

CAPITAL STRUCTURE AND FIRM PERFORMANCE IN EMERGING ECONOMIES: AN EMPIRICAL ANALYSIS OF SRI LANKAN FIRMS

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Abstract

This paper offers an empirical analysis of the impact of capital structure on firm performance in the context of an emerging market—Sri Lanka. The study applies both pooled and panel data regression models for a sample of 155 Sri Lankan-listed firms. 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 and provide strong evidence that the firm performance is negatively affected by the use of debt capital. The study also finds 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 directions.

Keywords: Capital Structure, Leverage, Corporate Performance, Emerging Markets, Sri Lanka

JEL classification: G3

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1. Introduction

The capital structure decisions have been extensively investigated in search of optimal mix of debt and equity which maximizes the value of a firm. The modern theory of capital structure espoused by Modigliani and Miller (1958) argued that capital structure is *irrelevant* to the value of a firm under perfect capital market and provided the base for theoretical directions for capital structure decisions. However, market imperfections make capital structure pertinent to the value of the firms. Harris and Raviv (1991) provide a neat taxonomy of the capital structure theories that try to address some of these imperfections namely; agency costs; asymmetric

information; product or input market interactions; and corporate control considerations. These theories suggest the proposition that the capital structure impacts firm performance.

Many studies in corporate finance (for example, Long and Malitz, 1985; Titman and Wessels, 1988; Jensen and Langemeier, 1996; Boateng, 2004; Jong et al. 2008) have examined the determinants of capital structure of firms in different industries and their value implications. But very limited studies investigated the impact of capital structure on firm's performance (Kyereboah-Coleman, 2007). Further, these studies are limited to the US and other developed countries. Capital structure decision in developing countries has not received much attention

in the literature (Berger and Bonaccorsi di Patti, 2006; Ofek, 1993; Simerly and Li, 2000) irrespective of the existence of fundamental economic differences among these countries. Through an examination of these economic differences in a sample of ten developing countries, Booth et al. (2001) find that there are systematic differences in the way the debt ratios are affected by country specific factors, such as GDP growth rates, inflation rates and stage of development of the capital market. Mayer (1990) stated that the capital structure choices made by the firms in developing countries are different to that of developed countries. Therefore, in view of the paucity of studies on the impact of capital structure on a firm's performance in the developing economies, this study will investigate capital choices and their impact on firm performance in small, open emerging economies with special reference to Sri Lanka.

Sri Lanka provides an ideal case for such investigation as it has undergone political and economic turmoils in recent decades, producing various macroeconomic anomalies. In comparison to other emerging markets in Asia, Sri Lanka provides a unique business environment because of its colonial legacy, adoption of market oriented economic policies and cessation of hostilities in the 30-year civil war. 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 mixture of opposites create a challenging environment for Sri Lankan companies to carry out their operations. Consequently, there can be systematic differences in the way the businesses are financed which are affected by Sri Lankan macroeconomic factors suggested by Booth et al. (2001). This uncharacteristic relationship can produce idiosyncratic effects on firm performance, providing impetus for examining these issues in different macroeconomic environments.

The objective of this paper is to examine the effect of capital structure on corporate performance of 230 companies listed in the Colombo Stock Exchange (CSE). The dynamics of capital structures and their impact on value and performance remain unexplored for Sri Lankan companies. Previous Sri Lankan literature on capital structure are primarily concentrated on the determinants of corporate debt financing (for example, Samarakoon, 1997; Samarakoon, 1999; Senaratene, 1998). To our knowledge, this is the first attempt which investigates the effect of capital structure on corporate performance using panel data of Sri Lankan companies. The reminder of this paper is organized as follows. Section 2 provides a brief review of the existing literature on capital structure choices and their impact on the value and the profitability of firms. Section 3 explains the data and methodology.

The analysis and empirical findings are presented in Section 4, while Section 5 concludes the discussion.

2. Literature Review

Capital structure is considered as one of the main factors that have an impact on firm performance. Central to this argument is the agency theory, which explains the conflict of interest between shareholders and managers as well as the shareholders and bondholders. In their pioneering work, Jensen and Meckling (1976) argue that the choice of capital structure may help mitigate agency costs. They claim that higher use of debt capital may reduce agency costs through the threat of liquidation, which causes personal losses to managers' salaries, reputation, and through pressure to generate cash flow to pay interest expenses (Grossman and Hart 1982, Jensen 1986, Williams 1987). A testable hypothesis that can be drawn from this argument is that increasing the leverage results in lower agency costs and improved firm performance, *ceteris paribus*. Conversely, when leverage becomes relatively high, further increases generate significant agency costs such as bankruptcy cost or financial distress resulting in negative impact on performance (Berger and Bonaccorsi di Patti, 2006).

Harris and Raviv (1990) argue that the debt instruments in the capital structure provide more power to investors and thereby can discipline management by reducing the discretionary power of the management on free cash flow of the firm. Emanating from this argument, leveraging is considered an appropriate method to mitigate conflicts between shareholders and managers and thereby reduce the agency cost (Jensen and Meckling, 1976). The relationship between agency cost and firm performance under agency cost hypothesis has been examined by Berger and Bonaccorsi di Patti (2006) using data of 7,320 US banks for the period from 1990 to 1995. They employ profit efficiency as an indicator of firm performance and estimate a simultaneous-equations model to account for reverse causality from performance to capital structure. They find statistically significant relationship between higher leverage and higher profit efficiency. Their findings are consistent with agency cost hypothesis. Using an identical model of Berger and Bonaccorsi di Patti (2006), Pratomo and Ismail (2007) also examine the impact of capital structure choices on performance of five Malaysian Islamic banks from 1997 to 2004. In line with agency cost hypothesis, they argue that a high leverage tends to have an optimal capital structure and therefore produces a good performance.

High usage of debt capital increases the chances of financial distress and bankruptcy. Firms face costs of financial distress because of default risks. From the agency perspective, a negative relationship between leverage and performance is expected when firms use excessive debt financing. Empirical support

for the negative relationship between capital structure and firm performance are many. Krishnan and Moyer (1997) examine corporate performance and capital structure of large enterprises from four emerging economies in Asia to determine the effect of both country of origin and capital structure on corporate performance. Their findings show that country of origin has positive impact on performance while leverage has negative but insignificant impact on performance. Thus, evidence provides only limited support to the capital structure theories in these emerging markets. Another study by Gleason et al. (2000) on retailer businesses in four cultural clusters of 14 European countries found that firm's capital structure has a negative and significant impact on firm performance. The results further suggest that the use of higher than appropriate levels of debt in the capital structure produces lower performance as per the agency cost hypothesis. They also find that capital structures for retailers are significantly varied across cultural clusters suggesting the presence of control variables in capital structure choices. In a similar study, Zeitun and Tian (2007a), using 167 Jordanian companies over a fifteen year period, find that a firm's capital structure has a significant negative impact on the firm's performance in both the accounting and market measures. Rao et al. (2007) examine the relationship between capital structure and financial performance to explain debt use by Omani firms and find a negative association between the level of debt and financial performance. They further argue that the negative association can be attributed to the high cost of borrowing and the underdeveloped nature of the debt market in Oman, nullifying the tax savings and other benefits that the firm receives by using debt. Chiang et al. (2002) also confirm the negative relationship between financial leverage and performance in the property and construction sectors of Hong Kong. Their results further suggest that liquidity, age, growth potential and capital intensity have significant influences on financial performance.

In addition to the level of leverage, there are other variables in capital structure decisions that will impact firm performance. Abor (2005) examines the impact of short-term and long-term debts on profitability of listed companies on the Ghana Stock Exchange. He finds a significant positive relationship between short-term debts and return on equity; and a negative relationship with long-term debts. He further observes that short-term debt capital as the major source of financing of Ghanaian companies representing 85 percent of total debt capital. Based on these findings he claims that the firms which use more short-term debts will have more earning potential. On the contrary, in a study examining the relationship between capital structure and corporate performance of 49 listed Malaysian construction companies, San and Heng (2011) find a positive relationship between long-term debts and earnings per share (EPS). This study further reveals that total debt capital has a

negative impact on firm performance, implying a negative relationship between short-term debt and EPS. Doan and Nguyen (2011) examine the relationship between firm characteristics, capital structure and operational performance among a sample of 427 companies listed on the Vietnamese Stock Exchange and find that operational performance has a negative effect on both long-term debt and short-term debt capital. As evident, the empirical studies that probe this relationship have produced mixed results, raising many questions than answers. Furthermore, despite the apparent benefits of leverage, there are many firms across the countries that avoid debt financing altogether (Gardner and Trzcinka, 1992). Finding an explanation for this behaviour has proven to be a major challenge as many business environmental factors, both country-specific and firm-specific, can influence the capital structure decisions.

Prior empirical studies find that capital structure choices are not only influenced by firm-specific factors but also by country-specific factors (Booth et al., 2001; Claessens et al., 2001; Bancel and Mitto, 2004). The results of these studies indicate that macro economic factors such as GDP growth, prevalence of developed bond and stock markets, inflation, and fiscal policy on corporate tax have direct as well as indirect bearing on capital structure decisions. For example Jong et al. (2008) argue that a developed bond market can directly affect the usage of higher leverage in a country, while a developed stock market can have the opposite effect. In addition, country-specific factors can also influence corporate leverage indirectly through their impact on the effect of firm-specific factors. For example, irrespective of the availability of developed bond market in a country, the use of debt by corporate entities will not be high if the tangible assets, which act as collateral in borrowing, is limited for the firms in the same country. In other words, country characteristics may explain why the effect of firm's tangibility on leverage differs across countries. Due to these factors, the behaviour of capital structure choices and their impact on firm performance are diverse across countries, warranting further studies on this issue in different contextual settings.

Only a few studies have been done in examining capital structure issues in the context of Sri Lankan companies. These studies reveal a number of interesting findings. In investigating the mean capital structure and the factors that are correlated with leverage of Sri Lankan firms, Samarakoon (1999) reveals that the use of debt financing especially long-term debt by Sri Lankan firms is significantly low. The low use of debt capital is mainly due to the lack of a developed long-term debt market in Sri Lanka. Furthermore, firm size is positively correlated with the leverage whereas the firm's profitability is negatively correlated with leverage. Another study by Samarakoon (1997) finds a strong negative

relationship between mean return and systematic risk measured by beta in Sri Lanka. This result is contrary to the central argument of the Capital Assets Pricing Model. These empirical results, some of which are contrary to the central arguments of main theories under consideration, may have resulted due to the existence of unique economic conditions pertaining to Sri Lanka.

With the growing nature of takeover activities in the markets, the relationship between market for corporate control and capital structure attracts importance in finance literature. Market for corporate control model argues that controlling equity shareholders resort to capital structure decisions to control the unwanted takeover bids since the probability of firms becoming acquisition targets decreases with their leverage. As in many other emerging markets in Asia, the ownership of Sri Lankan companies is highly concentrated, with a presence of controlling shareholders in most companies (Samarakoon, 1999). Senaratne and Gunaratne (2007) reveal that the ownership of Sri Lankan companies is characterized by certain features such as: family ownership as the ultimate owners; the common existence of cross-holdings and pyramid ownership structure; controlling shareholders' participation in management; and the absence of large community of arm's-length institutional shareholders. Therefore, the capital structure choices of Sri Lankan companies are in the hands of the majority shareholders whose participation in management has become a main determinant of capital structure of Sri Lankan companies. It is interesting to know how this behaviour affects the performance of companies.

The corporate debt market is relatively very small compared to the equity market in Sri Lanka. As per the 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. The companies are highly dependent on bank loans and other means of debt financing (e.g. intra-group financing) instead of exposing themselves into corporate debt market. Furthermore, companies prefer short-term loan over long-term loan in order to avoid the risk arising from high volatility of the market. However, short-term loan more often carry higher interest rate due to high inflation. This behaviour can lead to negative relationship between leverage and performance of the companies.

From the above discussion, it is evident that there is a dearth of studies examining the capital structure and its impact on firm performance in

emerging economies. Therefore, an investigation into the capital structure and its link to performance of firms in Sri Lanka is imperative not only to contribute to the shallow literature but also to provide valuable insights for policy design and formulation in small open economies.

3. Methodology

As alluded to earlier, there are theoretical arguments and empirical evidence that the capital structure of a firm affects its performance. In investigating the effect of capital structure on the performance of Sri Lankan companies, we first estimate a pooled model assuming no firm or time specific effects on firm performance as a benchmark. However, pooled model estimation may be biased because of unobserved heterogeneity (omitted variables bias). The central regression assumption of pooled model is that the independent variables and the error term are uncorrelated. If the independent variables correlate with the error term (endogeneity), the estimates are biased. In order to address these limitations and to recognise the existence of firm-specific characteristics, we then estimate a panel regression with fixed and random effects where the error term is decomposed into an entity-specific error and an idiosyncratic error. This enables us to control for the individual specific unobservable effects in a panel framework. The entity-specific error is assumed to be constant over time in the fixed effects model whereas it is assumed to be a random variable in the random effects model. In this study, Hausman Test and Breusch and Pagan Test have been used to make a choice between the fixed effects and random effects model.

3.1 The Model

The analytical framework of this study postulates that the long-run profit (variously measured) of firm i in period t depends upon the level of leverage of firm i in period t along with other additional independent variables which are directly relevant to the performance of firm i in period t . The theoretical capital structure literature provides some insights into the determinants of profitability of a firm but there is, however, considerable disagreement on what constitutes an optimal model. Therefore, we posit additional variables that include growth, size, risk, tangibility and corporate tax. A parsimonious representation of the analytical model is specified below:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \beta_6 X_{6it} + u_{it} \quad (1) \text{ Pooled Model}$$

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \beta_6 X_{6it} + \varepsilon_i + u_{it} \quad (2) \text{ Panel Model}$$

Where, Y_{it} is alternately Return on Assets (ROA) and Tobin Q (TQ) for firm, as a measure of performance of firm i in year t .

X_1 = Leverage ratios;

X_2 = Growth of sales;

X_3 = Total sales;

X_4 = Risk;

X_5 = Tax/Earnings before interest and tax (EBIT);

X_6 = Tangibility;

ε_i = Unobserved or heterogeneity effect; and

μ_{it} = residual error of firm i in year t .

3.2 The Variables

Here we describe the variables of the models and spell out the a priori expected signs of the independent variables.

Performance: Performance is denoted by Y_{it} .

Both accounting (ROA) and market measures (TQ) are employed to examine the performance of the firm. ROA is measured by EBIT over total assets while TQ is measured as market value of firm's equity plus the book value of its debt over the book value of total assets. Both performance measures have been widely used in previous studies for measuring performance (see for example, Kapopoulos and Lazaretou, 2007; Zeitun and Tian 2007a,b; Thomsen et al., 2006; Demsetz and Villalonga, 2001; Agrawal and Knoeber, 1996; Morck et al., 1988; Demsetz and Lehn, 1985).

Leverage: Leverage is denoted by X_1 . Three alternative measures of leverage are used: (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). A majority of Sri Lankan companies use short-term debt as the major component of their debt capital and therefore STD/TA is used in addition to the leverage variables in (1) and (2). Agency theory assumes either a positive or a negative relationship between performance and leverage of a firm.

Growth: Growth opportunities, measured by growth of sales, are denoted by X_2 . Firms with high growth provide positive signals to the market about their future performance. Thus, growth is considered to be positively related to market performance measures. Furthermore, firms with high growth opportunities have a high accounting performance, as established firms are able to generate higher profit on investment. Therefore, growth opportunities are expected to have positive impact on firms' performance.

Firm Size: Firm size (denoted by X_3) is expected to have a positive influence on firm performance since larger firms perform better than smaller firms through economies of scale and are resilient during economic downturns, leading to consistent performance both in terms of accounting profit and market return. A number of studies examining the impact of firm size on firm performance found a significant positive relationship between the two (see for example, Gleason et al., 2000 and Zeitun and Tian, 2007a) while some studies (see for example, Tzelepis and Skuras, 2004, Durand and Coeuderoy, 2001 and Lauterbach and Vaninsky, 1999) found positive but insignificant impact of firm size on the firm's performance.

Risk: Risk is denoted by X_4 . Risk is measured by the standard deviation of cash flow to total assets ratio for the previous three years. Cash flow is calculated by the sum of net income and depreciation of a firm. The cash flow volatility for a period of three-year moving cycle is considered a measure of risk since this volatility reflects the dispersion of expected cash flow of the firm. A firm with larger dispersion can be considered a high risk firm which is expected to generate high return as per the classical risk-return trade-off arguments. Thus, a positive relationship is expected between risk and corporate performance.

Tangibility: Tangibility, denoted by X_5 , refers to tangible assets as a proportion of total assets. In this study, fixed assets are used as a 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 collateral (Rajan and Zingales, 1995, Friend and Hasbrouck, 1988, Marsh, 1982). However, diverse relationships can be expected between firms' performance and tangibility as the nature of the relationship is contingent upon the degree of efficient utilisation of tangible assets by the firm. If a firm utilises its tangible

assets efficiently then a positive relationship between tangibility and performance can be expected, otherwise the relationship is negative.

Corporate Tax: Tax ratio, measured by annual tax expenses over EBIT, is denoted by X_6 . Firms have an incentive to use debt capital as interest is tax deductible. High tax payment reflects high profits as well as the low use of debt capital by a firm and vice-versa. Thus, tax is expected to be positively related to performance.

3.3 Data

The data for this study are 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 are balance sheets, income statements which are directly extracted from the OSIRIS database. The market share price information of firms is 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, the sample represents approximately 74 per cent of the listed companies in Sri Lanka. These companies represent all industrial sectors of the CSE, excluding the bank, finance and insurance sector. This sector is excluded from the sample 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 sampled companies is unavailable.

4. Analysis, Results and Discussion

4.1 Summary Statistics

The key descriptive statistics of the regression variables are reported Table 1. 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 of 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 coupled with minimum and maximum values. The maximum value of total debt to total assets ratio is 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. Traditionally, Sri Lankan companies are dependent on the banking sector for their debt capital. Since the raising of debt capital through share market started only after 1996, it is still not widely used by Sri Lankan firms. Consequently, the market for long-term debts remains small.

Table 1. Descriptive Statistics of Variables; 2002–2008

Variables	N	Mean	Std. Dev.	Min.	Max.	Skewness	Kurtosis	Shapiro-Wilk	
								Statistic	Prob.
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	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
Tangibility	730	0.61	0.27	0.00	0.99	-0.47	-0.78	0.956	0.000

As shown in Table 1, the ROA of firms in the sample have mean value of 7.9 per cent and high standard deviation and as well as high dispersion between minimum and maximum values. This indicates that performance of the firms is significantly diverse over time and across firms.

The total fixed assets ratio (tangibility) has a very high mean value of 61 per cent. A high tangible assets mean more collateral assets for companies to

take loans from the banking sector. The high tangibility and the lack of a developed long-term debt market can explain the high use of short-term debt capital by Sri Lankan companies.

The result present 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 high performing firms tend to have

high Tax to EBIT ratio. These firms are able to use more internally generated funds than debt capital to satisfy their financial needs. Thus, high performing firms tend to have inverse relationship between tax rate and leverage. A positive relationship between tangible assets and debt capital is 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 short-term debts to long-term debts to minimize risk. Short-term loans can be obtained by using both current and non-current

assets as collateral. Furthermore, the pledged loans, some of which are based on directors' personal guarantee, are a 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 observe a 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	
Tangibility	-.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 is 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 pooled regression analyses estimated all-encompassing equations involving all independent variables. We primarily concentrate on the main variables of interest. The leverage ratios i.e. TD/TA, TD/TE and STD/TA are used interchangeably with each of the model. Table 3 indicates that a significant negative relationship exists between three leverage ratios and accounting performance measure, ROA. The coefficients of leverage variables as measured by TD/TA and STD/TA are found to be negative and are significant at 1 per cent level. However, although TD/TE ratio has a negative coefficient, it is not statistically significant. This empirical evidence identifies leverage as a major contributing factor for negative firm performance, supporting the agency cost hypothesis—high leverage increases agency costs resulting negative impact on performance. Our results are consistent with the findings of Gleason et al. (2000), Tzelepis and Skuras (2004) and Zeitan and Tian (2007a).

We also examine the impact of leverage on market-based performance indicator, TQ, and find a

significant positive relationship. More specifically, contrary to the theoretical assertion, we find both TD/TA and STD/TA variables have significant positive impact on TQ at the 1 per cent level. However, the estimated coefficients of leverage are small in magnitude in all the models indicating a negligible impact. The significant positive results suggest 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 is not a good indicator of firm performance as it is subject to inherent anomalies of the market such as insider trading and price fixing. This problem might have been aggravated owing to the use of proxy TQ as it is imbedded with accounting measurement problems in addition to market inefficiencies.

Furthermore, as expected coefficients of firm size and risk are found to be positively impacted on ROA. However, contrary to our expectation, tangibility is found to be negatively related to firm performance. This finding indicates under-utilisation of non-current assets by Sri Lankan firms.

Table 3. Results of Pooled Data Model estimations

	ROA			Tobin Q		
	TD/TA	TD/TE	STD/TA	TD/TA	TD/TE	STD/TA
Constant	-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	-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	0.593 (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)	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	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	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	-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	506	506	506	506	506	506
R ²	0.179	0.158	0.169	0.056	0.082	0.070
Adjusted R ²	0.169	0.148	0.159	0.044	0.022	0.058
F-stat	18.14	15.65	16.95	4.94	1.88	6.26
P-value	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

Diagnostics

The results in Table 3 are robust. Adjusted R² lies between 16 to 17 per cent for ROA as dependent variable while the adjusted R² is considerably lower when Tobin Q is the dependent variable. On the basis of the *F* test we can see the joint significance of the regressors in both the models. The use of robust standard errors takes care of any problems associated with heteroscedasticity and autocorrelation. Variance inflation factor (VIF), reported in Table 1, indicates fewer than 2 scores for all variables in the model indicating the absence of multicollinearity.

Panel Regression Models

An additional issue examined 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 with 155 panels and 506 observations. On the basis of the Hausman Test and Breusch and Pagan Test (*p* values of χ^2 tests are significant - see Table 4) we can reject the random effect model in favour of the fixed effect model. The results of the fixed-effect model are reported in the Table 4.

Table 4. Results of Panel Data Model: Fixed-effect estimation

	ROA			Tobin Q		
	TD/TA	TD/TE	STD/TA	TD/TA	TD/TE	STD/TA
Constant	-5.698 (-0.43)	-10.230 (-0.75)	-7.511 (-0.55)	0.617 (0.91)	0.851 (1.22)	0.601 (0.88)
Leverage	-13.692 (-4.54)***	-0.012 (-0.17)	-6.591 (-2.53)**	0.706 (4.59)***	0.001 (0.16)	0.611 (4.70)***
Growth	0.570 (1.00)	0.791 (1.35)	0.685 (1.18)	-0.038 (-1.32)	-0.050 (-1.67)*	-0.040 (-1.37)
Size (L-Sales)	2.961 (1.47)	2.371 (1.14)	2.413 (1.18)	0.077 (0.75)	0.108 (1.02)	0.103 (1.00)
Risk	23.912 (3.65)***	26.302 (3.91)***	25.873 (3.88)***	0.218 (0.65)	0.095 (0.28)	0.134 (0.40)
Tax/EBIT	0.961 (1.71)*	1.090 (1.89)*	1.006 (1.76)*	0.023 (0.80)	0.016 (0.55)	0.024 (0.83)
Tangibility	3.240 (0.54)	5.196 (0.85)	3.548 (0.58)	-0.535 (-1.75)*	-0.636 (-2.03)**	-0.482 (-1.58)
No. of observations	506	506	506	506	506	506
No of Groups	155	155	155	155	155	155
R ² - Overall	0.016	0.032	0.023	0.013	0.001	0.012
P-value	0.000	0.001	0.000	0.000	0.215	0.000
Breusch-Pagan Test (χ^2)	102.40	95.09	101.84	274.93	262.65	273.54
P-value	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
Hausman Test (χ^2)	13.40	12.12	10.54	17.92	14.07	18.39
P-value	0.037**	0.059*	0.103	0.006***	0.028***	0.005***

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 measure and they are statistically significant at 1 per cent and at 5 per cent respectively. The results indicate that there is a strong evidence of negative relationship between profitability and leverage. This further confirms the agency cost argument as in the case of pooled model and is consistent with the findings of previous studies (for example: Krishnan and Moyer 1997—Four emerging economies: Hong Kong, Malaysia, Singapore and Korea; Zeitun and Tian 2007a—Jordan; Rao et al. 2007—Oman; Doan and Nguyen 2011—Vietnam). The results of the TQ model are also similar to the results of pooled model where both TD/TA and STD/TA variables are found to have a significant positive impact on TQ at the 1 per cent level.

As for the relationship between firm's growth and performance, we find a positive relationship but statistically insignificant impact on ROA. However, growth exerts a negative but insignificant impact on TQ. In the former, the high growth opportunities are associated with the lower cost of capital and high

accounting and market performance; while in the latter, a negative relationship with TQ suggests the existence of anomalies in Sri Lankan market where market expectations do not properly reflect on share prices.

With regard to the relationship between firm size and performance, we find a positive but statistically insignificant relationship. The findings indicate that the large firms earn higher returns compared to smaller firms due to economies of scale, resilience during business downturns and their degrees of freedom in diversifying their investments.

As shown in Table 4, the relationship between risk and ROA is found to be positive and significant at the 1 per cent level. This result is consistent with the classical risk-return trade-off arguments where positive relationship between risk and performance is expected. Furthermore, the risk is also found to have a positive impact on TQ but the coefficients are not statistically significant for TQ models indicating a weak evidence for the market performance measure. As expected, we find a positive relationship between tax ratio and performance which is significant at the 10 per cent level. We also find a positive relationship

between tangibility and ROA although the coefficients are not statistically significant. However, the relationship between tangibility and TQ is negative which is contrary to expectation providing further evidence for market anomalies in Sri Lanka.

5. Summary and 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 attempts 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 155 Sri Lankan listed companies from 2002 to 2008 show that most of the Sri Lankan public companies are moderately leveraged and intensively use short-term debt as against the long-term debts. The low use of long-term debt capital is mainly due to the lack of a developed long-term debt market, highlighting the need for promoting organized debt market in Sri Lanka. Furthermore, the two models - pooled and panel - show a significant negative relationship between the three leverage ratios and accounting performance measures. This provides strong evidence that the performance of Sri Lankan firms is negatively affected by the use of debt capital as against the equity capital. The contributory factors for this behaviour is the use of high cost short-term debt capital as the major source of finance. For example, this kind of relationship is possible if financially distressed firms are dependent on debt capital as their last resort of financing whereas financially stable companies are dependent on internally generated funds.

From the policy makers' point of view, the intensive use of short-term debt as against the long-term debts underscores the lack of a developed long-term debt market in Sri Lanka. Hence, the promotion of the organized debt market in Sri Lanka is a sine qua non for the efficient functioning of firms. We recommend the development of appropriate policies to develop an organized debt capital market enabling Sri Lankan companies to generate low cost long-term debt capital as a source of finance. In Sri Lanka, both equity securities and debt securities are listed on the Colombo Stock Exchange. In this regard, it is important to establish appropriate trading rules and mechanism to improve the efficiency of debt market as higher liquidity in secondary market generally reduces the cost of capital. Furthermore, based on the finding that Sri Lankan firms have not utilized their non-current assets efficiently, this study highlights the need for improving the operational processes, management practices, and corporate strategies in

relation to assets utilisation in order to achieve better performance.

References

1. Abor, J. (2005) The effect of capital structure on profitability: an empirical analysis of listed firms in Ghana, *Journal of Risk Finance*, Vol. 6, pp. 37-48.
2. Agrawal, A. & Knoeber, C. (1996) Firm performance and mechanism to control agency problems between managers and shareholders, *Journal of Financial and Quantitative Analysis*, Vol. 31, pp. 377-399.
3. Bancel, F. & Mittoo, U. (2004) Cross-country determinants of capital structure choice: a survey of European firms, *Financial Management*, Vol. 33, pp. 103-132.
4. Berger, A. N. & Udell, P. (2006) Capital structure and firm performance: a new approach to testing agency theory and an application to the banking industry, *Journal of Banking & Finance*, Vol. 30, pp. 1065-1102.
5. Boateng A. (2004) Determinants of capital structure: evidence from international joint ventures in Ghana, *International Journal of Social Economics*, Vol. 31, pp.56-66.
6. Booth, L., Aivazian, V., Demircug-Kunt, A. & Maksimovic, V. (2001) Capital structures in developing countries, *Journal of Finance*, Vol. 1, pp. 87-130.
7. Chiang, Y.A., Chang, P.C.A. & Hui, C.M.E. (2002) Capital structure and profitability of the property and construction sectors in Hong Kong, *Journal of Property Investment & Finance*, Vol. 20, pp. 434-453.
8. Claessens, S., Djankov, S., & Nenova, T. (2001) Corporate risk around the world, In Glick, R., Monero, R., & Spiegel, M. (Eds.), *Financial crises in emerging markets*. Cambridge University Press, pp. 305-338.
9. Demsetz, H. & Lehn, K. (1985) The structure of corporate ownership: causes and consequences, *Journal of Political Economy*, Vol. 93, pp.1155-1177.
10. Demsetz, H. & Villalonga, B. (2001) Ownership structure and corporate performance, *Journal of Corporate Finance*, Vol. 7, pp. 209-233.
11. Doan, Ngoc-Phi-Anh & Nguyen, J. D. K. (2011) Firm characteristics, capital structure and operational performance: a Vietnamese study, In APEA 2011 Conference, Pusan National University, Busan, Korea.
12. Durand, R. & Coeurderoy, R. (2001) Age, order of entry, strategic orientation, and organizational performance, *Journal of Business Venturing*, Vol.16, pp. 471-494.
13. Friend, I. & Hasbrouck, J. (1988) Determinants of capital structure. In Andy Chen (Ed.) *Research in Finance*, JAI Press Inc, New York, pp.1-19.
14. Friend, I. & Lang, L. (1988) An empirical test of the impact of managerial self-interest on corporate capital structure, *Journal of Finance*, Vol. 43, pp. 271-281.
15. Gardner, J. C. & C. A. Trzcinka (1992) All-equity firms and the balancing theory of capital structure, *Journal of Financial Research*, Vol. 15, pp. 77-90.
16. Gleason, K. C., Mathur, L. K. & Mathur, I. (2000) The interrelationship between culture, capital structure, and performance: evidence from European retailers, *Journal of Business Research*, Vol. 50, pp.185-191.

17. Grossman, S., and O. Hart (1982) Corporate Financial Structure and Managerial Incentives, In J. J. McCall (ed.), *The Economics of Information and Uncertainty*, University of Chicago Press, Chicago, pp.107-140.
18. Harris, M. & Raviv, A. (1991) The theory of capital structure, *Journal of Finance*, Vol. 46, pp. 297-355.
19. Jensen F.E., Langemeier, L.N. (1996) Optimal leverage with risk aversion: empirical evidence, *Agricultural Finance Review*, Vol. 56, pp. 85-97.
20. Jensen, M. (1986) Agency costs of free cash flow, corporate finance and takeovers, *American Economic Review*, Vol. 76 pp. 323-329.
21. Jensen, M. and Meckling, W. (1976) Theory of the firm: managerial behavior, agency costs and ownership structure, *Journal of Financial Economics*, Vol. 3, pp. 305-360.
22. Jong, A.de., Kabir, R. & Nguyen, T.T (2008) Capital structure around the world: The roles of firm- and country-specific determinants, *Journal of Banking & Finance*, Vol. 32 pp. 1954-1969.
23. Kapopoulos, P. & Lazaretou, S. (2007) Corporate ownership structure and firm performance: evidence from Greek firms. *Corporate Governance: An International Review*, Vol.15, pp.144-158.
24. Krishnan, V. S. & Moyer, C. R. (1997) Performance, capital structure and home country: an analysis of Asian corporations, *Global Finance Journal*, Vol. 8, pp. 129-143.
25. Kyereboah-Coleman, A. (2007) The impact of capital structure on the performance of microfinance institutions, *Journal of Risk Finance*, Vol. 8 pp. 56-71.
26. Lauterbach, B. & Vaninsky, A. (1999) Ownership structure and firm performance: evidence from Israel, *Journal of Management and Governance*, Vol. 3, pp. 189-201.
27. Long, M., & Malitz, I. (1985). The investment–financing nexus: some empirical evidence, *Midland Corporate Finance Journal*, Vol. 5 pp. 53-59.
28. Marsh, P. (1982) The choice between equity and debt: an empirical study, *Journal of Finance*, Vol. 37, pp. 121-144.
29. Mayer, C. (1990) Financial systems, corporate finance and economic development, In Hubbard, R. G. (Ed.) *Asymmetric information, corporate finance and investment*. University of Chicago Press, Chicago.
30. Modigliani, F. & Miller, M. H. (1958) The cost of capital, corporation finance, and the theory of investment, *American Economic Review*, Vol. 48, pp. 261-297.
31. Morck, R., Shleifer, A. & Vishny, R. (1988) Management ownership and market valuation: an empirical analysis, *Journal of Financial Economics*, Vol. 20, pp. 293-315.
32. Nanayakkara, G. (1999) The study of best management practices in Sri Lanka's high performing companies, *Journal of Comparative International Management*, Vol. 2, pp. 9 -17.
33. Ofek, E. (1993) Capital structure and response to poor performance: an empirical analysis, *Journal of Financial Economics*, Vol. 34, pp. 3-30.
34. Pratomo, W.A. & Ismail, A.G. (2006) Islamic bank performance and capital structure, MPRA Paper, No. 6012, posted 29. November 2007/06:24.
35. Rajan, R. G. & Zingales, L. (1995) What do we know about capital structure? Some evidence from international data, *Journal of Finance*, Vol. 50, pp.1421-60.
36. Rao, N.V, Al-Yahyaee, K.H.M & Syed, L.A.M (2007) Capital structure and financial performance: evidence from Oman, *Indian Journal of Economics and Business*, pp. 1-23.
37. Samarakoon, L. (1997) The cross-section of expected returns in Sri Lanka, *Sri Lankan Journal of Management*, Vol. 3, pp. 233-250.
38. Samarakoon, L. (1999) The ownership structure of Sri Lankan companies, *Sri Lankan Journal of Management*, Vol. 4, pp. 143-157.
39. San, O. T. & Heng, T. B. (2011) Capital structure and corporate performance of Malaysian construction sector, *International Journal of Humanities and Social Science*, Vol. 1 pp. 28-36.
40. Senaratne, S. & Gunaratne, P. S. M. (2007) Ownership structure and corporate governance of Sri Lankan listed companies, *The 4th International Conference on Business Management*, University of Sri Jaywardenepura, Sri Lanka.
41. Simerly, R., Li, M. (2000) Environmental dynamism, financial leverage and performance: a theoretical integration and an empirical test, *Strategic Management Journal*, Vol. 21 pp. 31-49.
42. Thomsen, S., Pedersen, T. & Kvist, H. (2006) Block holder ownership: effects on firm value in market and control based governance systems, *Journal of Corporate Finance*, Vol. 12, pp. 246-269.
43. Titman, S. & Wessels, R. (1988) The determinants of capital structure choice, *Journal of Finance*, Vol. 43, pp. 1-19.
44. Tzelepis, D. & Skuras, D. (2004) The effects of regional capital subsidies on firm performance: an empirical study, *Journal of Small Business and Enterprise Development*, Vol. 11, pp. 121-129.
45. Williams, J. (1987) Perquisites, risk and capital structure, *Journal of Finance*, Vol. 42, pp. 29-49.
46. Zeitun, R. & Tian, G. G. (2007a) Capital structure and corporate performance: evidence from Jordan, *The Australasian Accounting Business & Finance Journal*, Vol. 1, pp.40-61.
47. Zeitun, R. & Tian, G. G. (2007b) Does ownership affect a firm's performance and default risk in Jordan?, *Corporate Governance*, Vol. 7, pp. 66-82.