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## **Capital structure and its implications: empirical evidence from an emerging market in South Asia**

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### Abstract

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### Keywords

Capital, structure, its, implications, empirical, evidence, from, emerging, market, South, Asia

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**Capital Structure and Its Implications:  
Empirical Evidence from an Emerging Market in South Asia**

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***Abstract***

Using panel data regression analysis for a sample of 171 companies, this paper examines the implications of capital structure of corporate entities in an emerging market, Sri Lanka. The results demonstrate that most of the Sri Lankan firms finance their operations with short-term debt capital as against the long-term debt capital. It provides strong evidence to indicate that debt capital has a negative impact on firm performance. The study also found a significant negative relationship between tangibility and performance indicating inefficient utilization of non-current assets. The negative performance implications associated with over-utilization of short-term debts and the under-utilization non-current assets provide corporate managers with useful policy direction on appropriate capital structure and operational decisions. The findings contribute to the growing body of knowledge pertaining to capital structure-performance link in emerging economies.

Keywords — Capital structure, corporate performance, emerging markets, Sri Lanka

**1. Introduction**

The capital structure, a mix of debt and equity which a firm deems as appropriate to enhance its operations, has been the subject of many studies. The use of capital structure is considered as one of the mechanisms to mitigate the agency costs and thereby increase firm performance (Berger and Udell, 2006). Accordingly, a positive relationship is expected between debt capital and firm performance. On the contrary, pecking order theory suggests a negative relationship between debt capital and firm performance (Donaldson, 1961, Myers, 1984, Myers and Majluf, 1984). This is due to the fact that profitable firms are likely to use internal finance (retained earnings), resulting less debt capital while less profitable firms are likely to use external finance (borrowings), resulting high debt capital.

Empirical evidence suggests that the capital structure is one of the factors that impact on firm performance along with many other factors including macroeconomic conditions of a country (Rajan and Zingales, 1995, Friend and Hasbrouck, 1988, Senaratne, 1998, Friend and Lang, 1988, Myers and Majluf, 1984). Thus, it is important to investigate impact of capital structures on firm performance in different economic conditions to test the validity of these theoretical claims. However, empirical research on this issue has been largely restricted to the USA and other developed countries. The capital structure decision in developing countries has not received much attention in the literature irrespective of the fact that fundamental economic

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differences exist among these countries impacting capital structure. For example, Booth et al. (2001), based on the analysis of data from ten developing countries, found that there were systematic differences in the way the debt ratios were affected by country factors, such as GDP growth rates, inflation rates and development of capital market. Mayer (1990) noted that the capital structure choices made by the firms in developing countries were different to that of developed countries. This macroeconomic diversity and the dearth of studies in the emerging markets provide the need for investigating capital structure choices and their impact on firm performance. Sri Lanka provides an ideal case for such investigation as the understanding the pattern and the main determinants of capital structures of companies and their impact on performance have largely been unexplored. Therefore, the main objective of this study is to examine the impact of capital structure on corporate performance using the emerging market of Sri Lanka as a case. The remainder of this paper is organized as follows. Section 2 provides a brief background of the study. Section 3 presents the data and methodology followed by the analysis and empirical findings in Section 4. Section 5 provides conclusions and policy guidelines.

## **2. Background of the study**

The corporate debt market is relatively very small compared to equity market in Sri Lanka. As per Colombo Stock Exchange (CSE) Annual Report 2009, only 69 corporate debt securities are listed on the CSE. Moreover, the total turnover of corporate debt is Rs. 136 million compared to total turnover of Rs. 142,463 million of equity shares. This shows that companies are highly dependent on bank loan and other means of debt financing such as intra-group financing rather than exposing themselves into corporate debt market. Furthermore, companies appear to prefer short-term debt over long-term debt to minimize the risk. However, the prevalent high inflation rate in the country, which was largely caused by prolong civil war, resulted in high cost of capital for short-term debt financing. This behaviour can lead to negative relationship between debt ratio and performance of the companies. These contexts provide new insights into studies on the relationship between capital structure and firm performance.

There have been only a few studies that have examined capital structure issues of Sri Lankan companies. These studies have largely examined the pattern of leverage and main determinants of capital structure. A study conducted by Samarakoon (1999) investigated the mean capital structure and the factors that are correlated with leverage of Sri Lankan firms and revealed that the use of debt financing, especially long-term debt by Sri Lankan firms, was significantly low. The study further revealed that firm size was positively correlated with the leverage while the firm profitability was negatively correlated with leverage. Another study by Samarakoon (1997) found that the relationship between mean return and systematic risk measured by beta was strongly negative in Sri Lankan market. This provides evidence contrary to the central argument of the Capital Assets Pricing Model. Senaratene (1998) examined the applicability of the pecking order theory in Sri Lanka and suggested that Sri Lankan companies follow the pecking order partially i.e. the companies prefer internal finance to external finance but they prefer equity to debt in raising external finance. These empirical results, some of which are contrary to the theoretical arguments, show the existence of unique economic conditions in Sri Lanka.

This is not surprising given the fact that Sri Lanka has undergone much political and economic turmoil in recent decades, producing various macroeconomic anomalies. In comparison to many other emerging markets in Asia, Sri Lanka provides a unique business environment because of its historical inheritance from colonial rulers, the end of the 30-year civil

war and other market oriented economic policies. As Nanayakkara (1999, p.9) points out, “in many dimensions, Sri Lanka’s performance has been paradoxical: high quality of life with low level of productivity; high level of literacy and education with low level of employment and high level of political instability with a stable democratic system of governance”. These inconsistencies at the macroeconomic level create a challenging environment for Sri Lankan companies to carry out their operations. Consequently, there can be systematic differences in the way the debt ratios are affected by Sri Lankan macroeconomic factors, such as GDP growth rates, inflation rates and development of capital market as suggested by Booth et al. (2001) based on an empirical study of 10 emerging markets. This kind of uncharacteristic relationship can produce idiosyncratic effects on firm performance, providing impetus for examining these issues in different macroeconomic environments in order to test above mentioned theoretical arguments.

### **3. Methodology**

#### **3.1 Data**

The data for this study were obtained from Bureau Van Dijk’s OSIRIS database (OSIRIS) and CSE’s *Data Library* which provides share price information of Sri Lankan stock market. The major items of interest to this study were balance sheets, income statements items which were directly extracted from the OSIRIS database. The market share price information of sample firms was obtained from the *Data Library* published by the CSE.

The data used in the study is based on 171 of 232 public companies listed on the CSE over the period 2002–2008, consisting 730 firm-years. Accordingly, this sample represents approximately 74 per cent of the listed companies in Sri Lanka. These companies belonged to all industrial sectors of the CSE, excluding the bank, finance and insurance sector. This sector was excluded from the initial sample selection process mainly due to non-comparability of capital structure of this sector to other sectors. The data set consists of unbalanced panel data as the information for entire sample period for all the sample companies was not available on the database.

### ***3.2 Measurement and Selection of Variables***

We employed both accounting performance measures and market performance measures to examine the impact of leverage on performance. The profitability of the firm is measured by three variables: operating profit on assets (OPOA), return on assets (ROA), and Proxy Tobin's Q (TQ), as follows.

OPOA: Earnings before Interest, Tax, Depreciation / Total Assets

ROA: Earnings before Interest and Tax / Total Assets

Proxy TQ: Market value of equity plus the book value of its debt / Book Value of Total Assets.

These performance variables represent the dependent variables in the model. In this study, TQ was used as the market performance measure whereas OPOA and ROA were employed as the accounting performance measures. Both these performance measures are suffered from limitations. While financial ratios suffered from the application of accounting principles, the market performance measures are subjected to manipulations, signalling, group behaviour, and investor mistakes since they are based on market prices (Kapopoulos and Lazaretou, 2007). Furthermore, Proxy TQ suffers from accounting measurement problems also owing to the application of book value in place of replacement value of tangible assets (Zeitun and Gary, 2007, Thomsen et al., 2006, Demsetz and Villalonga, 2001, Agrawal and Knoeber, 1996, Morck et al., 1988, Demsetz and Lehn, 1985).

Leverage is measured using three variables: (1) total debt to total assets ratio (TD/TA) (2) total debt to total equity ratio (TD/TE) and (3) short-term debt to total assets ratio (STD/TA). Most of the companies use short-term debt as the major component of their debt capital in Sri Lanka and therefore STD/TA ratio use in addition to main leverage variables to examine its performance implications. As indicated previously, a negative relationship is expected between leverage and past profitability. Furthermore, short-term debt is expected to be negatively related to performance since it exposes firms to a higher risk through refinancing and the cost of capital commitments.

For the purpose of achieving the main objective, we designed a regression model incorporating leverage variables. However, the factors other than these variables influence firm performance. So we have incorporated several additional independent variables which are directly relevant to performance into the regression model to avoid omitted-variable bias. These variables include growth, size, risk, tangibility and tax.

Growth opportunities are measured by growth of sales. Firms with high growth opportunities provide positive signal to market about their future performance. Thus, a firm growth opportunity is considered to be positively related to market performance measures. Furthermore, firms with high growth opportunities have a high accounting performance as firms with high growth are able to generate high profit for their investment. Therefore, growth opportunities are expected to be positively related to both TQ and accounting performance measures.

A firm's size is measured by log of sales. Although, it can conveniently be argued that size of a firm leads to better performance through scale of economies, the empirical evidence shows diverse results. For example, Gleason et al. (2000) and Zeitan & Tian (2007) found that firm size has a positive and significant impact on firm performance. In contrast, many researchers such as Tzelepis and Skuras (2004), Durand and Coeuderoy (2001), and Lauterbach and Vaninsky (1999) have reported that the impact of firm size on the firm's performance was insignificant. However, large firms have a better ability to survive in bad times than small firms, which may lead to consistent performance both in terms of accounting profit and market return. Thus, a firm size represented by total sales is expected to have a positive influence on firm performance.

Risk is considered to be one of the key factors that can affect the performance of a firm. In this study, risk is measured by the standard deviation of cash flow to total assets ratio for the last three years. Cash flow is measured using proxy variable of net income plus depreciation. The cash flow volatility for the period of three-year moving cycle is considered as a measure of risk since this volatility reflects the dispersion from the expectation of cash flow of the firm. A firm with larger dispersion can be considered as a high risk firm which is expected to generate high return as per the classic risk-return trade-off arguments. Thus, a positive relationship is expected between risk and corporate performance.

The tangibility refers to tangible assets as a proportion to total assets. The current study uses the fixed assets to total assets as the measure of firm tangibility. A positive relationship between tangible assets and debt is expected as a firm with high proportion of tangible assets has more property that can be used as collateral (Rajan and Zingales, 1995, Friend and Hasbrouck, 1988, Marsh, 1982). However, diverse relationship can be expected between performance and tangibility as the nature of relationship is dependent on how efficiently tangible assets are utilized by the firm. If a firm utilizes its tangible assets efficiently a positive relationship between tangibility and performance can be expected and otherwise the relationship can be negative.

Tax is measured by income tax expenses to earnings before interest and tax ratio (Tax/EBIT). As interest is a tax deductible expense, firms prefer to use more debt capital. High tax reflects high profitability as well as the low use of debt capital and vice-versa. Thus, tax paid is expected to be positively related to performance.

### 3.3 The Model

In order to carry out the investigation, we employ both pooled and panel regression analysis. The panel regression takes the form of the random effects model for unbalanced panel data. The basic regression equations take the following forms:

$$Y_{it} = \alpha + \beta X_{it} + \varepsilon_{it} \quad (\text{Pooled model})$$

$$Y_{it} = \alpha + \beta X_{it} + (\varepsilon_{it} + \mu_i) \quad (\text{Random effects model})$$

Where  $Y_{it}$  is alternately OPOA, ROA and TQ for firm  $i$  as a measure of performance of firm  $i$  in year  $t$ .  $\alpha$  = intercept coefficient of firm  $i$ .  $\beta$  = slope coefficients of regressors.  $X_{it}$  = independent variables for firm  $i$  at time  $t$ . This variable is made up of the following:  $X_1$ (Lev) = leverage ratio which is alternately TD/TA, TD/TE and STD/TA.  $X_2$  (Growth) = growth of sales.  $X_3$  (Size) = the natural logarithm of total sales.  $X_4$  (Risk) = the standard deviation of cash flow to total assets ratio of the firm for the last three years.  $X_5$  (Tax) = Tax/EBIT.  $X_6$  (Tangibility) = fixed assets/total assets.  $\varepsilon_{it}$  = residual error of firm  $i$  in year  $t$ .

There are number of approaches available for estimating panel data model. The appropriate technique for estimating the basic model is dependent on the structure of the components of the error term and also the correlation between the error term and the observed explanatory variables. In considering a situation where there are no firm specific effects and time specific effects, the basic pooled OLS is most appropriate because it ignores the panel nature of the data set (Johnston and Dinardo, 1997). Initially, we have carried out pooled data regression analysis to examine whether the leverage has a significant impact on firm performance assuming no firm specific or time specific effects. However, pooled model estimations may be biased because of unobserved heterogeneity (omitted variables bias). The central regression assumption is that the X-variable and the error term are uncorrelated. If X-variable correlates with the error term (endogeneity) the estimates are biased in regression model.

In addition to pooled model, we carried out panel data regression analysis also to capture the effects of leverage on performance having recognized the firm-specific nature of data set and the limitations of pooled model. However, the panel models alone do not provide the remedy for limitations encountered by the pooled model. Therefore, the fixed effect model and random effect model where error term can be decomposed into an entity-specific error and an idiosyncratic error were considered for our analysis. In these models, the unobservable effects can be accommodated by making different assumptions over error term. The entity-specific error is assumed to be constant over time in the fixed effect model whereas it is assumed to be a random variable in the random effect model. As we intended to find out whether there is a firm-specific effect on performance from its capital structure over time, we consider the random effect model is more appropriate for our analysis.

## 4. Analysis, Results and Discussion

### 4.1 Descriptive Statistics

Table 1 reports the descriptive statistics of both dependent variables and regressors. As per this table, the mean total debt ratio is 52 per cent which indicates that most of the Sri Lankan companies are highly levered. However, most of these debts are short-term debts (mean 31 per cent) as against the loan-term debts indicating lack of developed debts market and heavy dependence on internal finance in Sri Lanka. Furthermore, the leverage of firms is varied



substantially across firms as shown in the standard deviation couple with minimum and maximum values. The maximum value of total debt to total assets ratio was 4.44, reflecting total equity capital of some companies had been completely eroded and converted into a large negative value by their accumulated losses and that had made them to hold larger debt capital than the total assets

**Table 1: Descriptive Statistics of Variables; 2002–2008**

Variables	N	Mean	Std. Dev.	Min.	Max.	Skewness	Kurtosis	Shapiro-Wilk	
								Statistic	Prob.
OPOA	502	10.78	10.38	-22.08	94.43	1.58	10.21	0.888	0.000
ROA	728	7.98	10.02	-23.29	93.34	1.69	10.35	0.872	0.000
Tobin Q	730	1.16	0.63	0.00	4.96	2.72	10.16	0.746	0.000
TD/TA	730	0.52	0.39	0.00	4.44	4.26	35.17	0.942	0.000
TD/TE	730	1.86	5.68	-75.70	53.15	-0.35	73.61	0.364	0.000
STD/TA	730	0.31	0.27	0.00	3.47	4.50	40.98	0.874	0.000
Growth	578	0.03	0.74	-8.32	1.00	-6.72	60.85	0.422	0.000
Size: L-Sales	727	5.93	0.87	1.85	7.68	-0.60	0.71	0.978	0.000
Risk	586	0.05	0.07	0.00	0.91	6.03	55.09	0.670	0.000
Tax	655	0.23	2.05	-7.66	49.80	21.54	520.45	0.331	0.000
Tangi	730	0.61	0.27	0.00	0.99	-0.47	-0.78	0.956	0.000

Traditionally, Sri Lankan companies are dependent on banking sector for their debt capital. It is only after 1996, the companies started to finance through debts capital by issuing prospectus to general public. However, this financing method is still not very popular in Sri Lanka and the market for loan-term debts remains small. As indicated in Table 1, the total fixed assets ratio (tangibility) has very high mean value of 61 per cent. The more tangible assets mean more collateral assets for companies to take loan from banking sector. The high tangibility and lack of developed long-term debt market may explain the high use of short-term debt capital by Sri Lankan companies.

The firms in the sample have mean values of 10.8 per cent and 7.9 per cent for OPOA and ROA respectively. The relatively high standard deviation and high dispersion between minimum and maximum values indicated that performance of the firms is greatly diverse over time and across industry sectors. These differences suggest that there could be systematic differences among the different industry sectors and different time periods of the sample.

The result presented in Table 2 indicates the extent of correlation between the explanatory variables used in this study. It shows that there is a negative relationship between tax and leverage and tangibility and leverage. The negative relationship between tax and the leverage ratios partially supports the pecking order theory argument. The high performing firms tend to have high Tax to EBIT ratio. These firms were able to use more internally generated funds than debt capital to satisfy their financial needs. Thus, high performing firm tend to have inverse relationship between tax rate and leverage. A positive relationship between tangible assets and debt capital was expected as a firm with high proportion of tangible assets tends to have more assets that can be used as collateral. However, majority of Sri Lankan firms prefer to have short-

term debts than long-term debts to minimize risk. The short-term loan can be obtained using both current and non-current assets as the collateral. Furthermore, the pledged loans, some of which are based on directors' personal guarantee, are common method of obtaining short-term loan by Sri Lankan firms. Thus, it is difficult to establish a clear relationship between tangibility and leverage of Sri Lankan firms. We observed positive relationship between size and leverage as expected. The main reason for this behaviour may be due to the tendency of larger firms to have high volume of sales requiring more operating capital which is normally met through short-term debt capital.

**Table 2: Correlation Matrix of Explanatory Variables, 2002–2008**

	Correlation								Variance Inflation Factors		
	TDTA	TDTE	STDTA	Growth	Size	Risk	Tax	Tangi	TDTA	TDTE	STDTA
TDTA	1								1.27		
TDTE	.169**	1								1.07	
STDTA	.793**	.108**	1								1.45
Growth	.033	.028	-.002	1					1.06	1.06	1.06
Size	.276**	.120**	.208**	.248**	1				1.24	1.14	1.12
Risk	.180**	.012	.120**	-.149**	-.164**	1			1.14	1.14	1.14
Tax	-.052	-.021	-.024	-.014	-.090*	-.136**	1		1.02	1.04	1.02
Tangi	-.186**	-.040	-.470**	-.015	-.177**	-.122**	.017	1	1.25	1.08	1.54

Note: \*\* Significant at 1% level, \*significant at 5% level. The reported Variance Inflation Factors (VIF) is estimated with pooled regression models where ROA used as the dependent variable.

#### 4.2 Discussion of Regression results

**Pooled regression models:** The results of the pooled regression are shown in the Table 3. The leverage ratios i.e. TD/TA, TD/TE and STD/TA were used interchangeably with each of the model. The pooled regression analyses estimated all-encompassing equations involving all independent variables. In order to find out whether there is multicollinearity among the variables in the regression models, a diagnostic test, i.e. variance inflation factors (VIF), was carried out with the pooled regression models. The summary scores of the VIF tests which were estimated with each of the regression model where ROA used as the dependent variable were shown in the Table 2. The results indicate fewer than 2 scores for all variables in the model. In general, VIF scores under 10 (or scores under 2.5 even in a weaker model) can be considered as a good indicator for non-multicollinearity (Gujarati, 2003).

The regression results in Table 3 indicate that a significant negative relationship exists between three leverage ratios and accounting performance measures. The coefficients of leverage variables as measured by TD/TA and STD/TA were found to be negative. They were significant at 1 percent level. However, although TD/TE ratio has negative coefficient, it was not significant for ROA but was significant at 5 per cent level for OPOA. Overall, these results partially support the pecking order theory argument. The high performing firms tend to use internal finance over debt capital. However, it did not support the argument that when a financing need arises in excess of internally generated funds, firms preferred debt capital over equity capital. Our results are consistent with the findings of previous studies such as Senaratene (1998), Gleason et al. (2000), and Tzelepis and Skuras, (2004). Furthermore, it supports the argument of agency theory that owing to agency conflicts firms over-leverage themselves causing negative impact on

performance. This empirical evidence identifies leverage as a major contributing factor for negative firm performance.

**Table 3: Results of Pooled Data Model estimations**

	OPOA			ROA			Tobin Q		
	TD/TA	TD/TE	STD/TA	TD/TA	TD/TE	STD/TA	TD/TA	TD/TE	STD/TA
Constant	-16.848 (-4.47)***	-15.034 (-3.93)***	-12.685 (-3.35)***	-8.071 (-2.35)**	-6.975 (-2.01)**	-5.164 (-1.49)	1.423 (6.58)***	1.306 (5.95)***	1.175 (5.48)***
Leverage	-9.005 (-4.87)***	-0.189 (-2.44)**	-8.997 (-3.71)***	-6.003 (-3.84)***	-0.108 (-1.46)	-5.784 (-2.95)***	0.416 (4.24)***	-0.000 (-0.08)	0.617 (5.07)***
Growth	0.285 (0.41)	0.580 (0.83)	0.356 (0.51)	0.593 (0.93)	0.794 (1.24)	0.647 (1.01)	0.031 (0.79)	0.018 (0.43)	0.033 (0.84)
Size (L-Sales)	5.848 (9.66)***	4.688 (8.46)***	5.074 (8.97)***	3.990 (7.24)***	3.203 (6.27)***	3.430 (6.67)***	-0.091 (-2.63)***	-0.028 (-0.86)	-0.065 (-2.04)**
Risk	44.371 (5.15)***	41.085 (4.69)***	42.345 (4.87)***	16.775 (2.87)***	16.083 (2.72)***	15.673 (2.67)***	0.866 (2.35)**	0.935 (2.50)**	0.946 (2.60)
Tax/EBIT	.732 (1.13)	1.005 (1.50)	0.726 (1.10)	1.049 (1.66)*	1.193 (1.85)	1.024 (1.61)	-0.052 (-1.31)	-0.053 (-1.30)	-0.049 (-1.24)
Tangi	-8.287 (-4.71)***	-6.378 (-3.65)***	-10.202 (-5.04)***	-9.332 (-5.76)***	-7.891 (-4.95)***	-10.562 (-5.78)***	0.037 (0.36)	-0.065 (-0.64)	0.223 (1.96)**
No. of observations	400	400	400	506	506	506	506	506	506
R <sup>2</sup>	0.273	0.240	0.255	0.179	0.158	0.169	0.056	0.082	0.070
Adjusted R <sup>2</sup>	0.262	0.229	0.243	0.169	0.148	0.159	0.044	0.022	0.058
F-stat	24.58	20.74	22.43	18.14	15.65	16.95	4.94	1.88	6.26
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.082	0.000

Note: \*\*\*, \*\*, \* significant at 1%, 5%, 10% level respectively. Numbers in parentheses are t-values. Leverage is alternately TD/TA, TD/TE and STD/TA

Our analysis to examine the impact of leverage on market-based performance measure found a significant positive relationship. More specifically, contrary to the theoretical assertion, we found both TD/TA and STD/TA variables have significant positive impact on TQ at 1 per cent level. However, it revealed that the estimated coefficients of leverage were less than 1 per cent for all the models indicating a negligible impact. The significant positive results suggest that the existence of market anomalies in Sri Lankan market where economic and company fundamentals do not properly reflect on share prices. This restricts the ability of market prices to give a true picture of firm performance. Thus, TQ as a performance measure is not suitable since it is subject to inherent anomalies of the market such as insider trading and price fixing. This phenomenon is common to most of the small markets. This problem might have been aggravated owing to the use of proxy TQ as accounting measurement problems were also imbedded into estimated TQ in addition to market inefficiencies.

**Panel regression models:** An additional issue worth addressing in this study is whether time-invariant inter-firm heterogeneity of Sri Lankan firms has led to different performance impacts from leverage. For this purpose, the panel data models are also estimated for full sample observations. The results of the panel data models are shown in the Table 4.

**Table 4: Results of Panel Data Model: Random-effect estimations**

	OPOA			ROA			Tobin Q		
	TD/TA	TD/TE	STD/TA	TD/TA	TD/TE	STD/TA	TD/TA	TD/TE	STD/TA
Constant	-12.497 (-2.13)**	-11.808 (-1.97)**	-9.722 (-1.63)	-10.164 (-2.05)**	-8.737 (-1.75)*	-7.068 (-1.42)	1.336 (4.32)***	1.264 (4.02)***	1.129 (3.68)***
Leverage	-12.795 (-5.58)***	-0.102 (-1.85)*	-6.645 (-2.70)***	-9.218 (-4.64)***	-0.062 (-0.96)	-6.776 (-3.20)***	0.559 (4.86)***	0.001 (0.17)	0.606 (5.30)***
Growth	0.318 (0.68)	0.747 (1.56)	0.554 (1.15)	0.443 (0.88)	0.698 (1.35)	0.547 (1.07)	-0.012 (-0.45)	-0.027 (-0.99)	-0.013 (-0.50)
Size (L-Sales)	6.066 (6.52)***	4.709 (5.15)***	4.865 (5.36)***	4.520 (5.65)***	3.341 (4.40)***	3.671 (4.82)***	-0.072 (-1.46)	-0.002 (-0.04)	-0.035 (-0.74)
Risk	23.598 (2.52)**	25.028 (2.59)**	26.453 (2.75)***	21.959 (3.89)***	22.122 (3.83)***	21.981 (3.85)***	0.435 (1.43)	0.396 (1.27)	0.411 (1.36)
Tax/EBIT	0.466 (1.03)	0.655 (1.38)	0.519 (1.10)	1.094 (2.05)**	1.217 (2.22)**	1.102 (2.04)	0.010 (0.34)	0.005 (0.16)	0.011 (0.39)
Tanqi	-12.319 (-4.56)***	-10.124 (-3.70)***	-12.284 (-4.32)***	-8.939 (-3.83)***	-6.918 (-3.02)***	-9.809 (-3.98)***	-0.126 (-0.87)	-0.251 (-1.73)	0.004 (0.03)
No. of observations	400	400	400	506	506	506	506	506	506
No of Groups	151	151	151	155	155	155	155	155	155
R <sup>2</sup> - Overall	0.251	0.225	0.242	0.171	0.155	0.166	0.039	0.006	0.049
Wald Test	97.54	66.45	71.31	76.23	54.64	64.68	30.38	6.46	34.84
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.374	0.000

Note: \*\*\*, \*\*, \* significant at 1%, 5%, 10% level respectively. Numbers in parentheses are z-values. Leverage is alternately TD/TA, TD/TE and STD/TA

Table 4 indicates that the estimated coefficients for leverage variables measured in terms of TD/TA and STD/TA are negative for accounting performance measures and they are statistically significant at 1 per cent level. The results indicate that there is a strong evidence of negative relationship between profitability and leverage. This further confirms the fact that the Sri Lankan firms prefer internal financing over debt financing. This finding is in line with the pecking order theory of capital structure and is consistent with the findings of previous studies (see for example—Zeitun and Tian, 2007; Rajan and Zingales, 1995; and Booth et al., 2001). Furthermore, as estimated in pooled data model, both TD/TA and STD/TA variables are found to have a significant positive impact on TQ at 1 per cent level. The estimated coefficients of leverage for all the panel data models were also less than 1 indicating a negligible impact.

As for the relationship between firm's growth and performance, this study found a positive relationship but insignificant impact on OPOA and ROA. However, growth is found to have a negative but insignificant impact on TQ. The high growth opportunities are associated with the lower cost of capital and high accounting and market performance. However, negative relationship with TQ suggests the existence of market anomalies in Sri Lankan market in which market expectation are not properly reflect on share prices.

With regard to relationship between firm size and performance, the study found a significant positive relationship in respect of ROA and OPOA. The findings indicate that the large firms earn higher returns compared to smaller firms. This means that large firms enjoy economies of scale and are capable of having high performance in different economic conditions through diversification of their investments. However, results show that size and TQ has a

negative insignificant relationship. This further confirms that the existence of market anomalies in Sri Lankan market.

The results shown in Table 4 provide evidence of a positive relationship between risk variable, as measured by standard deviation of cash flow and the accounting performance measures of OPOA, and ROA. The coefficients of ROA and OPOA were significant at 1 per cent and 5 per cent level respectively. It is predicted to have a positive relationship between risk and corporate performance in consistence with classical risk-return trade-off arguments. Our results show that the firms with higher variability in cash flow have a higher accounting return. Furthermore, the risk has a positive impact on Tobin's Q, which supports the classic risk-return arguments. However, coefficients were not significant for any models indicating weak evidence for the market performance measure.

The study, however, reveals some contrasting evidence with regard leverage and tangibility. As shown in Table 2, the sign of the correlation coefficients of tangibility are negative with all leverage ratios. This indicates that either a negative relationship exists between tangibility and leverage, or that tangibility is irrelevant to debt financing of Sri Lankan firms since they were more concentrated on short-term debt capital. Similar results are shown in Table 4 in respect of tangibility and performance. It provides evidence of a negative relationship between tangibility and accounting performance measures. The coefficients were significant at 1 per cent level. This implies that Sri Lankan firms were neither operating in full capacity owing to market limitation nor utilizing their fixed assets efficiently causing negative impact on firm performance.

## 5. Conclusions

Prior research examining the relationship between capital structure and firm performance has revealed that capital structure influences firm performance. However, studies examining this aspect in emerging markets are limited despite the existence of fundamental economic differences among these countries. This study contributes to fill this gap through an examination of the relationship between capital structure and firm performance in an emerging market in South Asia, taking Sri Lanka as a case. The analysis of panel data from 171 Sri Lankan listed companies covering eight-year period from 2002 to 2008 showed that most of the Sri Lankan public companies were moderately leveraged and intense usage of short-term debt as against the long-term debts was observed. The low use of long-term debt capital is mainly due to the lack of a developed long-term debt market in Sri Lanka, highlighting the need for promoting organized debt market in Sri Lanka. Furthermore, the two models—pooled and panel—were employed in the study showed a significant negative relationship between the three leverage ratios and accounting performance measures.

On the basis of the findings of this study, we recommended the development of appropriate policies to develop organized debt capital market enabling Sri Lankan companies to generate low cost long-term debt capital as a source of finance. Since the higher liquidity in secondary market reduces the cost of capital, it is imperative that appropriate trading rules and mechanism be established in order to improve the efficiency of debt market. Furthermore, the findings on tangibility, which shows that the performance was negatively affected by tangibility, led us to draw the conclusion that the Sri Lankan companies have not utilized their non-current assets efficiently. Therefore, it is recommended that firms should find improvements in

operational processes, management practices, and corporate strategies to enhance firm performance through better utilization of assets.

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