Debt Financing and Profitability of Listed Companies in the Colombo Stock Exchange of Sri Lanka

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INTRODUCTION

The capital structure decision plays a significant role in firm's profitability and it is crucial for any organization. Capital structure is the composition of capital that an organization uses for financing its overall operations and growth. It is the combination of debt and equity capital that the firm uses for investing and operating activities. A business can seek for different level of mixtures of equity and debt or other financial facilities with equity having the emphasis on maximizing the firm's value. Also, it affects the liquidity and profitability of a firm. Therefore, it is important to take a proper care and attention in determining the capital structure of a firm.

An optimal capital structure is usually defined as one that will minimize firm's cost of capital, while maximizing the firm value. Many studies have been undertaken on the capital structure since Modigliani and Millers (1958) landmarked. Among them, the effect of capital structure on firm's profitability has received a considerable attention in the finance literature. According to Modigliani and Millers' (1958) irrelevance theory, in a perfect capital market, the capital structure is unrelated to the firm's market value, which will be settled by the composition of its assets. Also they found that the firm's value depends on its operating profitability rather than its capital structure under perfect capital market assumptions.

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AIM

Several researchers have concluded that debt financing and profitability are positively associated. In the Sri Lankan studies conducted by Nirajini and Priya (2013), it was found that capital structure and firm performance showed a positive relationship. Some other scholars have proved that there is a significant negative relationship between the debt financing and firm's profitability. Velnampy and Anojan (2014) concluded that the capital structure of the listed telecommunication firms in the Colombo Stock Exchange (CSE) is negatively correlated with profitability and authors indicated that firms should give consideration on its capital structure because the composition of the capital structure may seriously affect the firm's profitability in the future. Hence, the results of the existing studies are contradictory as the findings of several studies derived mixed results. Additionally, most of the local researchers have conducted the study only in one sector. Therefore, this paper examines the impact of debt financing on firms' profitability in the context of Sri Lankan listed companies. Hence, the main research problem can be stated as, to what extent does the debt financing impact on the profitability of listed companies in Sri Lanka? The research objective, therefore, is to examine the impact of debt financing on profitability.

LITERATURE REVIEW

Gnanasooriyar (2014) conducted a study for investigating the relationship between capital structure and profitability and its impact on profit earning capacity over a past 10 year period from 2004 to 2013 on listed manufacturing companies in Sri Lanka. The research findings showed that Debt to Equity ratio has significant relationship with two dependent variables that is net profit ratio and return on equity ratio. Rajendran and Nimalathasan (2013) and Leon (2013) confirmed the same findings in their researches.

Sivalingam and Kengatharan (2018) had undertaken a study on capital structure and financial performance of commercial banks in Sri Lanka and it was revealed that the total debt to total assets is negatively correlated and has significant relationship with Return on Assets (ROA) and Return on Equity (ROE). In addition, they argued that short term debt to total assets and long term debt to total assets do not significantly impact on ROA and ROE.

Safeena and Hassan (2014) conducted a research based on the sample of 20 listed manufacturing companies in Sri Lanka and identified that the capital structure has a significant influence on firms' profitability of listed manufacturing companies in the CSE in Sri Lanka. Additionally, there is a significant relationship between long term debt to assets and ROA, and there is a positive strong relationship between total debt to assets and profitability.

Anandasayanan and Subramaniam (2015) conducted a study on the impact of the capital structure on profitability of manufacturing companies listed in the CSE. The overall conclusion was the variables of debt to equity, long term debt to total assets, and short term debt to total assets have strong significant influence on firm's profitability.

METHODS

This study is based on secondary quantitative data. Out of 297 companies listed in the CSE, the data is collected from 100 companies for the period of 7 years from 2012 to 2018. Stratified random sampling method is used by the researchers to select 100 companies due to the unavailability of data for some companies for several years. Additionally, 19 sectors have been covered excluding banking, finance and insurance companies. The conceptual framework developed in the study the independent and dependent variables and their measurements are shown in Figure 1.

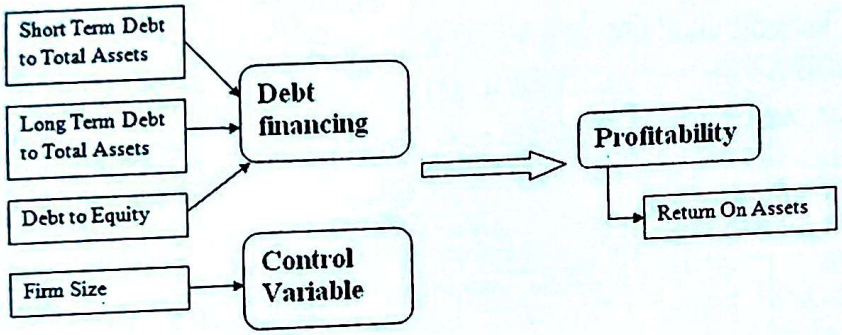

Figure 1: Conceptual Framework

The main hypothesis for the study has been developed as follows:

H_1 – There is a significant impact of Debt Financing on Return on Assets.

In order to test the main hypothesis, following hypotheses have also been developed.

H_{1a} - There is a significant impact of Short Term Debt to Total Assets on Return on Assets.

H_{1b} - There is a significant impact of Long Term Debt to Total Assets on Return on Assets.

H_{1c} - There is a significant impact of Debt to Equity on Return on Assets.

H_{1d} – There is a significant impact of Firm size on Return on Assets.

The variables identified in the conceptual framework have been operationalized in the study as given in table 1.

Table 1: Definition of Variables

Independent Variable – Debt financing		
Short Term Debt to Total Assets	SD_TA	Short Term Debt / Total Assets
Long Term Debt to Total Assets	LD_TA	Long Term Debt / Total Assets
Debt to Equity	DE_EQ	Debt / Equity
Dependent Variable – Profitability		
Return on Assets	ROA	Profit After Tax / Total Assets
Control Variable		
Firm size	FSIZE	Natural logarithm of total assets

RESULTS AND DISCUSSION

Descriptive Statistics

As given in table 2, the mean value of ROA is 5.9, therefore, the average return earned by the Sri Lankan listed companies is 5.9%. The values of 0.24, 0.11, 0.86 and 20.72 respectively indicate the average of SD_TA, LD_TA, DE_EQ and FSIZE. The mean value of LD_TA suggests that 11.3% of the total assets are financed by the long term debt.

Table 2: Descriptive Statistics

	ROA	SD_TA	LD_TA	DE_EQ	FSIZE
Mean	5.909142	0.240253	0.113047	0.861649	20.72024
Median	5.381210	0.197150	0.075975	0.543915	20.69060
Maximum	72.19626	1.269690	0.683250	32.65115	25.86484
Minimum	-44.38744	0.001440	0.000160	0.003040	9.210340
Std. Dev.	8.691578	0.191570	0.117493	1.533299	2.025662
Observations	700	700	700	700	700

Source: Survey Data

Correlation Analysis

The results of the correlation analysis are given in table 3. Accordingly, the coefficient value of SD_TA is -0.224, where SD_TA is negatively correlated with ROA and is significant at 95% confidence level. There is a negative and significant correlation between LD_TA and ROA. In addition, Debt to Equity is also negatively correlated and the correlation is significant as the p value is less than 0.05.

Table 3: Pearson's Correlation Analysis

Probability	ROA	SD_TA	LD_TA	DE_EQ	FSIZE
ROA	1.000000				

SD_TA	-0.224569	1.000000			
	0.0000	-----			
LD_TA	-0.173465	0.038998	1.000000		
	0.0000	0.3028	-----		
DE_EQ	-0.231789	0.448610	0.411695	1.000000	
	0.0000	0.0000	0.0000	-----	
FSIZE	0.099243	0.263643	0.196327	0.184927	1.000000
	0.0086	0.0000	0.0000	0.0000	-----

Source: Survey Data

Variance Inflation Factor

Based on the analysis of Variance Inflation Factor as depicted by table 4, the value of centered VIF seems to be less than 10. Therefore, it can be concluded there is no multi collinearity problem within the model.

Table 4: VIF Test

	Coefficient	Uncentered	Centered
Variable	Variance	VIF	VIF
C	10.39515	109.3315	NA
SD_TA	3.552815	3.526239	1.369365
LD_TA	8.858926	2.475141	1.284400
DE_EQ	0.062979	2.046830	1.555049
FSIZE	0.025905	118.0899	1.116377

Source: Survey Data

Regression Analysis

The results of the regression analysis are shown in table 5.

Table 5: Ordinary Pooled Regression Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-8.436304	3.224150	-2.616598	0.0091
SD_TA	-10.36995	1.884889	-5.501621	0.0000
LD_TA	-12.16940	2.976394	-4.088638	0.0000
DE_EQ	-0.569298	0.250956	-2.268514	0.0236
FSIZE	0.902649	0.160950	5.608254	0.0000
R-squared	0.124021	Mean dependent var		5.909142

Adjusted R-squared	0.118979	S.D. dependent var	8.691578
S.E. of regression	8.158149	Akaike info criterion	7.043029
Sum squared resid	46256.00	Schwarz criterion	7.075537
Log likelihood	-2460.060	Hannan-Quinn criter.	7.055595
F-statistic	24.59952	Durbin-Watson stat	1.548504
Prob(F-statistic)	0.000000		

Source: Survey Data

According to table 5, the independent variables SD_TA, LD_TA and DE_EQ negatively and significantly impact on ROA. But, the firm size is positively and significantly impact on ROA. The adjusted R2 is 0.118 where 11.8% variation in the dependent variable is explained by the variation in the independent variables. Further, the p value of F statistic is 0.000 which recommends overall the model is of high goodness of fit. Furthermore, the Value of Durbin Watson stat is 1.55.

Table 6: Fixed Effect Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-26.29435	11.92763	-2.204490	0.0279
SD_TA	-4.733175	3.090563	-1.531493	0.1262
LD_TA	-12.91411	4.788056	-2.697150	0.0072
DE_EQ	-0.595886	0.246798	-2.414466	0.0161
FSIZE	1.704324	0.576299	2.957363	0.0032
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.407642	Mean dependent var		5.909142
Adjusted R-squared	0.305272	S.D. dependent var		8.691578
S.E. of regression	7.244461	Akaike info criterion		6.934655
Sum squared resid	31279.40	Schwarz criterion		7.610815
Log likelihood	-2323.129	Hannan-Quinn criter.		7.196030
F-statistic	3.982028	Durbin-Watson stat		2.009230
Prob(F-statistic)	0.000000			

Source: Survey Data

As shown in table 6, the variables LD_TA and DE_EQ negatively and significantly impact on ROA at the same time SD_TA has insignificant negative impact on ROA. But the firm size is positively and significantly impact on ROA. The adjusted R^2 explains 30.52% variation in Return on Assets is explained by the variation in the independent variables. The p value of F statistic is 0.000 which recommends overall the model is of high goodness of fit. Further, the Value of Durbin Watson stat is 2 and this proves that there is no auto correlation.

Table 7: Random Effect Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-9.793397	4.627221	-2.116475	0.0347
SD_TA	-8.595412	2.240368	-3.836608	0.0001
LD_TA	-12.79153	3.532408	-3.621192	0.0003
DE_EQ	-0.581068	0.237657	-2.444980	0.0147
FSIZE	0.951453	0.228388	4.165952	0.0000
	Effects Specification			
			S.D.	Rho
Cross-section random			3.800668	0.2158
Idiosyncratic random			7.244461	0.7842
	Weighted Statistics			
R-squared	0.278638	Mean dependent var		3.454125
Adjusted R-squared	0.273335	S.D. dependent var		7.533825
S.E. of regression	7.252320	Sum squared resid		36554.32
F-statistic	14.82944	Durbin-Watson stat		1.846054
Prob(F-statistic)	0.000000			
	Unweighted Statistics			
R-squared	0.122183	Mean dependent var		5.909142
Sum squared resid	46353.07	Durbin-Watson stat		1.543054

Source: Survey Data

As shown in table 7, the independent variables SD_TA, LD_TA and DE_EQ negatively and significantly impact on ROA. But the firm size is positively and significantly impact on ROA. The adjusted R^2 is 27.3 % variation in the dependent variable is explained by the variation in the independent variables. Overall the model is of high goodness of fit as the p-value of F statistic is significant at 5%. Furthermore, the Value of Durbin Watson stat is 1.55.

Moreover, as shown in table 8, according to the Hausman Test, the Chi-Sq Statistic is 5.51 and its p value is 0.2390. Since the p value is greater than 0.05, the random effect model is best suitable.

Table 8: Hausman Test

Correlated Random Effects - Hausman Test			
Equation: Untitled			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	5.508676	4	0.2390

Source: Survey Data

CONCLUSION

Based on the Hausman test, it can be concluded that the random effect model is the best model. As per the random effect model, it is proved that the debt financing is negatively and significantly impact on firms' profitability in the Sri Lankan listed companies. These findings are consistent with Leon (2013), Pratheepkanth (2011), Rajakumaran and Yogendrarajah (2015), and Anandasayanan and Subramaniam (2015).Therefore, the hypotheses H1a, H1b, H1c and H1d are accepted. Moreover, these findings are consistent with the pecking order theory where the profitability of the organization is declined due to the large amount of debt financing. Hence, it would be better if organizations make use of retained earnings available in the firm, and then seek for debt capital as a final option. A summary of findings in the hypotheses testing are given in table 9.

Table 9: Summary of Hypotheses Testing

Hypotheses	Statistical techniques	P Value	Result
H1 – There is a significant impact of Debt Financing on Return On Assets.			
H1a	Ordinary Least Square Regression	0.0000	Accepted
H1b	Ordinary Least Square Regression	0.0000	Accepted
H1c	Ordinary Least Square Regression	0.0236	Accepted
H1d	Ordinary Least Square Regression	0.0000	Accepted
H1a	Fixed Effect	0.1262	Rejected
H1b	Fixed Effect	0.0072	Accepted
H1c	Fixed Effect	0.0161	Accepted
H1d	Fixed Effect	0.0032	Accepted
H1a	Random Effect	0.0001	Accepted
H1b	Random Effect	0.0003	Accepted
H1c	Random Effect	0.0147	Accepted
H1d	Random Effect	0.0000	Accepted

Source: Survey Data

KEYWORDS

Debt financing, Short term debt to total assets, Long term debt to total assets, Debt to equity

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