# Factors Influencing Companies' Leverage: Evidence from Listed Manufacturing Companies in Sri Lanka

Thusyanthi. R[1] and Yogendrarajah. R[2]

[1]*Advanced Technological Institute, Jaffna.*

[2] *Department of Financial Management, University of Jaffna*

**Abstract**

The purpose of this study was to find the factors that influence on financial leverage of Sri Lankan listed manufacturing companies. The sample covered 33 manufacturing companies listed in Colombo Stock Exchange (CSE) and the analysis was based on the year end observations of five years from 2011-2015. Panel data analysis was used and profitability, tangibility, growth rate, and firms' size were analyzed as the determinants of the companies' financial leverage. Tangibility significantly impact on long term leverage; Profitability and Firm's Size was confirmed to be a relevant determinant to total leverage. More profitable companies would tend to have fewer debts, since they use the retained earnings rather than debts. This evidence is support to the pecking order theory. High growth firms are more likely to use long-term leverage. These companies use more short term loans than long term loans. The lack of developed long-term debt market may be the main reason for this situation in Sri Lanka.

**Keywords:** Determinants, Leverage, Listed Manufacturing Companies

## Introduction

Business owner can use either debt or equity to finance or buy the company's assets. Leverage as a business term refers to debt or to the borrowing of funds to finance the purchase of company's assets. It is clear that leverage is an important management decision as it greatly influences the owner's equity returns, the owner's risks as well as the market value of the shares. In other word, how a firm is financed is very important not just go to the managers of the firm but also to fund providers. This is because if a wrong mix of finance is employed, the performance and survival of the business enterprise may be seriously affected. The term leverage is used to represent the proportionate relationship between debt and equity (Pandey 2010). The concept used to study the effect of various mix of debt and equity on the shareholders return and the risk in the capital structure of a firm is known as leverage (BhanuVasishtha, 2011). The Colombo Stock Exchange (CSE) is only one Sri Lankan stock exchanges financial market which has 295 companies representing 20 business sectors as at 18th August 2016. Here the researcher selects the manufacturing sector as a research sample, because, the manufacturing sector plays an important role in economic growth of Sri Lanka. This is justifying the importance of promoting manufacturing in the developing countries like Sri Lanka.

## Review of Literature

Following on from the pioneering work of Modigliani and Miller (1958) on capital structure has generated strong interest among financial researchers. Thus, it has fulfillment with new elements over the years, such as taxes, bankruptcy costs, agency costs and the information asymmetry. In recent years, a number of theories have been proposed to explain the variation in debt ratios across firms. The theories suggest that firms select capital structure depending on attributes that determine the various costs and benefits associated with debt and equity financing. Among these theories researcher select two conflicting theories such as static trade-off and pecking order of capital structure, which are briefly discussed. The Trade-Off theory of Myers (1977), says that a firm's adjustment toward an optimal leverage is influenced by three factors namely taxes, costs of financial distress and agency costs. Pecking order theory says least preferred mode of financing is issue of equity (Donaldson, 1961; Myers, 1984; Myers and Majluf, 1984).

**Factors Influencing companies' Leverage**

There are some factors influences on companies' leverage. Here researcher selects the following factors for the research purpose.

**Tangibility**

The ratio of fixed assets to total assets, the tangibility of assets represents the effect of the collateral value of assets of the firm's gearing level. There are various conceptions for the effect of tangibility on leverage decisions. If debt can be secured against assets, the borrower is restricted to using debt funds for specific projects. Creditors have an improved guarantee of repayment, but without collateralized assets, such a guarantee does not exist. Leary and Roberts (2005), Bulan and Yan (2009) and (Vijayakumaran&sunitha, 2011) measured tangibility as net property, plant and equipment divided by total assets. Huang and Song, Drobetz and Fix (2003), Abimbola Adedeji, Dilek Teker,Ozlem Tasseven, (Lingesiya, 2012) and Ayca Tukel (2009) measured tangibility as fixed assets divided by total assets.

Tangibility = Total Fixed Assets/ Total Assets

**Profitability**

The ratio of Earnings before Tax (EBT) scaled by total assets, Profitability plays an important role in leverage decisions. Profitability is measured by return on assets. ROA represents the contribution of the firm's assets on profitability creation. Profitability is a measure of earning power of a firm. The earning power of a firm is generally the basic concern of its shareholders. Akhtar and Oliver (2006) measured profitability as the average net income to total sales for the past four years. Wafaa Sbeiti (2010) and (Lingesiya, 2012) measured profitability as the ratio of operating profit to book value of total assets. Titman and Wessels (1988), Drobetz and Fix (2003) measured it as the ratio of operating income over total assets (ROA) and the ratio of operating income over sales. Chen and Hammes (2003), Rajan and Zingales (1995), Abimbola Adedeji, Francisco Sogorb-Mira José López-Gracia (2003) measured profitability as earnings before interest and taxes divided by total asset.

Profitability = Earnings before Interest and Tax/ Total Assets

**Growth Rate**

This is measured by market to book value of assets (Myers, 1977) and (Vijayakumaran & sunitha, 2011). The market value of total assets is the book value of total assets minus book value of equity plus market value of equity. The company growth rate is the percentage change of total assets. The growth potential of a firm can be measured by many different variables. Rajan and Zingales (1995) measured growth as Tobin's Q, Laarni Bulan and Zhipeng Yan (2009) measured growth as market-to-book ratio as market equity/book equity, and Akhtar and Oliver (2006) defined it as the average percentage change in total assets over the previous four years. Chen and Hammes (2003), Leary and Roberts (2005), and Sbeiti (2010) measured growth opportunities as the ratio of market value of assets (book value of assets plus market value of equity less book value of equity) to book value of assets.

Growth Rate = M/B ratio = Market Value of Assets/ Book value of Assets

**Firms' Size**

Company size is the natural logarithm of sale. Firm size provides a measure of the agency costs of equity and the demand for risk sharing. Firm size is likely to capture other firm characteristics as well (e.g., their reputation in debt markets or the extent their assets are diversified). Titman and Wessels (1988) and Drobetz and Fix (2003) measured firm size as the natural logarithm of net sales. Chen and Hammes (2003) measured firm size as in Rajan and Zingales (1995) that is the natural logarithm of total turnover. Akhtar and Oliver (2006), Leary and Roberts (2005), Francisco Sogorb-Mira y José López-Gracia (2003), Sbeiti (2010), (Vijayakumaran&sunitha, 2011) and (Lingesiya, 2012) measured size as the natural logarithm of total assets.

Size = Log of Sales value

**Past Research findings regarding the Determinants of capital structure in Sri Lanka**

It is worth reviewing the previous studies on Sri Lankan companies that are related to leverage. Samarakoon (1997) investigated the ability of market beta, book - to –market equity, leverage and earning price ratio to explain the cross sectional variation in expected returns in Sri Lanka. He found no evidence of a relationship between mean returns, size of the firm, book-to-market equity and leverage. Senerathne (1998) tested the applicability of pecking order theory of financing in Sri Lanka. The results suggested that Sri Lankan companies follow the pecking order partially. Colombage (2005) empirically investigates the capital structure of Sri Lankan companies and finds that the financing trend of Sri Lankan firms confirms the pecking order hypothesis to a greater extent than predictions of information asymmetry and static tradeoff consideration. Champika and Gunaratne (2007) found that Sri Lankan firms demonstrated a market timing behavior in adjusting their capital structure. They also revealed that profitable firms are particularly very much reliant on internal financing. Rathirani and Sangeetha (2011) found there is low relationship between the factors of leverage and profitability, tangibility and assets turnover has negative relationship related with leverage. Pirakalathan (2010) found that Capital Intensity positively related with long term debt and total debt and negatively related with short term debt. Tangibility positively related with long term debt short term debt and total debt. Profitability negatively related with long term debt short term debt and total debt. Firm size negatively related with long term debt short term debt and total debt. Non-debt tax shield negatively related with long term debt short term debt and total debt. Silva and Ranjani(2010) found that positive association between leverage and non debt tax shields, -size measured in terms of sales, size measured in terms of assets, tax, volatility, tangibility, and profitability (return on equity) while -negatively associate with profitability (return on capital), profitability (return

on assets) and growth opportunities. Vijayakumaran and Sunitha, (2011) found that The size of the firms is positively significantly related to leverage while profitability is negatively significantly associated with leverage suggesting that more profitable firms tend to use less leverage. This suggests that firms tend to follow a reverse pecking order with regard to external financing: Equity is the first source of external finance on the pecking order. This study documents that the size and profitability have robust effects on long-term leverage in Sri Lanka Lingesiya(2012) found that profitability and tangibility are negatively related with leverage while non debt tax shield is positively related to leverage. At the same time size did not have significant relations with leverage of the Sri Lankan companies. Profitability only had a significant negative relation with long term debt to total assets ratio. Tangibility, non debt tax shield, and size did not have significant relations with long term debt to total assets ratio. Buvanendra (2013)Profitability, Tangibility, Size and Growth rate were used as independent variables, while leverage ratios such as total debt ratio, long term debt ratio and short term debt ratio were the dependent variables and the result was only profitability variable was statistically significant with leverage ratios (with total debt ratio and short term debt ratio) at manufacturing companies. Ajanthan (2013), results suggest that only profitability is negatively related to the debt ratios (long term; short term and total debt) whereas tangibility (asset structure), size and growth do not appear to be significantly related to the debt ratios. Through the findings we can come to conclusion that Pecking order theory is more relevant to Sri Lankan context. Sangeetha and Sivathaasan (2013), Results revealed that the use of debt capital is relatively low in Sri Lanka and size, growth rate and profitability are statistically significant determinants of capital structure. Hanitha and Anandasayanan (2015) result of this study Profitability and Non debt tax shield were confirmed to be relevant determinant for Sri Lankan manufacturing companies, except Tangibility.

**Research Problem**

Through this study researcher try to find out "To what extent the influencing factors of leverage affect the leverage level of the listed manufacturing companies in Sri Lanka?"

**Objective**

The main objective of this study is "To examine the factors' influence on leverage of Listed Manufacturing companies in Sri Lanka" in the light of the trade off and Static Pecking Order theory.

**Hypothesis**

H1: Firm's Tangibility of assets, Profitability, Growth Rate and Firms' Size significantly impact on firm's long term leverage

H2: Firm's Tangibility of assets, Profitability, Growth Rate and Firms' Size significantly impact on firm's Total leverage

## Methodology

**Sampling method**

Listed companies in Colombo Stock Exchange are identified and listed manufacturing companies are selected for the purpose of this study. The reason for taking manufacturing companies are these are more compare with other companies and manufacturing industry is

the important one in the country's economic development. There are 37 manufacturing companies in Colombo Stock Exchange. Out of the 37 companies the researcher decides to select 33 companies based on the data availability and time period taken for the study.

**Data collection**

The secondary data will be used for the study. Thus the data will be collected from the annual financial reports of listed companies published by the Colombo Stock Exchange, Journals and books etc. This study is based on the financial data of 33 manufacturing firms for five years from 2011-2015.

**Conceptualization**

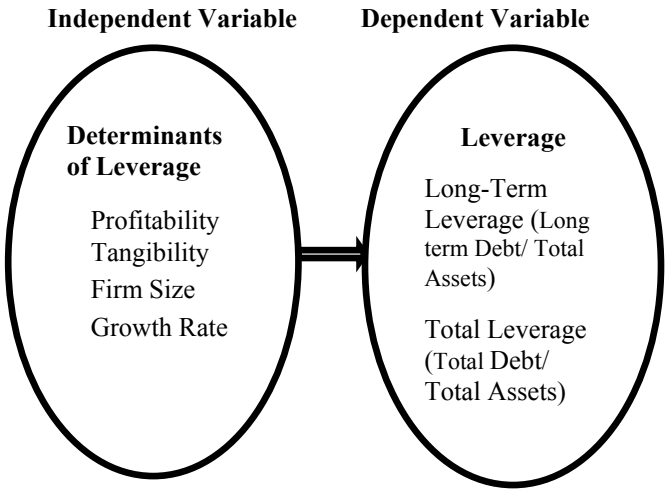


Figure 1 Conceptualization

Source: Developed by Researcher

**Data Analysis**

The study examines the determinants of capital structure of listed manufacturing firms in Sri Lanka by using the descriptive Statistics analysis and multiple Regression analysis (OLS model).

**Model – I**

$LTDR_{i,t} = \beta 0 + \beta 1 TANG_{i,t} + \beta 2\ PROF_{i,t} + \beta 3\ GR_{i,t} + \beta 4\ FSIZE_{i,t} + \varepsilon$

**Model – II**

$TDR_{i,t} = \beta 0 + \beta 1 TANG_{i,t} + \beta 2\ PROF_{i,t} + \beta 3\ GR_{i,t} + \beta 4\ FSIZE_{i,t} + \varepsilon$

Where, $\beta 0$ = constant variable
$\beta 1, \beta 2, \beta 3, \beta 4$, - Model coefficients of variables
$\varepsilon$ = Error term.
$i,t$ = for firm i in period t

## Data Analysis and Result

The researcher tries to summarize the statistics for the selected variables with the help of the EViews 8 software for the statistical analysis purpose and output of descriptive statistics are as follows.

Table 1 Descriptive Statistics analysis

| | Observations | Mean | Maximum | Minimum | Std.Dev |
|---|---|---|---|---|---|
| Tangibility | 165 | 0.489350 | 0.938395 | 0.052335 | 0.198126 |
| Profitability | 165 | 0.097230 | 0.636034 | -0.309998 | 0.124870 |
| Growth rate | 165 | 1.933069 | 9.566923 | 0.577719 | 1.703600 |
| Firm size | 165 | 9.128017 | 10.16196 | 7.619092 | 0.605322 |
| Long-term leverage | 165 | 0.100041 | 0.692925 | 0.002217 | 0.108763 |
| Total leverage | 165 | 0.420273 | 1.806276 | 0.039228 | 0.208935 |

Source: Analyzed data

Mean value of tangibility was 48.9% which indicated 48.9% of fixed assets were in the total assets. Generally, higher level of tangible assets requires higher level of long term debts than short term loans. Average value of profitability over ten year period was 9.7% (it was nearly 10%) that demonstrate a not remarkable performance of the companies in the period under study. Because of the minimum value of the profitability -30.99% was found by this study. It can be seen that Sri Lankan listed manufacturing companies have a low rate of profitability. The growth rate on average is 193.3% and the manufacturing companies tend to have a high growth. Based on Firm size, as expected, the manufacturing companies are bigger with mean value of log of sales is 9.13. Average of long term debt to total assets was 10 % that depicts a noteworthy portion of assets was financed with the long term debt. The substantially low amount of long term debt reflects the fact that the listed manufacturing companies are mainly financed by share capital rather than debt. Manufacturing companies tend to have a low average long term debt 10 percent than the short term debt 32 percent. This implies that manufacturing companies prefer short term loans rather than long term ones. The total debt ratio is 42% of total book value of assets in manufacturing companies is having higher average total debt ratio. It is also close to the average total book - debt level of 51% in developing countries (Booth et al., 2001). In compare with total debt 42% , total debt consist only 10% of long term debt and rest 32% is the short term debt. The under development nature of the long term debt market might be one of the possible reasons. Overall 42% assets were financed with the debt that depicts listed companies was moderately leveraged.

**Multiple Regression analysis (OLS model)**

The objective of regression analysis is to examine the linear relationships between the predictor and criterion variables, to examine the influence of tangibility, profitability, growth and firm size on long-term leverage, and total leverage.

**Testing of hypothesis**

The probabilities of the each pair of variables are tested in compare with the probability value of 0.05 and then hypotheses can be decided whether accepted or rejected. The following is the regression result of the effect of independent variable on dependent variable. 0.000 level of significant is the highest significant level which implies that dependent variable is significantly influenced by independent variable.

Table 2 Hypothesis 1

| Model 1 | | t- statics | P value | Hypothesis |
|---|---|---|---|---|
| Long term Leverage | TAN | 5.286710 | 0.0000 | Accepted |
| | PROFIT | -0.888746 | 0.3755 | Rejected |
| | GR | 0.754144 | 0.4519 | Rejected |
| | FS | -0.019717 | 0.9843 | Rejected |

Tangibility has a positive highly significant regression coefficient on long-term leverage, with 0.000 at 0.05 significant level and 5.286710 t-values. This suggests that high tangibility firms are more likely to use long-term leverage for financing their investments than firms with low tangibility. Profitability has a negative but not significant regression coefficient on long-term leverage, with 0.3755 at 0.05 significant level and -0.888746 t-values. This suggests that high profitability firms are less likely to use long-term leverage for financing their investments than firms with low profitability. Growth has a positive but not significant regression coefficient on long-term leverage with 0.4519 at 0.05 significant level and 0.754144 t-values. This suggests that high growth firms are more likely to use debt for financing their investments than low growth firms. Size has a negative but not significant regression coefficient on long-term leverage, with 0.9843 at 0.05 significant level and -0.019717 t-values. This suggests that larger size firms are less likely to use long-term leverage for financing their investments than small size firms.

Table 3 Hypothesis 2

| Model 1 | | t- statics | P value | Hypothesis |
|---|---|---|---|---|
| Total Leverage | TAN | -0.592592 | 0.5543 | Rejected |
| | PROFIT | -1.783418 | 0.0764 | Rejected |
| | GR | -1.080752 | 0.2814 | Rejected |
| | FS | 10.72054 | 0.0000 | Accepted |

Source: Analyzed data

Tangibility has a Negative but not significant regression coefficient on total leverage, with 0.5543 at 0.05 significant level and -0.592592 t-values. This suggests that high tangibility

firms are less likely to use total leverage for financing their investments than firms with low tangibility. Profitability has a negative but not significant regression coefficient on total leverage, with 0.0764 at 0.05 significant level and -1.783418 t-values. This suggests that high profitability firms are less likely to use total leverage for financing their investments than firms with low profitability. Growth has a negative but not significant regression coefficient on total leverage, with 0.2814 at 0.05 significant level and -1.080752 t-values. This suggests that high growth firms are less likely to use total leverage for financing their investments than low growth firms. Size has a positive highly significant regression coefficient on total leverage, with 0.0000 at 0.05 significant level and 10.72054 t-values. This suggests that larger size firms are more likely to use total leverage for financing their investments than small size firms.

Table 4 Consistency of the regression result to theory

| Determinants/ Factors | Predicted sign by the theories of Trade-Off theory and Pecking Order | Predicted sign by this research |
|---|---|---|
| Tangibility | +(trade-off)<br>+(Pecking order) | Positive with Long term leverage<br>Negative with Total leverage |
| Profitability | +(trade-off)<br>-(Pecking order) | Negative with both leverage |
| Growth Rate | -(trade-off)<br>+(Pecking order) | Positive with Long term leverage<br>Negative with Total leverage |
| Firms' Size | +(trade-off)<br>-(Pecking order) | Negative with Long term leverage<br>positive with Total leverage Positive |

Source: Secondary data and Analyzed data

Coefficient of Determination (R-squared)

Table 5 Model summary

| **Model** | **R square** | **Adjusted R Square** | **Std.Error of the Estimate** |
|---|---|---|---|
| LL | 0.143433 | 0.127473 | 0.101595 |
| TL | 0.078926 | 0.061763 | 0.202380 |

Predictors: (constant),TAN,PROFIT,GR ,FS

Source: Analyzed data

R-squared shows a predictor tangibility, profitability, growth and firm size of 0.143 with long-term leverage as dependent variable. This means that 14.3% of the long-term leverage could be explained by the existence of those variables. R-squared shows a predictor tangibility, profitability, growth and firm size of 0.0789 with total leverage as dependent variable. This means that 7.9% of the total leverage could be explained by the existence of those variables.

Table 6 Standardized Beta Coefficients summary

| Variables | Long-term Leverage | Total Leverage |
|---|---|---|
| TAN | 0.203270 | -0.045388 |
| PROFIT | -0.062708 | -0.250668 |
| GR | 0.003753 | -0.010715 |
| FS | -4.95E-05 | 0.053565 |

Standardized coefficients of tangibility, profitability, growth and firm size on long-term leverage as dependent variable of this model 1, tangibility is the large effect or contributed variable on the long term leverage level. Standardized coefficients of tangibility, profitability, growth, Non debt tax and firm size on total leverage as dependent variable of this model 2, profitability (-0.251) is the large effect or contributed variable on the total leverage level.

## Conclusion

Mean value of tangibility indicated nearly half portion of the total assets was fixed assets. Average value of profitability over five year period demonstrates a not remarkable performance of the companies in the period under study. Firms' growth rate is high level and firms' size also large. Overall 42% assets were financed with the debt that depicts listed companies was moderately leveraged. According to the regression analysis, all the independent variables of determinants of leverage other than tangibility were not significantly impact on long term leverage and all the independent variables of determinants of leverage other than Firms' size were not significantly impact on total leverage.

**Limitations and Scope for future Study**

The study suffers from certain limitations which are, the study is purely based on listed manufacturing companies, so the results of the study are only indicative and not conclusive. And data representing the period of 5 years were used for the study. The findings of this study imply areas that need further study. The study covered only the listed manufacturing sector companies. Therefore, additional investigation is required to examine firms in the different sectors in the capital structure patterns. Giving enough time and resources it is possible to attempt to study some other listed companies in Sri Lanka over a long period of time and using different statistical methods in order to have a more comprehensive result. In future the above technique may be used by considering more than five years. The analyses and findings of this study show that there are some factors other than the independent variables used for this study, that affect financial leverage, further Research could be conducted to identify those other factors so as determine the capital structure.

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