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DETERMINANTS OF DEBT FINANCING: AN EMPIRICAL ANALYSIS OF NON-FINANCIAL LISTED COMPANIES IN SRI LANKA

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Abstract

The purpose of this study is to identify the factors which determine the level of debt financing over the equity financing of the non-financial companies in Sri Lanka. The study is conducted on a sample of 30 companies from non-finance companies listed on the Colombo Stock Exchange (CSE). The sample consists of 20 companies that are selected based on the highest market capitalization and 10 companies which have issued debentures in the market. The data are obtained from the annual reports of sample companies for the years 2015 to 2018 for this purpose. A panel data regression analysis is conducted to analyze whether the firm performance, age, size, agency cost of debt, tangibility, sales growth, liquidity, and tax shield have an impact on the debt financing decisions of the firm. The pecking order theory, agency theory, and trade-off theory are used to explain the impact of determinants on debt financing. The findings of the analysis show that the firm performance, size, liquidity, tangibility, sales growth, and agency cost of debt have generated an inverse association with the firm leverage. Age and non-debt tax shield positively correlated with leverage according to the analysis. Findings are in line with the hypotheses developed except for firm size, tangibility, and non-debt tax shield. The size of the firm and tangibility deviate from the hypotheses developed while the non-debt tax shield is found to be insignificant in influencing its decision to apply for financing. This research has provided the basis to explore the determinants of debt financing in the overall capital structure of Sri Lankan firms. The results are useful for the managers and the policymakers to have knowledge about the firm-specific determinants of debt financing, and it should help corporate managers to make optimal capital structure decisions. This study contributes to enhancing the existing literature by analyzing the impact of determinants of debt financing in listed non-financial companies in Sri Lanka.

Keywords: Determinants of Debt Financing, Non-Financial Companies, Pecking Order Theory, Trade-off Theory, Sri Lanka

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1 INTRODUCTION

1.1 Background of the Study

Investment decisions, working capital decisions, financing decisions and dividend decisions are fundamental and most critical functions of financial management in a company (Amit & Amir 2021). Therefore, this study mainly focuses on how debt financing decisions are determined over various factors namely firm performance, size, age, agency cost of debt, tangibility, sales growth, liquidity, and non-debt tax shield. The Financial manager compares the merits and demerits of each source of financing for a project. The determinants of debt financing provide an indication to select a suitable source of finance (Chadha & Sharma 2015). Modigliani and Miller (1958) highlight the irrelevance of capital structure under the assumptions such as no tax or zero transaction cost. Hence, the selection of debt or equity has no impact on the value of the company. However, the market is imperfect and assumptions such as no tax or zero transaction cost are not realistic. Therefore, capital structure decisions have an impact on the value of the firm and the cost of capital of an organization (Ganguli 2014). Pecking order theory (Myers & Majluf 1984), Agency cost of debt (Jensen & Meckling 1976), and Trade-off theory (Bradley et al. 1984) provide the theoretical background of the debt financing decision. Wrong financing decisions ultimately affect financial distress and bankruptcy (Alipour et al. 2013). Capital structure decisions should be taken to maximize the value of the firm but there is no specific model that has been developed to find out the optimal capital structure (Alipour et al. 2013). This is because theories relating to capital structure provide different perceptions about capital structure. While trade-off theory is more concerned with taxes, pecking order theory emphasizes information asymmetry and agency theory targets free cash flows (Sheikh & Wang 2011).

1.2 Corporate Debt Market in Sri Lanka

Sri Lankan corporate debt market was initiated in 1997. The corporate debt market was improved by enacting new listing rules in 2013 (CSE 2015). Stock brokering firms and primary dealers who have registered in CSE provide advice to deal in corporate debt securities. The market capitalization of the corporate debt market is relatively low which represents only 8% (CSE 2015) compared to the stock market. Bank, Insurance, and finance sector primarily deal with corporate debt markets other than a few other different industries. Debt financing through bank loans is the main source of debt financing in non-financial companies. The secondary market for the corporate debt market in Sri Lanka is illiquid and transaction costs such as brokerage commission and fees are very high (Samarakoon 2016).

Short-term debt is more demanded by companies compared to long-term debt because of ease of access and low-interest rate risk (Abeywardhana 2017). Firms in Pakistan, which is one of the closest countries to Sri Lanka, mainly go for bank borrowings due to the undeveloped corporate debt market. Banks are unwilling to provide loans for highly volatile companies. Hence the companies which have high earning volatility have fewer borrowings (Sheikh & Wang 2011). Sheikh and Wang (2011) further explained that Pakistan firms more rely on short-term debts due to the undeveloped corporate debt market and the high cost of long-term bank loans.

1.3 Research Problem and Objectives

Debt financing decision ultimately impacts shareholders' wealth maximization and therefore, it becomes one of the key decisions to be taken by corporate finance managers (Adkins 2021).

In Sri Lankan firms, the main sources of debt financing include short-term loans, commercial papers, long-term loans, corporate bonds, convertible bonds, corporate debentures, finance leases, warrants, swaps, forward contracts, and bank overdrafts (Abeywardhana 2017). The study of the factors affecting debt financing has become important in determining the optimum capital structure to enhance the value of the firm and reduce the cost of capital. This study aims to explore how companies have chosen their sources of financing and whether the company performance, size, age, agency cost of debt, tangibility, sales growth, liquidity, and non-debt tax shield have an impact on the debt financing decisions of non-financial firms in Sri Lanka. It is expected that the results of the study could be used by corporate finance managers when they decide on the level of debt financing as a benchmark.

The remaining sections of this study are organized as follows. Section two discusses the existing literature relevant to this study. Section three presents the design and methods used to collect and analyze the data. Next chapter analysis the collected data. Section five discusses the findings of the study along with the limitations and future research directions.

2 LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 Theoretical Development

Modigliani and Miller (1958) highlight the irrelevance of the capital structure under the assumptions such as no tax or zero transaction cost. Accordingly, company debt and equity amount have no impact on the cost of capital and thereby the value of the company. By relaxing these assumptions, Modigliani and Miller (1963) argued that the firm's value increases with the firm's debt level because of the interest tax shield. Merton Miller (1977) suggested another theory based on three different tax rates which are the corporate tax rate, the personal tax rate on equity income, and the personal tax rate on interest income. This theory explains how the tax-saving effect is zero when both corporate and personal tax rates are taken into consideration. From the investor viewpoint, Interest income is taxed at a higher rate than equity income because equity income includes both dividends and capital gains. Hence, the effective personal tax rate of equity income is less than the actual personal tax rate. Therefore, the advantage of corporate tax over debt financing can be offset by the disadvantage of personal tax over interest income. If the advantage of corporate tax over debt financing is not adequate to compensate for the disadvantage of personal tax over interest income, it causes to reduction in the advantage of debt financing over equity.

Pecking order theory suggest that the first preference of financing decision goes to internal funds such as retained earnings. When internal funds are insufficient debt is issued. If both options are unavailable, the final solution is to issue equity shares. This is because the information asymmetry which means managers are better informed about the true value of the company compared to shareholders (Myers 1984). According to the study, by Wasiuzzaman and Nurdin (2018) SMEs utilize internal sources such as retained earnings and personal savings and outside sources such as borrowing from friends, family, and angel investors first and go to financial intermediaries (bank loans) after the above sources are utilized. SMEs rarely use equity financing since their ownership control gets diluted.

According to the Pecking order theory firms prefer debt over equity because if equity is issued lower price than the market price shareholders might think shares have been overvalued or the company is in a trouble to issue debt and pay interest. If a debt is issued there will be a problem with pricing the debt since the interest rate volatility and default risk. So, companies prefer to finance through retained earnings to avoid information asymmetry (Ganguli 2014).

Agency cost simply means a conflict of interest. There are mainly two types of agency costs which are agency costs between managers and shareholders and agency costs between debt holders and shareholders. Agency cost of debt arises because of rejecting value-adding investing activities which will give most of the benefits of the investment to debt holders (underinvestment). Also, Agency costs of debt arise due to accepting very risky investments which will give benefits to shareholders if the investment project is successful (overinvestment) (Lee & Khaw 2017). Agency costs between shareholders and managers arise due to managers managing shareholders' resources for their interest but not for the best interest of shareholders. Strong corporate governance mechanisms, accountability toward management, and external auditing reduce the agency cost between shareholders and managers (Sheikh & Wang 2011). When the company has free cash flows more than profitable investment opportunities, managers may take decisions to invest below the cost of capital (invest in loss-making opportunities) without distributing additional free cash flow to shareholders. Debt is the solution for the above unwise decisions because of the bankruptcy cost and debt covenants (Sheikh & Wang 2011).

The trade-off theory constructs upon the financial distress cost and agency cost of debt. According to trade-off theory, the optimum debt level is determined at the point where tax savings arise from increasing debt equal to financial distress cost due to increasing debt (Sheikh & Wang 2011). The trade-off theory emphasizes the balance between debt and equity to minimize the cost and maximize the benefits of a company (Ganguli 2014).

A higher level of debt level causes bankruptcy cost ultimately. Bankruptcy is merely a legal mechanism which allows creditors to take over the company when a default of debt arises. There are two types of bankruptcy costs which are direct and indirect. The direct cost of bankruptcy includes lawyer fees, accountants' fees, professional fees, and time spend to settle the bankruptcy. Indirect cost includes a decrease in sales, increasing losses, and the inability to take debt except under unfavorable conditions (Sheikh & Wang 2011). On average, bankruptcy cost is 17 % of the total value of the firm according to the findings of Altman (1984). Further, Altman (1984) observed that since bankruptcy cost over the total assets is less fraction in larger size companies, small size firms have a bigger impact than larger size firms in a bankruptcy situation.

2.2 Empirical Studies

2.2.1 Relationship between company performance and debt financing

Abeywardhana (2017) has performed a study about the relationship between financial performance and debt financing of wholesale and retail sector companies in South Africa and Sri Lanka over five years. The findings of this study mentioned that debt capital, including both long-term debt and short-term debt has a negative and significant relationship with the financial performance of the South African firms operating in the wholesale and retail sectors. Because they try to minimize the agency cost of debt. According to Abeywardhana (2017), the long-term debt capital of the Sri Lankan retail companies has a positive as well as a significant influence on their financial performance while the short-term debt of Sri Lanka has a negative impact on company performance. Sri Lankan companies are preferable for internal sources as opposed to the external debt since it minimizes the agency cost of debt and has a positive impact on profitability. Both countries prioritize short-term debt because of the ease of accessing short-term debt. So, the high amount of short-term debt in both countries negatively impacts profitability.

Titman and Wessels (1988) found a negative correlation between past profitability and current debt level because of the high transaction cost incurred when issuing debt.

Dawar (2014) reflects a negative relationship between financial performance (ROA, ROE) and capital structure. This is because of the increase in agency cost of debt under the underdeveloped Indian bond market and the dominance of state-owned banks in lending money.

According to the Pecking order theory, more profitable companies tend to use less amount of debt as the theory suggests prioritizing internal financing sources. So, Rajan and Zingles (1995) found a negative relationship between leverage and firm performance by using a proxy for firm performance as the earnings before interest, taxes, and depreciation (EBIDTA) over the book value of assets.

Trade-off theory suggests having a positive relationship between profitability and company debt level because the company will be able to take more tax shield on interest expense when debt level increases.
The following hypothesis is developed based on the above empirical evidence.

H_1: *There is a negative relationship between total secured and unsecured debt levels and firm performance.*

2.2.2 Tangibility and debt financing

Higher tangible assets have resulted in a lower bankruptcy cost because fixed assets can be used as collateral for debt financing and can generate higher liquidation value in the event of bankruptcy (Lee & Khaw 2017). As per the agency theory, managers try to invest in risky investments at an expense of the debt holder's money. When issuing secured debt with collateral, debt holders can avoid this opportunistic behavior (Chadha & Sharma 2015). According to Nazir et al. (2021), a firm require more debt to purchase fixed assets, therefore tangibility and debt have a positive relationship.

On the other hand, Titman and Wessels (1988) suggest a negative relationship between tangibility and leverage. Firms which have higher levels of debt with less tangible assets are closely monitored by debt holders because guarantees for the provided debts are not given. Therefore, it is difficult to managers to take advantage of their optimum level of perquisites. Companies which have fewer tangible assets take more debts to prevent managers' self-interest behaviors.

The below hypothesis is developed according to the above empirical evidence.

H_2: *There is a positive association between total secured and unsecured debt levels and tangible assets.*

2.2.3 Non-debt tax shield and debt financing

As per the findings of Lee and Khaw (2017), Firms have a lower level of leverage if firms have a higher non-debt tax shield and the tax benefit from interest expense paid to debt holders is relatively low. Non-debt tax shield and the debt level of the company have a negative relationship because the non-debt tax shield from depreciation, investment tax credits, and tax loss carry forwards are substitutes for the tax shield of debt (Sheikh & Wang 2011). According to Sritharan and Vinasithamby (2014), there is no significant relationship between non-debt

tax shield and debt ratio in financial and insurance companies in Sri Lanka. As per Thusyanthi and Yogendrarajah (2016) manufacturing companies in Sri Lanka do not significantly impact debt financing decisions.

The below hypothesis is developed according to the above empirical evidence.

H_3: *There is a negative relationship between total secured and unsecured debt level and non-debt tax shield.*

2.2.4 Firm size and debt financing

Firm leverage and firm size have a positive relationship if the firm size is measured using total assets (Alderson & Betker 1995) and Firm leverage and firm size have a positive but insignificant relationship if the firm size is measured using sales of the company (Titman & Wessels 1988). Sheikh and Wang (2011) also suggest a positive relationship between leverage and firm size. This is because large companies have less default risk and less probability of bankruptcy because large firms are diversified their risk (Chadha & Sharma 2015). According to pecking order theory, there is an inverse relationship between firm size and leverage because information asymmetry is less impact on large firms. So large firms do not need to prioritize debt over equity (Sheikh & Wang 2011).

The below hypothesis is developed according to the above empirical evidence.

H_4: *There is a positive association between total secured and unsecured debt levels and the size of the company.*

2.2.5 Firm risk and debt financing

Titman and Wessels (1988) found that risk and leverage have a negative but insignificant relationship if the risk is measured through the standard deviation of the percentage change in operating income. Sheikh and Wang (2011) measured the risk using earning volatility. Earning volatility and the debt level of the company have a negative relationship because if earnings are more volatile there is any uncertainty in achieving contractual obligations such as debt repayments and interest payments.

2.2.6 Growth opportunities and debt financing

Sheikh and Wang (2011) suggest that growth opportunities are measured through the level of intangible assets in the company. If the company have more intangible assets than tangible assets it is difficult to take the secured debt with collateral. So, Sheikh and Wang (2011) found a negative relationship between leverage and growth opportunities. Agency cost theory derives a negative relationship with leverage and growth opportunities since the company may go for risky investment opportunities at an expense of the debt holder's money (Jordon et al. 1998). Hence firm's growth opportunities and leverage have a negative relationship as the proxy for growth opportunities measured using the market-to-book value ratio (Jordon et al. 1998). But Titman and Wessels found that leverage and a firm's growth have an insignificant relationship as the growth is measured through percentage change in assets, capital expenditure and R&D expenditure.

The below hypothesis is developed according to the above empirical evidence.

H_5: *There is a negative relationship between total secured and unsecured debt level and the Sales growth of the firm.*

2.2.7 Corporate governance and debt financing

Corporate governance and debt financing derive a positive relationship because debt holders' confidence levels increase with a strong corporate governance system (Ganguli 2014).

2.2.8 Liquidity and debt financing

The trade-off theory suggests a positive relationship between liquidity and leverage because the company will be able to fulfil contractual obligations such as debt repayments and interest payments on time. On the other hand, pecking order theory describes a negative relationship between liquidity and leverage because if the company has more liquidated assets it can use those as internal funds other than issuing debt or equity (Sheikh & Wang 2011). Even though Sheikh and Wang (2011) found a negative relationship between liquidity and leverage which is in line with the pecking order theory, excessive liquidity hits profitability (Ganguli 2014).

The below hypothesis is developed according to the above empirical evidence.

H_6: *There is a negative association between the total secured and unsecured debt level and the liquidity position of the company.*

2.2.9 Agency cost of debt and debt financing

Agency cost of debt arises because of the excessive dividend payments which will lead to remaining fewer assets to repay debt holders. Another way to arise the agency cost of debt is the taking of more and more additional debts which will lead to arise conflict between new debt holders and existing debt holders for the repayment of debt. Further agency cost of debt arises due to accepting riskier investments which will benefit the shareholders if the investment is successful or harm debt holders if the project gets unsuccessful (Deegan 2014). If there are no safeguards to prevent such types of actions which will lead to an increase in the risk of debt holders' money, debt holders demand higher interest to compensate for the risk of their investment (Deegan 2014).

An increase in leverage has a cost. When the company leverage level increases, the agency cost of debt will increase including the bankruptcy cost. The optimal capital structure is determined at the point where the marginal cost of debt is equal to the marginal benefit from the debt (Jensen 1986).

Lee and Khaw (2017) have measured the agency cost of debt in two ways. One method is the market value of debt over the book value of debt. The higher the ratio, the growth opportunities for the companies are higher. If more benefits of that opportunity go to debt holders, the growth opportunities are not implemented. The agency cost of debt arises due to sub-optimal investment decisions by shareholders at the expense of debt holders. Thus, higher growth opportunities mean higher agency costs of debt.

Another method of measuring agency cost of debt is the total assets over property plant and equipment of a firm (Lee & Khaw 2017). A higher ratio means that the company has a higher amount of non-collateral assets. It means shareholders can transfer wealth to them as they wish since no security has been given for the debt taken by the company (Lee & Khaw 2017).

This research is chosen to measure the second method. The first method can only be measured for 10 companies out of 30 samples in this research since the market value of debt is available only for the companies which are issued debt through the corporate debt market.

The below hypothesis is developed according to the above empirical evidence.

H$_7$: *There is a negative relationship between total secured and unsecured debt level and agency cost of debt.*

2.2.10 Age of the company and debt financing

The age of the company is measured as the number of years since the commencement of the company. Older companies have more credibility and reputation than newly born companies (Chadha & Sharma 2015). Chadha and Sharma (2015) found a positive and significant relationship between the Age of the company and Debt financing.

Majumdar (2014) found a negative relationship between company debt level and the age of the company because the older the firm, the firm can generate internal funds rather than go for external debt. Diamond (1989, 1991) explained that age and leverage of the company have an inverse relationship since applying for more debt may harm its reputation. Further young firms may apply for more debt to fulfil their financing requirements since they are in the growing stage of the business (Palacin-Sanchez at el. 2012).

The below hypothesis is developed according to the above empirical evidence.

H$_8$: *There is a positive association between total secured and unsecured debt levels and the age of the company.*

2.2.11 Ownership structure and debt financing

If the company has concentrated shareholders, the company has a trend to go for debt financing to avoid dilution of existing voting rights. Public sector banks and financial institutions in India mainly provide debt financing and should have collateral for companies to apply for bank loans to reduce the monitoring cost and agency cost of debt (Ganguli 2014).

Companies having diffused shareholding select internal financing (Profit) as the financing method and if it is not sufficient those companies go for equity rather than debt to avoid monitoring by lenders. Because companies have diffused shareholding likely to monitor by shareholders (Ganguli 2014).

2.2.12 Factors which have an impact on debt financing in SMEs

The findings from the survey (Wasiuzzaman & Nurdin 2018) show that an SME's access to finance and its legal form has a significant positive relationship with its decision to apply for debt financing. Among Sole proprietorships, Partnerships, and Private limited companies, Private limited companies tend to go for more debt financing. Factors restricting access to finance such as lack of capital, collateral, connections and credit histories, high risk, and poor project quality will lead to a lower level of debt compared to equity. SMEs with unfavourable past credit records are more likely to apply for financing. SMEs which have good credit ratings are less likely to apply for debt financing. This negative relationship between credit rating and debt financing is a gap identified which should be focused on in future research. The size and age of the SMEs insignificantly influence on debt financing decisions of the SMEs.

2.2.13 Research gaps

Debt financing decisions in the companies of developed countries are much different from the debt financing decisions in the companies of emerging markets because the capital and stock market are less efficient and incomplete as well as less regulated in emerging markets. The

information asymmetry in emerging markets leads to suboptimal decision-making. Companies have a trend to go for bank loans due to inefficiencies in the corporate debt market (Matemilola et al. 2013). Developing countries apply short-term debt than long-term debt. This can be evidenced from the sample taken in the research, by Sheikh and Wang (2011) which included 76% of short-term debt over total debt amount in the sample of listed Pakistan firms. Institutional differences between developed and developing countries create changes in the determinants of capital structure in those countries (Sheikh & Wang 2011). Since there is a lot of research available regarding capital Structure decisions in developed countries, this research would help to fill the research gap in Sri Lankan territory which is a developing country.

3 RESEARCH DESIGN AND METHODS

3.1 Data and Sampling Method

This study uses the annual report data from the year 2015 to 2018 to analyze the sample of 30 non-financial listed companies which is selected from two hundred and twenty-five non-financial companies listed in the CSE. Banks and Finance Sector companies such as banks, finance, leasing, and insurance companies have been excluded from the sample due to the non-comparable nature of financing sources of these companies The sample consists of 20 non-financial listed companies which are selected based on the highest market capitalization and 10 companies which are selected based on the availability of debenture issues in their capital structure. This study has chosen the highest market capitalization as the selection criterion because large companies tend to utilize debt financing for their expansion projects. Furthermore, financial institutions are preferred to provide loans for well-established companies since the probability of defaulting loans is very low (Wasiuzzaman & Nurdin 2018). 10 debenture-issued companies are selected for the sample because issuing debentures in the corporate debt market is one of the main sources of debt financing and the debentures have a market value in the secondary market.

The companies which do not have property plant and equipment (PPE) and the companies which do not have debt capital were excluded from the sample since it creates problems when calculating agency cost of debt and interest cover ratio. As the agency cost of debt is calculated using the ratio of total assets divided by total PPE, an infinity value is derived for the agency cost of debt ratio for the companies which do not have PPE. Thus, the companies which do not have PPE are excluded from the sample. Furthermore, the companies which do not have taken debts have zero or very small interest in the income statement and the interest cover ratio of those companies gets closure to infinity. Thus, this type of companies also excluded from the sample.

Panel data analysis was performed using the annual reports from the year 2015 to the year 2018 for a selected sample of 30 companies. Annual reports published within the last 4 years were used to analyze the most recent data. Companies which have not published annual reports for all 4 years were also excluded from the sample while data collection is performed. Finally, the companies that have the next largest market capitalization are selected for the sample after excluding the above-mentioned companies. Altogether 30 non-financial companies over 4-year were selected as the final sample of the study (Figure 1).

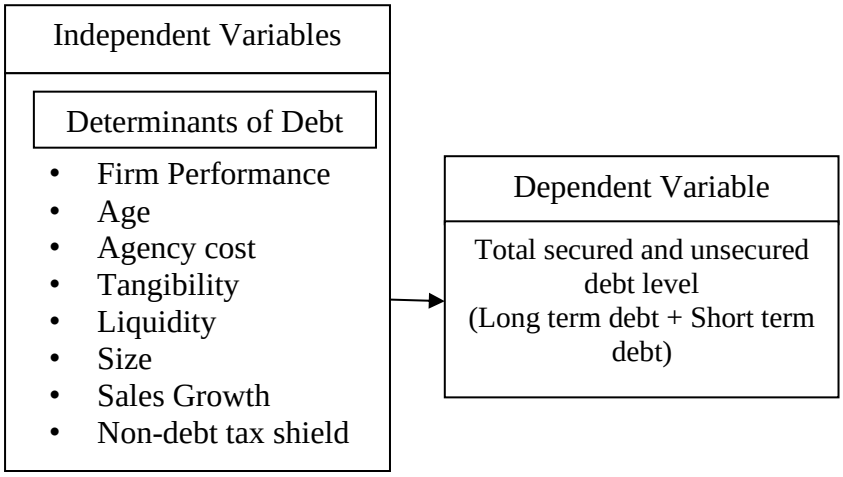

Figure 1: Conceptual Diagram
Source: Author Constructed

3.3 Operationalization

The operationalization of the variables is depicted in Table 1.

Table 1: Operationalization

Dependent Variable

Variable	*Definition*	*Related Study*
Total secured and unsecured debt level (*DR*)	Ratio of book value of total secured and unsecured debt to Book value of total assets	Sheikh & Wang 2011, Abeywardhana 2017

Explanatory Variables

Variable	*Definition*	*Related Study*
Firm Performance ($PROF_{it}$)	Ratio of Net Profit before taxes to total assets	Sheikh & Wang 2011, Wasiuzzaman & Nurdin 2018
Age (AGE_{it})	No of years since inception	Sheikh & Wang 2011, Dawar 2014
Agency costs ($AGEN\ COS_{it}$)	Ratio of total assets over the fixed assets	Lee & Khaw 2017
Tangibility ($TANG_{it}$)	Ratio of Net plant and equipment to total assets	Sheikh & Wang 2011, Dawar 2014
Liquidity (LIQ_{it})	Current ratio & Interest Cover ratio	Sheikh & Wang 2011, Dawar 2014
Size ($SIZE_{it}$)	Book value of total assets	Sheikh & Wang 2011, Wasiuzzaman & Nurdin 2018
Sales Growth ($GROW_{it}$)	Ratio of (Sales (t) - Sales(t)) / Sales (t-1)	Sheikh & Wang 2011, Dawar 2014
Non-debt tax shield ($NDTS_{it}$)	Ratio of total annual depreciation expenses to total assets	Sheikh & Wang 2011, Lemma 2014

3.4 Sources and Data Collection

Secondary data is used as the data collection method. Published annual reports from the year 2015 to the year 2018 are analyzed as the main source. The researcher selected to analyse the annual reports from the year 2015 to 2018 as they are the most recently published annual reports.

3.5 Data Analysis Strategies

Descriptive and inferential statistics are used to analyse the data. Descriptive statistics summarize and describe data in a meaningful way. Measures of central tendency and measures of dispersion are the main two types of Descriptive statistics. Descriptive statistics namely mean value, maximum value, minimum value, and standard deviation are used to perform a univariate analysis among variables (Pratheepkanth 2011). Inferential statistics are statistics which help to generalize the sample to the total population. Correlation coefficients of independent variables are calculated to identify the Problem of multicollinearity among independent variables (Sheikh & Wang 2011). Pooled Ordinary least squares model which is a linear regression model is used to analyse the relationship between debt ratio and determinants of debt financing.

Since the OLS model does not consider panel characteristics such as group and individual effects, random effects estimation model or fixed effects estimation model is performed. The fixed effects estimation model considers the effect of individual firms. So, the intercept of the equation is varied to represent the heterogeneity within the firms. Random effects estimation model will be used when the sample is selected from a larger population and when there is no relationship between firm-specific error component and slope coefficient of independent variables. The generalization of the sample to the total population generates a more accurate result in the random effects estimation model (Sheikh & Wang 2011).

Hausman test (1978) is conducted to decide whether the random effects estimation model or fixed effects estimation model is more appropriate for our study. This test is performed to see whether there is a correlation between specific error components and the slope coefficient of independent variables. Two types of hypotheses are formulated to perform the Hausman test (Dawar 2014).

Null Hypothesis-There is no correlation between specific error component and slope coefficient of independent variables (random effects estimation model will be selected)

The alternative hypothesis-There is a correlation between specific error components and slope coefficients of independent variables (fixed effects estimation model will be selected).
The three regression models can be expressed as follows.

Pooled OLS

$$DR_{it} = \beta_0 + \beta_1 PROF_{it} + \beta_2 AGE_{it} + \beta_3 AGEN\ COS_{it} + \beta_4 TANG_{it} + \beta_5 LIQ_{it} + \beta_6 SIZE_{it} + \beta_7 GROW_{it} + \beta_8 NDTS_{it} + \varepsilon_{it}$$

Fixed effects estimation model

$$DR_{it} = \beta_{0i} + \beta_1 PROF_{it} + \beta_2 AGE_{it} + \beta_3 AGEN\ COS_{it} + \beta_4 TANG_{it} + \beta_5 LIQ_{it} + \beta_6 SIZE_{it} + \beta_7 GROW_{it} + \beta_8 NDTS_{it} + \mu_{it}$$

Random effects estimation model

$$DR_{it} = \beta_0 - \beta_1 PROF_{it} + \beta_2 AGE_{it} + \beta_3 AGEN\ COS_{it} + \beta_4 TANG_{it} + \beta_5 LIQ_{it} + \beta_6 SIZE_{it} + \beta_7 GROW_{it} + \beta_8 NDTS_{it} + \varepsilon_i + \mu_{it}$$

DR_{it} = Total secured and unsecured debt level of firm *i* at time *t*

$PROF_{it}$ = Firm Performance of firm *i* at time *t*

AGE_{it} = Age of firm *i* at time *t*

$AGEN\ COS_{it}$ = Agency costs of firm *i* at time *t*

$TANG_{it}$ = Tangibility of firm *i* at time *t*

LIQ_{it} = Liquidity of firm *i* at time *t*

$SIZE_{it}$ = Size of firm *i* at time *t*

$GROW_{it}$ = Sales Growth of firm *i* at time *t*

$NDTS_{it}$ = Non-debt tax shield of firm *i* at time *t*

β_0 = common y-Intercept

β_1- β_7 = Slope coefficients of independent variables

β_{0i} = y-Intercept of firm *i*

ε_{it} = Stochastic Error term of firm *i* at time *t*

μ_{it} = error term of firm *i* at time *t*

ε_i = Cross sectional error component

4 DATA ANALYSIS AND FINDINGS

4.1 Descriptive Statistics

The summary statistics of the dependent and explanatory variables over the sample period are presented in Table 2 reflecting the capital structures and their determinants of the analyzed firms.

Table 2: Descriptive Statistics

Variables	*Obs*	*Mean*	*Median*	*Std. Dev*	*Min*	*Max*
Total Debt level	120	0.274	0.275	0.207	0	0.78
Firm Performance	120	0.076	0.068	0.081	-0.123	0.354
Age	120	60.133	36	48.858	11	174
Tangibility	120	0.226	0.161	0.209	0.001	1
Size	120	16.55	17	0.501	15	19
Sales Growth	120	0.125	0.065	0.638	-0.99	6.59
Non-Debt Tax shield	120	0.017	0.01	0.017	0	0.07
Liquidity	120	37.726	3.721	84.876	-0.24	313.63
Agency cost	120	38.808	6	65.993	2	201

Source: Author Constructed

The average debt level of the companies in the non-financial sector is 0.275. It means non-financial sector companies use less level of debt to finance their total assets. Debt ratios of some of the developed countries can be extracted from past literature. 60.78% debt ratio results

in Pakistan non-financial companies (Sheikh & Wang 2011). Abeywardhana (2017) has calculated the short-term debt ratio as 37.21% and the long-term debt ratio as 14.78% in South African companies. Indian firms have average leverage of 25% which is somewhat close to resulting of this study (Chadha & Sharma 2015). According to Lemma (2014) firm leverage of some of the developing countries is depicted in Table 3.

Hence Sri Lankan non-financial companies have lower leverage compared to other developing countries. Mean and median values of debt level have not much different. Thus, it reflects those outliers consisted in the debt to asset ratio is less. The average firm performance is 7.6% among the non-financial companies in Sri Lanka. Non-financial companies are an average age of 60.

Table 3: Debt Ratios of Developing Countries

Country	*Debt ratio*
Egypt	0.471
South Africa	0.523
Botswana	0.442
Ghana	0.608
Kenya	0.509
Mauritius	0.467
Morocco	0.441
Nigeria	0.649
Tunisia	0.475

Source: Lemma (2014,)

The average fixed assets to total assets ratio took 23% in the non-financial sector in Sri Lanka. Size is measured through a logarithm of total assets and the mean value of size resulted in 16. The average sales growth level is 12% throughout the past 4 years in the non-financial sector. Benefit from non-debt items averages 17% among the 30 samples over 4 years. Liquidity value which was measured through interest expense over profit before interest and tax can be averaged to 38%. Finally, the average value of agency cost is 38%.

Table 4: Correlation Coefficients

	DR	*PROF*	*AGE*	*TANG*	*SIZE*	*GROW*	*NDTS*	*LIQ*	*AGEN COS*
DR	1.000								
PROF	-0.443**	1.000							
AGE	0.043*	0.265**	1.000						
TANG	0.020	0.107	0.014	1.000					
SIZE	0.011	0.239**	0.491**	-0.220**	1.0000				
GROW	0.010	0.057	-0.070	-0.085	-0.024	1.000			
NDTS	0.022	0.067	-0.217**	0.551**	-0.248**	-0.045	1.000		
LIQ	-0.515**	0.393**	0.152*	-0.027	0.133	-0.034	0.126	1.000	
AGEN COS	-0.107*	-0.171*	0.017	-0.588**	0.221**	0.202**	-0.409**	0.066	1.000

**$p<0.05$; *$p<0.1$

Source: Author Constructed

As per the results shown in Table 4, the debt level of the non-financial company and firm performance has a significant ($p<0.05$), moderate and negative relationship. Liquidity position has a significant ($p<0.05$), moderate and negative association with the leverage of the firm. Agency cost of debt variable shows a significant ($p<0.01$), weak and negative relationship with

company debt level. The age of the non-financial firm and leverage has a positive, significant (p<0.01) but weak association. Other factors such as tangibility, size, sales growth, on debt tax shied are shown an insignificant relationship with the debt level of the firm. According to correlation coefficients, the multicollinearity problem was not observed as cross-correlation among independent variables is small.

4.3 Pooled Ordinary Least Squares Model

According to the multiple regression analysis performed (Table 5), firm performance (p<0.01), Liquidity (p<0.01), and Agency cost of debt (p<0.05) have a negative impact on the leverage of the company. Age of the company (p<0.01), size (p<0.1), and Tangibility (p<0.1) have a positive relationship with the debt level of the firm. Non-debt tax shield and sales growth have no significant association with the capital structure of the company.

Table 5: Pooled Ordinary Least Squares Model

Variable	*Coef.*	*p<(t)*
Firm Performance	-1.0126*	0.000
Age	0.0008*	0.027
Tangibility	-0.1155***	0.095
Size	0.0358***	0.083
Sales Growth	0.0232	0.342
Non-Debt Tax shield	2.0038	1.084
Liquidity	-0.0010*	0.000
Agency cost	-0.0006**	0.043
F value	10.12	
Adjusted R^2	0.3802	
N	120	

*p<0.01; **p<0.05, ***p<0.1

Source: Author Constructed

Higher the value of R^2 well explains the variability of debt ratio over independent variables. F value shows the significance of the OLS model. Since the OLS model is not considered panel characteristics, panel regression is performed. Hausman test was performed to identify whether the most suitable method is the fixed-effect or random-effect model. Based on the Hausman test performed, the Null hypothesis is rejected (prob>chi2=0.0000). Hence fixed effect model is selected to run the panel data regression.

4.4 Panel Data Analysis – Fixed Effect Model

Based on the results generated from the panel data regression model (Table 6), Firm performance (p<0.05), Tangibility (p<0.1), Liquidity (p<0.05), agency cost of debt (p<0.05) and size of the firm (p<0.1) have a significant and negative association with a leverage level of the firm. The age variable (p<0.1) has a positive relationship with debt level. Sales growth and non-debt tax shield have no significant relationship with the leverage of the company.

Table 6: Panel Data Regression -Fixed Effect Model

Variable	*Coef.*	*p<(t)*
Firm Performance	-0.369**	0.021
Age	0.022*	0.003
Tangibility	-0.125***	0.089
Size	-0.016***	0.083
Sales Growth	-0.015	0.250
Non-Debt Tax shield	0.580	0.562
Liquidity	-0.0001**	0.042
Agency cost	-0.0004**	0. 047

R^2	0.257
Prob>chi2	0.000
N	120

$^{*}p<0.01$; $^{**}p<0.05$, $^{***}p<0.1$

Source: Author Constructed

All variables are in line with the developed hypothesis except size, tangibility, and non-debt tax shield. Though the relationship between size and tangibility is not in line with the hypothesis developed, further evidence is found from the literature to match the relationship the sample generated (empirical evidence of literature review section). The next section elaborates on the findings of the study.

5 DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Discussion of the Findings

5.1.1 Firm performance

According to the result generated, firm performance has a negative and significant relationship with the debt level of the company. So, the result is satisfied with the hypothesis established. When the result is generated for short-term debt and long-term debt separately, both have resulted in a negative relationship with firm performance. Though the association between long-term debt and firm performance is significant ($p<0.01$), there is no significant relationship between short-term debt level and company performance as per the result generated through the sample of this study. The result generated can be shown as follows (Table 7 & Table 8).

Table 7: Relationship between Short-term Debt Level and Firm Performance

Variable	***Coef.***	***p<(t)***
Firm Performance	-.1974408	0.171

$^{*}p<0.01$; $^{**}p<0.05$, $^{***}p<0.1$

Source: Author Constructed

Table 8: Relationship between Long-term Debt Level and Firm Performance

Variable	***Coef.***	***p<(t)***
Firm Performance	-.517924*	0.001

$^{*}p<0.01$; $^{**}p<0.05$, $^{***}p<0.1$

Source: Author Constructed

As per the study by Abeywardhana (2017), the negative relationship between debt financing and firm performance is in line with an agency theory since the debt level of the company increases the agency cost and because of that, firm performance has reduced. Though retail sector companies in Sri Lanka have generated a positive and significant relationship between long-term debt level and firm performance (Abeywardhana 2017), long-term debt level and firm performance of the non-financial sector has a negative and significant relationship in this study. According to Titman and Wessels (1988), the negative relationship between leverage and firm performance arises due to the high cost of issuing debt. The negative association between firm performance and leverage can be proved through pecking order theory too since

more profitable companies use internal sources first for their financial requirements (Rajan & Zingles 1995). But the result generated for the firm performance variable is contrary to the trade-off theory since it explains a positive relationship between firm performance and company leverage as the tax shield is increased with the debt level.

5.1.2 Age

The age of the company has a positive and significant relationship with debt level as per the sample of this study. So, the result is satisfied with the hypothesis established. Since older companies have more credibility and reputation than newly born companies, financial institutions are willing to provide debt even without collateral by looking at companies' history (Chadha & Sharma 2015). But the pecking order theory suggests a negative relationship between firm age and leverage which is not in line with the results generated from this study. This is because older firms have the capacity to generate internal funds rather than go for external funds (Majumdar 2014).

5.1.3 Tangibility

This research has found a negative and significant relationship between the tangibility and leverage of the firm. But under theoretical circumstances, tangibility and leverage should be positively correlated. Because tangible assets can be used as security for debt taken. Thus, the hypothesis established in this research is not satisfied. But the literature is supported the negative relationship because many research articles have found a negative relationship between tangibility and leverage of the firm. According to Titman and Wessels (1988), there is a negative correlation between tangibility and leverage because debts are not secured under collateral as the company has fewer tangible assets. So, debt holders closely monitor the company, and they are not allowed to take decisions unfavorable to them.

5.1.4 Size

The size of the company and debt level has a negative and significant relationship in this sample study which is opposite to the hypothesis developed. This is because trade-off theory explains that large-size firms have lower bankruptcy risks since they are well established, and risks have diversified. But on the other hand, size and debt level are negatively correlated according to pecking order theory. Because information asymmetry is less in large firms so they can prioritize equity over debt (Sheikh & Wang 2011).

5.1.5 Sales growth

This study has generated a negative relationship between sales growth and leverage. Though the result generated is matched with the hypothesis generated, the result is found to be insignificant. As per the research article by Jordon et al. (1998), there is a negative relationship between sales growth and leverage since companies may invest in risky investments to achieve growth at an expense of debt holders. Since sales growth and leverage have no significant relationship with 30 non-financial companies over 4 years, there would be a research gap for future research to find a significant relationship between sales growth and the capital structure of the firm through an extended sample.

5.1.6 Non-debt tax shield

Non-debt tax shield and leverage generated a positive correlation, and it is an insignificant relationship. According to Lee and Khaw (2017), a non-debt tax shield and leverage should

have a negative relationship since the company has a non-debt tax shield such as tax benefits from depreciation, amortization, and tax losses carried forward, company take lesser debts to gain tax shield from debt. The result generated from this study was not in line with the hypothesis developed and not in line with existing literature. This research has measured the non-debt tax shield using annual depreciation to total asset ratio. As per Titman and Wessels (1988), though the non-debt tax shield represents tax deductions, it should represent tax deductions net of true economic depreciation. So, it seems like deriving a true relationship for the non-debt tax shield variable is a somewhat difficult task. Therefore, it will be an opportunity for future researchers to identify an equation to measure the non-debt tax shield variable correctly.

5.1.7 Liquidity

Liquidity showed a negative and significant correlation with the debt level of the company. This is in line with the hypothesis established. Pecking order theory supports the findings of this study since if the company has more liquid assets those can be used as internal funds before issuing debt or equity externally. But the negative relationship between liquidity and firm debt level is contrary to the trade-off theory because liquid assets can be used to repay debt and interest on time. So, the trade-off theory creates a positive relationship between liquidity and leverage of the firm (Sheikh & Wang 2011).

5.1.8 Agency cost of debt

Agency cost of debt variable has generated a negative and significant relationship with the debt level of the non-financial firms. The findings of the analysis are the same as the hypothesis established. At the beginning of this study agency cost of debt was measured through the market value of debt securities divided by the book value of debt securities. Because of the unavailability of market data for all the companies, the study was restricted to measuring agency cost of debt using that equation. So, the equation for measuring the agency cost of debt variable is changed to total assets over the property plant and equipment of a firm (Lee & Khaw 2017). To derive a more genuine result, future researchers have an open question to identify a method to measure the market value of debt for the companies which are not issuing debt securities in CSE. According to the replaced equation which is a total asset over property plant and equipment, the higher the ratio means the higher the agency cost of debt. Because when higher the ratio non-collateral assets are more for the company and the company have fewer assets to give as security for debt issued. Thus, the agency cost of debt is high.

5.2 Conclusion

This study is conducted to identify determinants of debt financing in non-financial companies in Sri Lanka. Debt ratio is the dependent variable and firm performance, size, age, liquidity, agency cost of debt, non-debt tax shield, sales growth and tangibility are the independent variables. The debt ratio is included not only long-term debts but also short-term debts because of non-financial firms have the practice to use short-term debts as well as loan-term debt as short-term debts are easy to apply and cheaper. The sample of the study consists of 30 non-financial companies listed in CSE over 4 years.20 companies are selected based on the highest market capitalization and the remaining 10 companies are debenture-issued in CSE. Only companies which are year ended on March 31st were selected for the sample to maintain the consistency of the data collected. Descriptive statistics, Correlation coefficient, Pooled Ordinary least squares model, Hausman test and fixed effect model are used to generate the analysis results. In summary firm performance, size, age, liquidity, agency cost of debt, and

tangibility are proved to be the determinants of debt financing through two variables namely sales growth and non-debt tax shield has generated insignificant results. Thus, firm performance, tangibility, size, liquidity, and agency cost of debt variables are negatively and significantly correlated with the debt level of the firm. The age variable is found to be positively and significantly correlated with the debt level of the firm.

5.3 Recommendations

It is recommended to use less debt for the companies which have higher liquidity positions as they can use internal funds for financing activities. Utilization of internal funds rather than taking loans is more cost-effective and can have a lower gearing ratio which makes investors more attracted.

Investment in market opportunities using debt holders' money will increase the risk of repayment of debt and interest income for them. Therefore, debt holders demand a higher return to invest their money in risky investments. Thus, internal funds can be used as the best option to finance the growth opportunities of the company.

Though large firms can easily apply for debt financing, this study has generated an inverse relationship between firm size and leverage. Therefore, it is recommended to use internal funds as large firms are more profitable and the next best option is to go for equity financing due to less information asymmetry in large firms.

The factors considered in the analysis are linked with each other and deciding to consider each factor alone may not generate the correct decision. As an example, when the age of the firm increases, firms can apply for more debts since the company is a well-established one. On the other hand, firm performance may reduce with the debt level due to the agency cost of debt. So cumulative effect of all the factors should be taken into consideration.

As per the Overall result of the study, all the determinants have a negative relationship with the debt level of the company except the age of the firm. Thus, it is recommended to maintain a lesser debt level in a non-financial company in Sri Lanka.

It would be recommended to develop infrastructure, rules and regulations, governance standards, and transparency in the corporate debt market by regulatory bodies such as CSE, and the central bank.

5.4 Limitations of the Study

This study is limited to non-financial companies listed on Colombo Stock Exchange. The total number of companies listed on the Colombo Stock exchange has amounted to 297 and among them, 72 companies are categorized under the bank finance and insurance sector. It is difficult to apply the findings of this research to bank finance and insurance companies because bank finance and insurance companies are involved in borrowing and lending money as one of their main business activities.

Data collection method limits to secondary sources are the second limitation of this study. Annual reports year ended as of 31st March 2018 to 2015 were used as the main source of data collection. Some important data may be missing in the source because secondary data are the data already collected for some other purpose. Also, managers may manipulate financial information to increase their performance-based incentives. So secondary data are less reliable

than primary data. But collecting primary data will be consumed more time and companies are not willing to provide their internal information.

The third limitation of this study is that the corporate debt market in Sri Lanka is not strong. The corporate debt market has a relatively lower market capitalization (8%) compared to the stock market (CSE, 2015). Further majority of companies that deal with the corporate debt market are bank and finance companies (ADB, 2016). The secondary market for corporate debt is also illiquid. Companies apply for bank loans as a practice when arising a financing requirement. Hence, it is difficult to take the market value of debt other than the companies which have been involved in the corporate debt market.

5.5 Future Research Directions

Limitations that come throughout this study might be an opportunity for future research to solve. Among the determinants selected for the study, some variables are not generated the expected result.

A non-debt tax shield is not generated a negative and insignificant relationship with the leverage of the firm due to weaknesses in that variable measurement. The non-debt tax shield of this study is calculated using depreciation over total assets, but the study has not measured tax deductions net of true economic depreciation. Also, other items such as carried forward tax loss and investment tax credits have not been taken into consideration when measuring the non-debt tax shield in this study. Thus, it will be a future research area to find a true measurement for a non-debt tax shield.

The tangibility and leverage of the firm theoretically should be positively correlated as non-current assets can be given as collaterals when applying for debt financing. But this result generated a negative result between tangibility and leverage. Though previous research found a negative relationship between tangibility and leverage it will be a future research area to deeply analyze the collateral requirements for short-term and loan-term debt financing.

The sales growth variable is in line with the hypothesis developed. But it has generated an insignificant result. Therefore, it will be a future direction to identify a significant association between sales growth and the debt level of the firm through different financial ratios or extended samples.

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