti, 2006) have been used in past literature to measure the firm performance.

In this study we consider one accounting measure; that is Return on Equity (ROE) to measure the firm performance. Because ROE is a function of profitability, asset use efficiency and equity multiplier.

*3.2.2 Financial Leverage:* In different studies leverage has been measured using different parameters. However, in this study we have considered two explanatory variables to explain the impact of capital structure on firm performance.

- Short Term Debt to Total Assets (STD/TA)
- Long Term Debt to Total Assets (LTD/TA)

These are the same measures as used in studies of Hall et al. (2004), Abor (2005), Abor (2007), Ebaid (2009), Sadeghian et al. (2012) and Dawar (2014).

Short term debt is defined as the portion of the company's total debt repayable within one year (Hall et al., 2004) We have included bank overdraft, trade and other payables and other current liabilities. Long term debt is defined as the portion of total debt repayable beyond one year (Hall et al., 2004) We have excluded deferred tax liabilities and employee benefits from

LTD because they may overstate leverage. These arise from contracts and not used as sources of financing. Consequently, they will influence the ratio (Rajan and Zingales, 1995).

Total Debt to Assets has not been considered because total debt masks two opposite effects for long-term and short-term debt for some of the explanatory variables (Chittenden et al., 1996). All the variables used are based on book values extracted from financial statements of the companies.

*3.2.3 Control Variables:* We have identified apart from capital structure the firm characteristics such as firm size, tangibility of assets and growth impacts the firm performance. These characteristics which impacts firm performance were chosen as the control variables.

Firm size (SIZE) is an important determinant of profitability. The size of the firm is measured using log of total assets (Rajan and Zingales, 1995; Wald, 1999; Rao et al, 2007; Dawar, 2014). Researchers argue firm size positively impacts the firm performance. According to Rajan and Zingales (1995) larger firms tend to be more diversified and fail less often. Wald (1999) stipulates larger firms may be able to reduce the transaction costs associated with long term debt issuance. According to Himmelberg et al. (1999) larger firms can enjoy economies of scales. In summary size of the firm can expected to positively impact the firm performance.

Tangibility of Assets (TANG) of the firm is another characteristic that can negatively impacts the firm profitability. The tangibility of assets is measured using the ratio of net fixed assets to total assets.

Zeitun and Tian (2007) argues firms with high levels of intangible assets tend to have more investment opportunities in the long term and consequently negative association between tangibility and profitability.

However, a contradicting argument is presented by Jensen and Meckling (1976) and Titman and Wessel (1998) Firms with more tangible assets have in general greater ability to secure debt as these assets can be used as collateral. Thus, asset tangibility is expected to have a positive effect on leverage

Growth of the firm (GROW) can be considered as a characteristic that affects positively for the firm performance. As in Majumdar and Chhiber (1999) we measure the growth of the firm with rate of change in the sales between observation year and preceding year.

According to Margaritis and Psillaki (2010) this variable can be used as the proxy for growth prospects and investment opportunities. According to Zeitun and Tian (2014) the firms with high growth opportunities are expected to have high performance resulting high level of



return on investment. Hence, the growth rate is expected to positively affect the firm performance.

These are the control variables or exogenous variables that have been considered in this study.

### 3.3 Research Hypotheses

Based on the variable measurements the following hypotheses were developed:

$H_1$ - There is a negative significant relationship between firm's short-term debt policy and performance.

$H_2$ - There is a negative significant relationship between firm's long-term debt policy and performance.

### 3.4 Model

To capture the relationship between the capital structure choice and firm performance we developed the following regression models.

$$ROE_{i,t} = \beta_0 + \beta_1 STD_{i,t} + \beta_2 LTD_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 TANG_{i,t} + \beta_5 GROW_{i,t} + \mu_{i,t}$$

$ROE_{i,t}$  – Net profit divided by average total equity for firm  $i$  in time  $t$

$STD_{i,t}$  – Short term debt divided by total assets for firm  $i$  in time  $t$

$LTD_{i,t}$  – Long term debt divided by total assets for firm  $i$  in time  $t$

$SIZE_{i,t}$  – Natural log of total assets for firm  $i$  in time  $t$

$GROW_{i,t}$  – Sales growth for firm  $i$  in time  $t$

$\beta_0$  – Intercept

$\beta_1 - \beta_5$  - Coefficients of the concerned explanatory variables

$\mu_{i,t}$  – Error term for firm  $i$  in time  $t$

## 4. Analysis and Discussion

The research was conducted using panel data analysis method since both longitudinal and cross-sectional data were collected related to companies. The data set is consisting of balanced panel data for the entire sample period. Hausman (1978) specification test results suggest the random effect methodology to be carried out. According to Rao et al. (2014) The Hausman test assumes for the null hypothesis that there is no correlation between the individual effects and the regressors and hence REM should be used.

Variance inflation factor is  $<5$ . This shows the data is free from multicollinearity problem. Bruesch-Pagan test for heteroskedasticity shows data is free from heteroskedasticity and Jarque-Bera test reveals residuals are normal.

#### 4.1 Descriptive Statistics

Table presents descriptive statistics of the dependent, independent and control variables. Mean value of ROE in the manufacturing firms are .096 with a standard deviation of .143. This shows the performance of the manufacturing sector in CSE under the period of consideration was relatively poor. Further mean of the short-term debt to total assets of the manufacturing firms are .296 with a minimum of .066 and maximum of .601 and mean of the long-term debt to total assets are .032 with a minimum of 0 and a maximum of .197. This shows nearly 30% of the manufacturing firm total assets are finance through short-term debt and very small portion of long-term debt has been used for financing. From this we can observe most of the Sri Lankan manufacturing firms are low geared and major portion of the TA of the firms have been financed through equity.

**Table 1: Descriptive Statistics**

Variable	Obs	Mean	Std.Dev.	Min	Max
ROE	140	.096	.143	-.206	.379
STD	140	.296	.154	.066	.601
LTD	140	.032	.054	0	.197
SIZE	140	9.204	.46	8.315	9.848
TANG	140	.484	.172	.192	.777
GROW	140	.095	.142	-.136	.431

#### 4.2 Correlation Analysis

Table 2 presents the pairwise correlation of independent variables and control variables to the firm performance. According to this table short term debt and firm performance has a negative relationship which is significant. Firm size and ROE (firm performance) has a positive relationship which is significant. Long term debt, tangibility has positive relationships, but these are not significant. However, growth shows a negative relationship with firm performance, which is contrary to findings of past literature.

**Table 2: Pairwise correlation**

Variable	ROE	p-value	Sig
STD	-	0.014	**
	0.207		
LTD	0.019	0.826	
SIZE	0.327	0.000	**
			*
TANG	0.097	0.252	
GROW	-	0.678	
	0.035		

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

### 4.3 Regression Analysis

Below given are the results from random effect regression.

**Table 3: Random Effect Regression results**

ROE	Coef.	St.Err.	t-value	p-value	Sig
STD	-0.342	0.081	-4.25	0.000	***
LTD	-0.324	0.218	-1.49	0.136	
SIZE	0.128	0.026	4.96	0.000	***
TANG	-0.011	0.075	-0.14	0.889	
GROW	-0.065	0.063	-1.02	0.307	
CONSTANT	-0.959	0.237	-4.05	0.000	***

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Mean dependent var	0.096	SD dependent var	0.143
Overall r-squared	0.182	Number of obs	140.000
Chi-square	40.837	Prob > chi2	0.000
R-squared within	0.257	R-squared between	0.128

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

As shown in the above tables the results indicate there is a negative relationship between short term debt and the firm performance (ROE). The coefficient of STD is -0.342 and correlation coefficient is -0.207. Both are significant at 5% significance level which suggest a

negative relationship. This means increase in short term debt result in decrease of profitability.

On the other hand, the correlation results suggest that the relationship between long term debt and profitability is not significant. This is due to the minimum use of long-term debt by manufacturing firms in their capital structure. As presented by descriptive statistics mean of the LTD/TA is .032 which is small fraction of the capital structure. Since the manufacturing firms listed in CSE is barely using long term debt in their capital structure it does not have an impact on the firm performance.

Firm size shows a positive relationship with the performance of the firms. It has a coefficient of .128 and significant at 5% confidence interval. Larger the firm higher the profitability. This suggest larger firms enjoy economies of scale resulting higher profitability. However other control variables, tangibility and growth do not have significant effect on firm performance.

In summary the results shown in table 2 and 3 indicates after controlling the factors such as firm size, tangibility and growth the capital structure especially short-term debt has a negative impact on the firm performance in manufacturing firms listed in the Colombo Stock Exchange. Further results reveal manufacturing firms in Colombo Stock Exchange mainly depend on equity capital and usage of the long-term debt is at minimum. This may have been due to underdeveloped nature of the Sri Lankan corporate bond market. According to Manawaduge et. al (2011) The corporate debt market of Sri Lanka is not widely used by Sri Lankan firms. Cost of borrowing is high due to firms relying on traditional sources like bank borrowings. Consequently, the suppliers of debt capital in Sri Lanka, unlike developed economies, are primarily banks which has a higher cost of debt than direct financing. Further when we consider overall interest rate of the economy Sri Lanka has a higher interest rate than a developed country which would decrease the profits for companies who would rely on debt.

The results of this study in line with the findings of the previous literature which suggest the debt negatively impacts the firm performance. (Kester, 1986; Gleason et al., 2000; Goddard et al., 2005; Booth et al., 2001; Rao et al., 2007; Dawar, 2014; Friend and Lang, 1988; Titman and Wessels, 1988; Wald, 1999; Majumdar and Chhiber, 1999; Zeitun and Tian, 2007; Manawaduge et al., 2011)

## 5. Conclusion

Even though many researches have been conducted the impact of capital structure on firm performance remains a puzzle. The factors that impacts the capital structure choice in the developed markets and emerging markets must be further studied and compared.

This study was conducted using 28 manufacturing firms listed in the Colombo Stock Exchange for the period of 2013 to 2018. The results revealed the Sri Lankan manufacturing firms mostly depend on equity and rely on short term debt than long term debt. Results shows firm performance and the short-term debt has a negative relationship. Higher levels of short-term debt negatively impact the firm performance. The main reason for this could be identified as under developed nature of the bond market in Sri Lanka and high cost of short-term debt.

This research can be extended to other sectors of Colombo Stock Market and further research can be conducted on other factors such as; firm size, growth, tangibility, liquidity which affects the firm performance. Since the study reveals there is a negative relationship between short term debt and firm performance further research could be undertaken to identify the relationship between maturity structure of the debt and its impact on firm performance.

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