


CAPITAL STRUCTURE AND FINANCIAL PERFORMANCE: A STUDY ON COMMERCIAL BANKS IN SRI LANKA



 Logavathani Sivalingam¹

 Lingesiya Kengatharan^{2*}

¹Faculty of Management Studies & Commerce, University of Jaffna, Sri Lanka

Email: ssvathani@gmail.com Tel: 0094770760224

²Department of Financial Management, University of Jaffna, Sri Lanka

Email: lingesiya@univ.jfn.ac.lk Tel: 0094764014277



(+ Corresponding author)

ABSTRACT

Article History

Received: 28 February 2018

Revised: 23 April 2018

Accepted: 25 April 2018

Published: 26 April 2018

Keywords

Total debt to total assets
Long term debt to total assets
Short term debt to total assets
Growth in banks deposit
Bank size
Return on assets
Return on equity.

JEL Classification:

G32.

Purpose of this study was to examine the relationship between capital structure and financial performance of listed licensed commercial banks in Sri Lanka. Panel data were used to conduct the empirical study which were extracted from the annual reports of 10 selected banks for the period from 2007 to 2016. Total debt to total assets ratio, long term debt to total assets ratio, and short term debt to total assets ratio were used to measure the capital structure. Return on assets (ROA), return on equity (ROE) were used as financial performance measures. Size of the banks and growth in banks deposit were considered as control variables. Descriptive statistics, correlations, fixed effect and random effect models were used for the data analysis and then with the results of Hausman Specification Test, fixed effect model was considered as the most suitable model to examine the relationship between capital structure and ROA. According to the model, total debt to total assets ratio was significantly negatively related to ROA, however growth in banks deposit was significantly and positively related to ROA. Size, short term debt to total assets ratio and long term debt to total assets ratio did not show any relationship with ROA. Random effect model was considered as the most suitable model to examine the relationship between capital structure and ROE. As per the model, total debt to total assets ratio was significantly negatively related to ROE, while growth in bank deposit was significantly and positively related to ROE. Short term debt to total assets ratio, long term debt to total assets ratio and size were not significantly related to ROE. Results of the study suggest that financial managers should try to finance from internal sources rather than relying heavily on debt capital in their capital structure. Outcome of the study may useful to the practitioners, investors and decision makers in order to maximize their return from their investments.

Contribution/ Originality: This study is one of very few studies which have investigated the relationship between capital structure and financial performance of listed licensed commercial banks in Sri Lanka which give the geographical contribution to the existing finance literature.

1. INTRODUCTION

In finance, the most debatable topic is capital structure. The capital structure choice has long been an issue of great interest in the corporate finance literature. In order to run and manage a firm funds are needed. Right form of the promotional stage up to end finances play an important role in firm's life. Capital structure theories deal with

what is the optimum capital structure and guide to the maximum value of the firm. The mix of debt and equity is known as the firm's capital structure (Pandey, 2005). The overall cost of capital can be minimized by carefully mix up the debt and equity capital as well as maximize the value of the firm. The proportion of debt to equity is a strategic choice of corporate managers. The firm's capital structure is considered optimum when the market value of shares is maximized. If debt capital does not exist in the capital structure, the shareholders' return is equivalent to the firm's return. The use of debt affects the return and risk of shareholders; it may increase the return on equity funds, but it always increases risk as well. The financial leverage can be understood that the change in the shareholders' return caused by the change in the profits. A proper balance will have to be struck between return and risk. When shareholders' return is maximized with given risk, the market value per share will be maximized and the firm's capital structure would be considered optimum. Despite of the crucial nature of capital structure decisions the empirical studies have very little to say about the optimal level of debt financing.

Banking sector, in all over the world is one of the most sensitive businesses and plays a major role in current world of economy. It is the backbone of the Sri Lankan economy. The banking industry is especially sensitive to changes in financial leverage due to their low level of equity capital to total assets. In addition, the capital structure of banks is highly regulated. Banks must find better ways of determining the amount of capital that generally accounts for significant portion of financial resources of banking institutions. It plays a fundamental role in their financial performance, solvency position and their overall public creditability. In this context, this study is analyzed to find out the relationship between capital structure and financial performance of banks in Sri Lanka.

Globally, there are a number of empirical studies on the relationship between the capital structure and financial performance. However, most of the studies focus on Western countries or developed economies and only a few examine the situation of emerging economies. Meanwhile, few analyses are available to assess the impact of capital structure on financial performance for banks in Sri Lanka. This research shows the statistical analysis carried out seeking to discover if exists a relationship between capital structure and financial performance for the banks in Sri Lanka.

1.1. Statement of the Problem

When considering about the capital structure effects the performance of banking sector, it has some impacts on the performance. Therefore the capital structure of the banking sectors has the influence on the performance of banking sector. From the studies on the relationship between capital structure and financial performance which have carried out in the past, some of the studies concluded that there is a positive relationship between capital structure and firm performance (e.g: San and Heng (2011)) some of the studies concluded that there is negative relationship between capital structure and firm performance (e.g: Khan (2012)) and some of the studies concluded that there is no significant relationship between capital structure and firm performance (e.g: Ebaid (2009)). Therefore, there is no clear evidence on the relationship capital structure and firm's financial performance. Thus, the main problem of this study is to examine that what are the relationship between capital structure and banking sector's financial performance in Sri Lanka.

In this research, researcher is going to answer the following research question:

- Does capital structure influence on the financial performances of licensed commercial banks in Sri Lanka?

Therefore, objective of the study is to examine the relationship between capital structure and financial performance of licensed commercial banks in Sri Lanka.

1.2. Significance of the Study

Theoretically, the financial manager should plan an optimum capital structure for banking sectors. Since a number of factors influence the capital structure decision of a banking sector, the judgment of a person making the

capital structure decision plays a crucial role. Two similar banking sectors may have different capital structures if the decision-makers differ in their judgment of the significance of various factors.

The capital structure ought to be planned commonly keeping in careful observation on the benefit of the equity shareholders and the financial necessities of banking sectors. The equity shareholders, being the owners of the banking sectors and the providers of risk capital, would be concerned about the ways of banking sectors operations. In practice, for most banking sectors within an industry there may be a range of an appropriate capital structure within which there would not be great differences in the market value per share. The management of the banking sectors may fix its capital structure near the top of this range in order to make maximum use of favorable leverage, subject to other requirements such as flexibility, solvency, control and norms set by the banking sectors.

2. LITERATURE REVIEW

Capital structure is referred to as the way in which the firm finances itself through debts, equity and securities. It is the composition of debt and equity that is required for a firm to finance its assets. The capital structure of a firm is really extremely important since it is related to the ability of the firm to meet the requirements of its stakeholders. A number of theories have been examined related to capital structure and financial performance. Such as, Miller & Modigliani theory, Agency theory, Trade-off theory, Resource-based theory, Institutional theory, Market timing theory & Pecking order theory. Outline of the important theories on capital structure is given below:

2.1. Trade-Off Theory

The Trade-off theory of capital structure refers to the idea that a company chooses how much debt finance and how much equity finance to use by balancing the costs and benefits. An important purpose of the theory is to explain the fact that corporations usually are financed partly with debt and partly with equity. It states that there is an advantage to financing with debt, the tax benefits of debt and there is a cost of financing with debt, the costs of financial distress including bankruptcy costs of debt and non-bankruptcy costs.

2.2. Pecking Order Theory

If investors are less informed than the firm insiders about the value of the firm, then equity may be mispriced by the market. When firms need to finance new investments, under-pricing may be so severe that new investors capture more than the net present value of the project resulting in a dilution of value to the existing investors. This can lead to under-investment result. To avoid this, firms establish a preference over a financial pecking order. Under normal market conditions, firms prefer internal finance over external finance, safe debt over risky debt and convertibles, and finally common stocks (Donaldson, 1961; Myers, 1984; Myers and Majluf, 1984). There is no well-defined target debt-equity ratio according to this theory. The observed debt-equity ratio represents a firm's cumulative requirements for external finance. Therefore capital structure is path dependent.

2.3. Miller & Modigliani Theory

There was a academic debate was motivated from the study of Modigliani and Miller (1958) which was on the irrelevance of capital structure. This debate is still continuing. However, with the passage of time, new dimensions have been added to the question of relevance or irrelevance of capital structure. Miller and Modigliani acknowledged that in a world of frictionless capital markets, optimal financial structure would be very rare (Schwartz and Aronson, 1967). This theory later becomes known as the "Theory of Irrelevance". In M & M's over simplified world, no capital structure mix is better than another. M & M's proposition-II attempted answer the question of why there was an increased rate of return when the debt ratio was increased. It stated that the increased expected rate of return generated by debt financing is exactly offset by the risk incurred, regardless of the financing mix chosen.

2.4. Agency Theory

Berle and Means (1932) initially developed the Agency Theory and they argued that there is an increase in the gap between ownership and control of large organizations arising from a decrease in equity ownership. This particular situation provides a platform for managers to pursue their own interest instead of maximizing returns to the shareholders. Managers who desire shareholders interest may be outset by powerful shareholders or by a hostile takeover. This presupposes that shareholders have an interest to indulge in monitoring managerial behavior. However, shareholders differ with respect to incentives to spend resources on monitoring. Shareholders own a miniscule proportion of shares of a firm have very little incentive to devote the necessary time and effort on voicing their view on account of free riding from other shareholders.

With the base of various capital structure theories, empirical evidences on the relationship between capital structure and financial performances have been summarized below:

2.5. Review of Empirical Evidence on the Relationship between Capital Structure and Financial Performance

Hutchinson (1995) found in his study that financial leverage had a positive effect on the firm's profitability. Taub (1975); Nerlove (1968); Bakar (1973); Petersen and Rajan (1994) and Nikoo (2015) also found a positive relationship between capital structure and profitability/financial performance of the firms. In addition, Roden and Lewellen (1995) found a positive relationship between profitability and total debt. Champion (1999) described that the use of leverage is one way to improve the performance of the firm. Hadlock and James (2002) argued that companies prefer debt financing because they anticipate higher returns. Abor (2005) examined the effect of capital structure on the corporate profitability of the listed firms in Ghana using a panel regression model. His measures of capital structure included short-term debt ratio, long-term debt ratio, and total debt ratio. Abor (2005) findings showed a significantly positive relation between the short-term debt ratio and profitability. Yogen *et al.* (2014) empirically investigated the relationship between capital structure and the firm's profitability of banking industry in Kenya, using panel data which were extracted from the financial statements of the companies listed on the Nairobi Stock Exchange for the nine years period from 2004. Findings were reported that short term debt had significant positive relationship with the profitability.

Fama and French (1998) argued that the use of excessive debt creates agency problems among shareholders and creditors, in turn, lead to negative relationship between leverage and profitability. Majumdar and Chhibber (1999) and Gleason *et al.* (2000) found a negative effect of leverage on corporate profitability. Jensen (1986) reported that profitable firms might signal quality by leveraging up, resulting in a positive relation between leverage and profitability. Abor (2005) reported significantly positive relationship between short term debt and profitability and negative association between long term debt and profitability. This implies that an increase in the long-term debt position is associated with a decrease in profitability. Saeed *et al.* (2013) assessed the impact of capital structure on the performance of banks in Pakistan for the 5 years period from 2007. They have found that a positive relationship between determinants of capital structure and performance of banking industry.

Renoh and Ntoiti (2015) studied the effect of capital structure on financial performance of listed commercial banks in Kenya and found that there was a negative effect of capital structure on financial performance of commercial banks. Ramadan and Ramadan (2015) examined the effect of capital structure and financial performance on Jordanian companies and their findings suggested that negative effect of capital structure on return on assets were observed in their study. This findings were contradicted with the findings of Al-Taani's study. Taani (2013) conducted a study to investigate the relationship between capital structure and profitability. However, results illustrated that there was no relationship between debt ratio and return on assets. Anyhow, this findings was consistent with the Ebaid (2009) study which was evaluated the relationship between capital structure and performance based on the 64 firms in Egyptian companies during the period from 1997 - 2005.

Recently, Siddik *et al.* (2017) conducted a study to examine the impact of capital structure and financial performance of banks in Bangladesh. They have focused 22 banks for 10 years period from 2005. Return on assets, return on equity and earnings per share were considered as the performance measures. Results of their study illustrated that capital structure inversely affects the banks performance. Therefore, mixed results on the relationship between capital structure and financial performance have been reported in the literature.

2.6. The Relationship between Capital Structure and Financial Performance in Sri Lanka

Nimalathasan and Brabete (2010) conducted a study to examine the impact of capital structure on profitability of 13 listed manufacturing companies in Sri Lanka for the period from 2003 to 2007. Findings of their study revealed that debt equity ratio was significantly and positively related to gross profit ratio, operating profit ratio and net profit ratio. Therefore, they have suggested that there was a significant positive relationship between capital structure and profitability. However, the findings of Prahalathan and Ranjani (2011) indicated that neither short - term debt to total asset ratio, long- term debt to total debt ratio nor total debt to total asset ratio had a significant impact on firm's performance measured by return on equity and return on assets respectively. These results were contradicted with findings of previous study carried out in 2010. Pratheepkanth (2011) found that there is no significant relationship between capital structure and gross profit but there was a negative significant relationship between capital structure and net profit, return on equity, return on investment and return on assets. Lingesiya and Premkanth (2012) conducted a study to examine the impact of capital structure on financial performance of listed manufacturing companies in Sri Lanka. Outcome of their study revealed that there was significant negative impact of capital structure on financial performance of listed manufacturing companies in Sri Lanka. The findings of Velnampy and Nireesh (2012) revealed that there is a significant negative relationship between the capital structure and profitability of banks in Sri Lanka over the period of 2002 to 2009. Nirajini and Priya (2013) conducted a study to examine the impact of capital structure on financial performance of the listed manufacturing companies for the period from 2006 to 2010. Findings of their study suggested that there was a positive significant relationship between capital structure and financial performance of listed trading companies in Sri Lanka. Further, Nadeesha and Pieris (2014) conducted a study to investigate the impact of capital structure choice on firm performance in Sri Lanka with a 82 listed non-financial firms during the period of 2011/2012. They have found that there was a positive relationship between debt to total assets and return on capital employed. Recently, Abewardhana and Magoro (2017) completed a study on debt capital and financial performance which was a comparative analysis of South African and Sri Lankan listed companies. Their findings of the study were, in case of Sri Lanka, debt financing in terms of short term debt had a negative impact on firm performance while long term debt had a positive impact.

Therefore, there is a need for the study to examine the relationship between capital structure and financial performance in Sri Lanka because there are contradictions among the findings of the studies which were carried in Sri Lanka previously. Specifically, very few studies have been reported for the commercial banks in Sri Lanka. Thus, current study is attempted to examine the relationship between capital structure and financial performance of Sri Lankan commercial banks. Especially, commercial banks play an significant role in providing modern financial services in the country and they are being major financial intermediary in the fund transfer system. Considerable and significant percentage of the total assets of financial system in Sri Lanka is accounted by Commercial Banks. As per the Colombo Stock Exchange (2015) commercial banks plays a major role in the economic welfare of the Colombo Stock Exchange. Therefore, commercial banks were considered to carry out the empirical study.

3. METHODOLOGY

3.1. Data Collection

According to the annual report of the [Central Bank of Sri Lanka \(2016\)](#) currently, twenty five (25) Licensed Commercial Banks (LCB) and the seven (07) Licensed Specialized Banks (LSB) are in Sri Lanka. In terms of the asset base and the magnitude of services provided, the Licensed Commercial banks are the single most important category of financial institutions within the banking sector. At the end of 2016, the Licensed Commercial Banks dominated the financial system with a market share of 49 per cent of the entire financial system's assets and 84 per cent of the banking sector's assets. Therefore, the health of Sri Lankan financial system depends to a large extent on the soundness of the Licensed Commercial Banks. Even though a large number of licensed banks exist in the country, the stability of the financial system is primarily dependent on the performance and financial strength of the six largest Licensed Commercial Banks, consisting of the two state banks and the four largest domestic private commercial banks. Therefore, for this research, the data have been obtained from the annual reports and other financial statements of the 10 Licensed Commercial Banks which includes two state banks and eight private banks from 2007 to 2016 based on the order in largest market capitalization.

3.2. Conceptualization

With the evidence of empirical review carried out in the current study, following conceptual model was formulated to answer the research question.

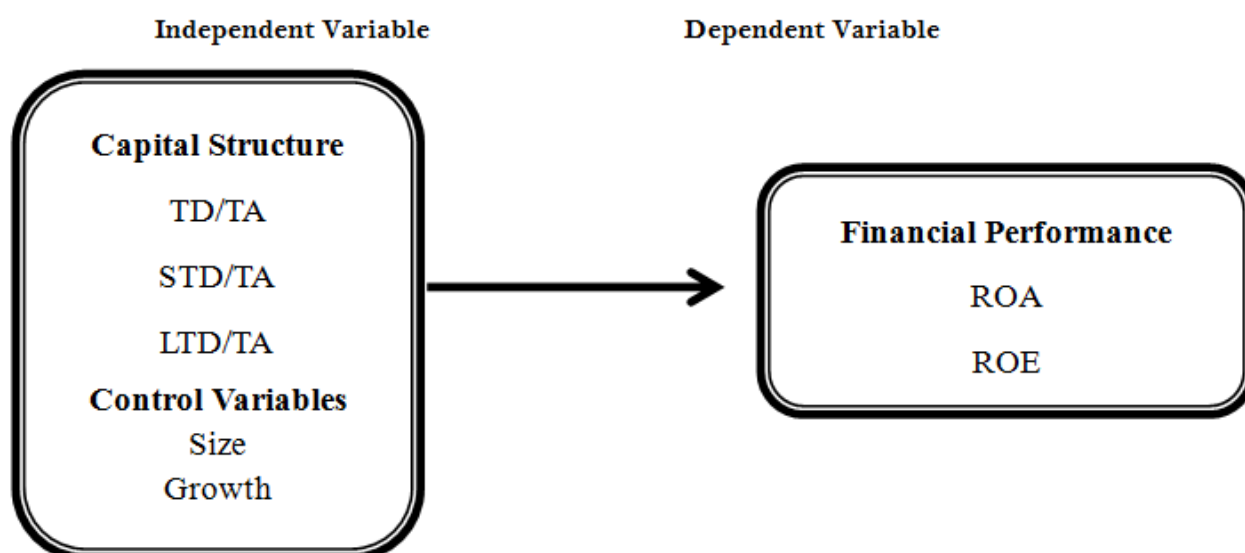


Figure-1. Conceptual model

Source: Developed by researchers

Based on the research problem and objectives, following hypotheses have been formulated to carry out the empirical study:

3.3. Hypotheses

- H₁: There is a significant relationship between total debt to total assets and financial performance.
 H₂: There is a significant relationship between long term debt to total asset and financial performance.
 H₃: There is a significant relationship between short term debt to total asset and financial performance.

3.4. Models

'A panel data has multiple entities, each of which has repeated measurements at different time periods' ([Park, 2011](#)). As per the nature of panel data, which are also named as longitudinal data or cross-sectional time series data

(Park, 2011). The current study is performed the balanced panel data analysis as all the selected banks have measurements on selected variables in all 10 years study period (2007-2016). Therefore, panel data might have individual/ group effect, time effect or both, which can be analyzed by fixed effect or random effect model. Therefore, the present study considered the fixed and random effect models to carry out the analysis.

3.4.1. Fixed Effect Models

Use of fixed effect model is to analyze the impact of variable that are vary over time.

$$ROA_{it} = \alpha_0 + \alpha_1SDTA_{it} + \alpha_2LDTA_{it} + \alpha_3TDTA_{it} + \alpha_4SIZE_{it} + \alpha_5GRO_{it} + \varepsilon_{it} \dots\dots\dots(1)$$

$$ROE_{it} = \alpha_0 + \alpha_1SDTA_{it} + \alpha_2LDTA_{it} + \alpha_3TDTA_{it} + \alpha_4SIZE_{it} + \alpha_5GRO_{it} + \varepsilon_{it} \dots\dots\dots(2)$$

3.4.2. Random Effect Models

In the random effect variations across entities is assumed to be random and uncorrelated with the predictor or independent variables included in the model.

$$ROA_{it} = \alpha_0 + \alpha_1SDTA_{it} + \alpha_2LDTA_{it} + \alpha_3TDTA_{it} + \alpha_4SIZE_{it} + \alpha_5GRO_{it} + u_{it} + \varepsilon_{it} \dots\dots\dots(3)$$

$$ROE_{it} = \alpha_0 + \alpha_1SDTA_{it} + \alpha_2LDTA_{it} + \alpha_3TDTA_{it} + \alpha_4SIZE_{it} + \alpha_5GRO_{it} + u_{it} + \varepsilon_{it} \dots\dots\dots(4)$$

In the equation,

ROA_{it} is calculated as net profits divided by total assets of bank i at time t .

ROE_{it} is calculated as net profits divided by shareholder equity of bank i at time t .

$SDTA_{it}$ is short term debt divided by total assets of bank i at time t .

$LDTA_{it}$ is long term debt divided by total assets of bank i at time t .

$TDTA_{it}$ is total debt divided by total assets of bank i at time t .

$SIZE_{it}$ is the log of total assets for firm i in time t ;

GRO_{it} is changes in banks deposit

ε_{it} : Stochastic error term of firm i at time t

u_{it} : error term of firm i at time t

4. RESULTS

4.1. Descriptive Statistics

Table-1. Descriptive statistics

	SDTA	LDTA	TDTA	GRO	SIZE	ROA	ROE
Mean	16.67	3.49	20.16	15.51	5.18	1.59	16.34
Maximum	69.00	14.10	72.50	87.30	6.20	12.30	49.20
Minimum	0.50	0.20	3.10	1.50	4.00	0.00	0.00
Std. Dev.	16.69	2.53	16.72	15.53	0.54	1.25	8.89
Observations	130	130	130	130	130	130	130

Source: Survey Data

Results of descriptive analysis has been presented in the table 1. As per the results presented in the table 1, short term debt to total assets ratio ranged from 0.50 to 69.00 and mean value was 16.67 with the standard deviation of 16.69. Long term debt to total assets ratio had the mean value 3.49 with the minimum value was 0.20 and maximum value was 14.10. Total debt to total assets ration ranged from 3.10 to 72.50 and mean value was 20.16 with the standard deviation of 16.72. Mean value of the ROA was 1.59 and ROE was 16.34. Growth in banks deposit and size had the mean values 15.51 and 5.18 respectively.

4.2. Correlation Analysis

Table 2 provides the results of correlations analysis between capital structure and financial performance of banking sector in Sri Lanka.

Table-2. Correlation Analysis

	SDTA	LDTA	TDTA	GRO	SIZE	ROA	ROE
SDTA	1.000						

LDTA	-0.064	1.000					
	0.471	-----					
TDTA	0.989	0.088	1.000				
	0.000	0.322	-----				
GRO	-0.162	-0.205	-0.193	1.000			
	0.065	0.019	0.028	-----			
SIZ	-0.073	-0.091	-0.087	0.102	1.000		
	0.407	0.303	0.325	0.250	-----		
ROA	0.577	-0.012	-0.574	0.028	0.033	1.000	
	0.000	0.891	0.000	0.752	0.706	-----	
ROE	0.049	-0.111	-0.032	-0.010	0.502	0.446	1.000
	0.579	0.211	0.716	0.908	0.000	0.000	-----

Source: Survey Data

As per the results presented in the Table 2, there was a significant positive association between short term debt to total assets ratio and ROA ($r = 0.577$, $p = 0.000$) but short term debt to total assets ratio did not show any significant association with ROE ($r = 0.048$, $p = 0.579$). Anyhow, long term debt to total assets ratio has not significantly associated with financial performance measure in terms of ROA ($r = -0.012$, $p = 0.891$) and ROE ($r = -0.111$, $p = 0.211$). Total debt to total assets ratio significantly negatively associated with ROA ($r = 0.574$, $p = 0.000$) but there was no significant association between total debt to total assets ratio and ROE ($r = -0.032$, $p = 0.716$). There was no significant association between growth and financial performance measures (ROA: $r = 0.028$, $p = 0.752$, ROE: $r = -0.010$, $p = 0.908$). Size was significantly positively associated with ROE ($r = 0.502$, $p = 0.000$) however, there was no significant association between size and ROA ($r = 0.033$, $p = 0.706$).

4.3. Test on Variable Inflation Factor

A Variable Inflation Factor test was conducted to examine whether multicollinearity exists amongst independent variables. Results of VIF test presented in the Table 3. Nachane (2006) suggested that $VIF < 10.0$ is an acceptable. According to the table 3, the highest variance inflation factor (VIF) was 3.32. therefore, there was a low level of multicollinearity and as such multicollinearity did not seem to be an issue in this study.

Table-3. Values of Variance Inflation Factors

Variable	VIF	1/VIF
SDTA	3.32	0.30120
LDTA	2.10	0.47619
TDTA	2.26	0.44248
SIZE	1.35	0.74074
GRO	1.09	0.91743
Mean VIF	2.02	

Source: Survey Data

4.4. Regression Analysis

Panel data estimation was employed to examine the relationship between capital structure and financial performance (ROA & ROE) from 2007 to 2016.

4.4.1. Relationship between Capital Structure and ROA

In the first equation, the relationship of short term debt, long term debt and total debt with the financial performance (ROA) was studied keeping size and growth controlling variables.

$$ROA_{it} = \alpha_0 + \alpha_1 SDTA_{it} + \alpha_2 LDTA_{it} + \alpha_3 TDTA_{it} + \alpha_4 SIZE_{it} + \alpha_5 GRO_{it} + \varepsilon_{it} \dots\dots\dots(1)$$

$$ROA_{it} = \alpha_0 + \alpha_1 SDTA_{it} + \alpha_2 LDTA_{it} + \alpha_3 TDTA_{it} + \alpha_4 SIZE_{it} + \alpha_5 GRO_{it} + u_{it} + \varepsilon_{it} \dots\dots\dots(3)$$

Table 4, presented the results of panel data multiple regression analysis to examine the relationship between capital structure and financial performance of banks in Sri Lanka. The F-statistics value for the fixed effect model (4.675 (p<0.05)) and random effect model (7.345 (p<0.05)) indicated that the independent variables were jointly statistically significant in the fixed and random estimates in explaining variations in ROA. The R-square statistics value of 0.3973 and 0.2098 revealed that the independent variables jointly account for about 39.73%, and 20.98% variation in ROA in the fixed and random effects models respectively. Going by the Hausman test statistics of (0.53, P < 0.10) it was rejected the null hypothesis that differences in coefficient of the fixed and random estimates were systematic, thus we accept and interpret the fixed effect model. Therefore, fixed effect model was considered as most suitable to explain the relationship between capital structure and ROA in this study.

From the results presented below in the fixed effect model, there was a significant negative relationship of total debt to total assets ratio ($\alpha = -0.4321$, P < 0.10) with ROA. Growth of banks ($\alpha = 0.2178$, P < 0.05) had significant positive relationship with ROA. However, Short term debt to total assets ratio, long term debt to total assets ratio and size were not significantly related with ROA. Therefore, as per the fixed effect model presented in the table 4, H₁ has been supported with the results of the study that there is a significant relationship between total debt to total assets ratio and ROA. H₂ was not supported with the results of the study that long term debt to total assets ratio has not significantly related to ROA. Further, results of the study is not supported with the H₃ as well that there was no significant relationship between short term debt to total assets ratio and ROA.

Table-4. Relationship between capital structure and ROA

Variable	Fixed effect	Random effect	
C	0.6230	0.3304	
SDTA	-0.4136	-0.4876	
LDTA	-0.4574	-0.5645**	
TDTA	-0.4321*	-0.5549**	
SIZE	0.2193	0.1368	
GRO	0.1256*	0.2178**	
No. of obs	100	100	
R-square	0.3973	0.2098	
F-statistic(p-value)	4.675 (0.002)	7.345(0.005)	
Hausman Specification Test	0.53(0.0892)		

*/**/** indicate coefficient is statistically significant at the 10/5/1 percent level of significance respectively.

4.4.2. Relationship between Capital Structure and ROE

In the second equation the relationship of short term debt, long term debt and total debt with the financial performance (ROE) was studied keeping size and growth controlling variables.

$$ROE_{it} = \alpha_0 + \alpha_1 SDTA_{it} + \alpha_2 LDTA_{it} + \alpha_3 TDTA_{it} + \alpha_4 SIZE_{it} + \alpha_5 GRO_{it} + \varepsilon_{it} \dots\dots\dots(2)$$

$$ROE_{it} = \alpha_0 + \alpha_1 SDTA_{it} + \alpha_2 LDTA_{it} + \alpha_3 TDTA_{it} + \alpha_4 SIZE_{it} + \alpha_5 GRO_{it} + u_{it} + \varepsilon_{it} \dots\dots\dots(4)$$

Table 5, present the results of panel data multiple regression analysis to examine the relationship between capital structure and ROE of banks in Sri Lanka. The F-statistics value for the fixed effect model was 6.432 (p<0.05) and random effect model was 10.765 (p<0.05) which illustrated that the independent variables were jointly statistically significant in the fixed and random estimates in explaining variations in ROE. The R-square statistics

value of 0.5220 and 0.5308 showed that the independent variables jointly account for about 52.20%, and 53.08% variation in ROE in the fixed and random effects models respectively. Going by the Hausman test statistics of (0.78, $P > 0.05$) we accepted the null hypothesis that differences in coefficient of the fixed and random estimates are not systematic, thus we accept and interpret the random effect model. In this case, random effect model was the best model to explain the relationship between capital structure and ROE.

Table-5. Relationship between capital structure and ROE

Variable	Fixed effect	Random effect
C	0.4356	0.5134
SDTA	0.3362	0.1764
LDTA	-0.6643	-0.2376
TDTA	-0.4231*	-0.4756*
SIZE	-0.3824	0.3634
GRO	0.1008	0.0987*
No. of obs	100	100
R-square	0.5220	0.5308
F-statistic(p-value)	6.432(0.033)	10.765(0.031)
Hausman Specification Test	0.78(0.8231)	

*/**/** indicate coefficient is statistically significant at the 10/5/1 percent level of significance respectively.

From the results of random effect model presented in the table 5, a significant negative relationship of total debt to total assets ratio ($\alpha = -0.4756$, $P < 0.10$) with ROE. Growth of banks ($\alpha = 0.0987$, $P < 0.10$) had significant positive relationship with ROE. However, long term debt to total assets ratio, short term debt to total assets ratio and size were not significantly related with ROE. Therefore, as per the random effect model presented in the table 5, H_1 is supported with the results of the study that there was a significant negative relationship between total debt to total assets ratio and ROE. H_2 was not supported with the results of the study that there was no significant relationship between long term debt to total assets ratio and ROE. Further, H_3 was also not supported with the results of the study that there was no significant relationship between short term debt to total assets ratio and ROE. Findings of the study were consistent with the studies of Velnampy and Niresh (2012); Ramadan and Ramadan (2015); Siddik *et al.* (2017) and Abewardhana and Magoro (2017).

5. CONCLUSION

By considering the panel data of 10 licensed commercial banks in Sri Lanka for the period from 2007 to 2016, this study empirically examined the relationship between capital structure choice (TDTA, LDTA and SDTA) and financial performance of banks (ROA and ROE). On the basis of findings, it was documented that short term debt had no significant relationship with the financial performance in terms of ROA and ROE. Whereas long term debt had also no significant relationship with the financial performance in terms of ROA and ROE in this study. Most importantly, total debt to total assets ratio had significant negative relationship with ROA and ROE. This findings envisage that debts were relatively more expensive due to certain direct and indirect costs, therefore employing high proportions of debt in financial structure results in low financial performance. Growth had significant positive relationship with ROA and ROE. However, size of banks did not show any significant relationship with ROA and ROE.

Empirical results indicated that negative significant relationship between total debt to total assets and financial performance. The underlying rationality was, Pecking order theory was true with this finding as key element of pecking order theory is that firms prefer to use internal financing whenever possible and if a firm is very profitable, it might never need external financing; so it would end up with little or no debt. Of an under developed bond and equity market in the developing countries like Sri Lanka, such as information asymmetry, strong covenants of debt and so on, for which there exists a high cost of debt. This study suggests that financial

managers should try to finance from retained earnings rather than relying heavily on debt capital in their capital structure. However, they can employ debt capital as the last resort. With a goal of maximizing the performance of banks, the managers should make an effort to attain an optimal level of capital structure and endeavour to uphold it as much as possible. These negative impacts also suggest that the legislative rules and policies have to be designed in such a way to assist banks in sharply reducing the reliance on too much use of debt. Although we observed significant negative impacts of capital structure choice on the financial performance of the sampled banks, this investigation still suffers from a comprehensive and systematic database for all banks in Sri Lanka. As more systematic datasets become available, we suggest that further research can be conducted on the same issue by employing data from a larger sample and more control variables for a longer period to confirm our findings.

Funding: This study received no specific financial support.

Competing Interests: The authors declare that they have no competing interests.

Contributors/Acknowledgement: Both authors contributed equally to the conception and design of the study.

REFERENCES

- Abewardhana, D.K.Y. and K.M.R. Magoro, 2017. Debt capital and financial performance: A comparative analysis of South African and Sri Lankan listed companies. *Asian Journal of Finance & Accounting*, 9(2): 103-127. [View at Google Scholar](#) | [View at Publisher](#)
- Abor, J., 2005. The effect of capital structure on profitability: An empirical analysis of listed firms in Ghana. *Journal of Risk Finance*, 6(5): 438-445. [View at Google Scholar](#) | [View at Publisher](#)
- Bakar, S.H., 1973. Risk, leverage & profitability: An industry analysis. *Review of Economics & Statistics*, 55(4): 503-507. [View at Google Scholar](#) | [View at Publisher](#)
- Berle, A. and G. Means, 1932. *The modern corporation and private property*. New York: McMillan.
- Central Bank of Sri Lanka, 2016. Annual Report, Colombo, Sri Lanka.
- Champion, D., 1999. Finance: The joy of leverage. *Harvard Business Review*, 77(4): 19-22.
- Colombo Stock Exchange, 2015. Annual Report, Sri Lanka.
- Donaldson, G., 1961. *Corporate debt capacity: A study of corporate debt policy and the determination of corporate debt capacity*. Boston: Division of Research, Harvard School of Business Administration.
- Ebaid, I., 2009. The impact of capital-structure choice on firm performance: Empirical evidence from Egypt. *Journal of Risk Finance*, 10(5): 477-487. [View at Google Scholar](#) | [View at Publisher](#)
- Fama, E.F. and K.R. French, 1998. Value versus growth: The international evidence. *Journal of Finance*, 53(6): 1975-1999. [View at Google Scholar](#) | [View at Publisher](#)
- Gleason, K.C., L.K. Mathur and I. Mathur, 2000. The interrelationship between culture, capital structure and performance: Evidence from European retailers. *Journal of Business Research*, 50(2): 185- 191. [View at Google Scholar](#) | [View at Publisher](#)
- Hadlock, C. and C.C. James, 2002. Do banks provide financial slack? *Journal of Finance*, 57(3): 1383 -1419. [View at Google Scholar](#) | [View at Publisher](#)
- Hutchinson, R.W., 1995. The capital structure and investment decisions of small owner managed firms: Some exploratory issues. *Small Business Economics*, 7(3): 231-239. [View at Google Scholar](#) | [View at Publisher](#)
- Jensen, M., 1986. Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review*, 76(2): 323-329. [View at Google Scholar](#)
- Khan, A.G., 2012. The relationship of capital structure decisions with firm performance: A study of the engineering sector of Pakistan. *International Journal of Accounting and Financial Reporting*, 2(1): 245-262. [View at Google Scholar](#) | [View at Publisher](#)

- Lingesiya, Y. and P. Premkanth, 2012. Impact of capital structure on financial performance: A study on listed manufacturing companies in Sri Lanka. Proceedings of 8th International Conference on Business Management. University of Sri Jayewardenepura, Sri Lanka (8th & 9th December 2011). pp:1.
- Majumdar, K. and P. Chhibber, 1999. Capital structure and performance: Evidence from a transition economy on an aspect of corporate governance. *Public Choice*, 98(3/4): 287-305. [View at Google Scholar](#)
- Modigliani, F. and M.H. Miller, 1958. The cost of capital, corporation finance and the theory of investment. *American Economic Review*, 4(3): 261-297. [View at Google Scholar](#)
- Myers, S.C., 1984. The capital structure puzzle. *Journal of Finance*, 39(3): 574-592. [View at Google Scholar](#) | [View at Publisher](#)
- Myers, S.C. and N.S. Majluf, 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 13(2): 187-221. [View at Google Scholar](#) | [View at Publisher](#)
- Nachane, D.M., 2006. *Econometrics: Theoretical foundations and empirical perspectives*. New Delhi: Oxford University Press.
- Nadeesha, D.H.D. and T.S.G. Pieris, 2014. The impact of capital structure choice on firm performance in Sri Lanka: Empirical evidence from the Colombo Stock Exchange. Proceedings of the Peradeniya University International Research Sessions, Sri Lanka. 4th & 5th July 2014, 18.
- Nerlove, M., 1968. Factors affecting difference among rates of return on individuals common status. *Review of Economics & Statistics*, 50(3): 312-331. [View at Google Scholar](#) | [View at Publisher](#)
- Nikoo, S.F., 2015. Impact of capital structure on banking performance: Evidence from Tehran stock exchange. *International Research Journal of Applied and Basic Sciences*, 9(6): 923-927. [View at Google Scholar](#)
- Nimalathasan, B. and V. Brabete, 2010. Capital structure and Its impact on profitability: A study of listed manufacturing companies in Sri Lanka. *RevistaTinerilor Economist (The Young Economists Journal)*, 1(15): 7-16.
- Nirajini, A. and K.B. Priya, 2013. Impact of capital structure on financial performance of the listed trading companies in Sri Lanka. *International Journal of Scientific and Research publications*, 3(5): 35-43. [View at Google Scholar](#)
- Pandey, I.M., 2005. *Financial management*. 9th Edn., India: Vikas Irish Publication.
- Park, H.M., 2011. *Practical guide to panel data modelling: A step by step analysis using STATA*. International University of Japan, Minami Uonuma. pp: 1-52.
- Petersen, M.A. and R.G. Rajan, 1994. The benefits of lending relationships: Evidence from small business aata. *Journal of Finance*, 49(1): 3-37. [View at Google Scholar](#) | [View at Publisher](#)
- Prahalathan, B. and R.P.C. Ranjani, 2011. The impact of capital structure choice on firm performance: Empirical investigation of listed companies in Colombo Stock Exchange, Sri Lanka. *International Journal of Research in Commerce and Management*, 2(4): 12-16. [View at Google Scholar](#)
- Pratheepkanth, P., 2011. Capital structure and financial performance: Evidence from selected business companies in Colombo stock exchange Sri Lanka. *Journal of Arts, Science & Commerce*, 2(2): 171-183. [View at Google Scholar](#)
- Ramadan, Z.S. and I.Z. Ramadan, 2015. Capital structure and firm's performance of Jordanian manufacturing sector. *International Journal of Economics and Finance*, 7(6): 279-284. [View at Google Scholar](#) | [View at Publisher](#)
- Renoh, C. and J. Ntoiti, 2015. Effect of capital structure on financial performance of listed commercial banks in Kenya: A case study of Kenya commercial banks limited. *Strategic, Business & Change Journal of Management*, 2(72): 750-781.
- Roden, D.M. and W.G. Lewellen, 1995. Corporate capital structure decisions: Evidence from leveraged buyouts. *Financial Management*, 24(2): 76-87. [View at Google Scholar](#) | [View at Publisher](#)
- Saeed, M.M., A.A. Gull and M.Y. Rasheed, 2013. Impact of capital structure on banking performance (A Case Study of Pakistan). *Interdisciplinary Journal of Contemporary Research in Business*, 4(10): 393-403. [View at Google Scholar](#)
- San, O.T. and T.B. Heng, 2011. Capital structure and corporate performance of Malaysian construction sector. *International Journal of Humanities and Social Science*, 1(2): 28-36. [View at Google Scholar](#)
- Schwartz, E. and J. Aronson, 1967. Some surrogate evidence in support of the concept of optimal financial structure. *Journal of Finance*, 22(1): 10-18. [View at Google Scholar](#) | [View at Publisher](#)

- Siddik, N.A., S. Kabiraj and S. Joghee, 2017. Impact of capital structure on performance of banks in a developing economy: Evidence from Bangladesh. *International Journal of Financial Studies*, 5(2): 13. [View at Google Scholar](#) | [View at Publisher](#)
- Taani, K., 2013. The relationship between capital structure and firm performance: Evidence from Jordan. *Global Advanced Research Journal of Management and Business Studies*, 2(11): 542-546.
- Taub, A., 1975. Determinants of firm's capital structure. *Review of Economics and Statistics*, 57(4): 410-416. [View at Google Scholar](#) | [View at Publisher](#)
- Velnampy, T. and J. Niresh, 2012. The relationship between capital structure and profitability. *Global Journal of Management and Business Research*, 12(13): 67-74. [View at Google Scholar](#)
- Yogen, C., J. Cheruiyot, J. Sang and P.K. Cheruiyot, 2014. The effect of capital structure on firm's profitability: Evidence from Kenya's banking sector. *Research Journal of Finance & Accounting*, 5(9): 152-159. [View at Google Scholar](#)

Views and opinions expressed in this article are the views and opinions of the author(s). Asian Economic and Financial Review shall not be responsible or answerable for any loss, damage or liability etc. caused in relation to/arising out of the use of the content.