Inflationary Impact on Capital Structure: An Analysis of Listed Manufacturing Companies in Sri Lanka.

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Abstract

The capital structure reflects all of the firm's equity and debt obligations. Firm's capital structure is determined on several factors and it is very important to lead the firm towards better and performance. Therefore determinants of capital structure obviously play an economically important role in a firm. Hence it is necessary to identify that what factors contribute to the capital structure composition. The current research is conducted to identify the relationship between determinants of the capital structure and the firm's leverage. As identifications through literature reviews, determinants to the capital leverage (Dependent variables) are profitability, tangibility, firm size and capital intensity & Inflation. In Sri Lanka there is no any study was conducted to identify the relationship between Inflation (Independent Variable) and the capital Leverage (Dependent Variable).According to that the main objective of the present study is to identify the relationship between capital structure and its determinants with the predictor of inflation. To obtain a final conclusion, analyzed 25 manufacturing companies (Sample) listed in Colombo Stock Exchange from the population of 37 manufacturing companies listed in Colombo Stock Exchange during the period of 2010/2011 year of assessment to 2013/2014 year of assessment. Findings showed that capital intensity is a significant predictor of short term leverage, firm size is a significant variable of long term leverage and final model was rejected statistically.

Key Words: Capital intensity, Tangibility, Profitability, Inflation, Firm Size, Leverage

Paper Type: Model Testing

Introduction

Decisions concerning capital Structure are very important for every Organization. The Capital Structure refers to the mix of debt and equity used by a firm in financing its assets (Ghatak, 2011). Financing and investment are two major decision areas in a firm. In the financing decision the manager is concerned with determining the best financing capital structure for the firm. However maximization of firm value is not an easy task for any organization. If the Management make wrongful decisions regarding the Capital structure of the firm it will lead the company towards the bankruptcy. Therefore many researchers have got attempt to identifying factors affecting to capital structures. The capital Structures determinants such as Profitability, Firm Size, Tangibility and volatility are already well-thought-out by many researchers. Even though there are many research articles in which covered the basic determinants of the capital Structure, are not any published articles in Sri Lanka which concentrate influences of inflation to the capital Structure.

The Objectives of the Study are,

- To find out the determinants of Short Term Leverage
- To find out the determinants of Long Term Leverage
- To find out the determinants of Total Leverage

Generally this study attempts to find the effects of significant determinants of capital structure Therefore, the study further extends the applicability of capital structure theories.

How important is the concentration of control for the company functions and the type of investors exerting to tried to answer for long time prior studies show that capital structure has relating with corporate governance, which is the key issues of state owned enterprise. There are many limitations can be found out study the effects of capital structure or will help to know the potential problems in performance and capital structure such as some information are not useful for current and future decisions making of the company because of past information and also mislead. If the company wants to maintain better capital structure, the management of the capital structure should be knowledgeable, for purpose of that is very difficult to recruit best people. According to that limitations can be found out study the effects of capital structure or financial performance.

Literature review

Previous Studies have generated many results attempt to explain the determinants of capital Structure of Manufacturing Companies listed in Colombo Stock Exchange. Theoretical Constructs of any empirical research are representations indirectly through the use Of firm characteristics. The links between the theoretical determinants and the Variables chosen in the empirical studies are complex. In the following, capital Intensity, Tangibility of assets, profitability, Age of the Firm, Firm size & Inflation are discussed.

There are several important theories about the capital structure that have been devolved firms, leverage decisions can be viewed from the various theories. Modigliani & Miller (1958) were the very First researcher who conducts a research under the topic of Capital Structure. Although under this theory he explained the impact of taxation Agency cost & Bankruptcy costs on the determinants of & optimal Capital Structure, in recent years a number of new theories have been proposed to explain the above topic. Most of the theories Suggested that firms Should Select their capital Structure based in the various cost in benefits associated. Static trade off Theory & Pecking order theories Signaling theory and Agency cost theories are the mostly focused theories by the many researchers.

Most of researchers have tried to recognize the relationship between profitability & Capital Structure leverage in manufacturing Firms listed in Colombo Stock Exchange. Highly Profitable firms are able to finance their investment Proposals by using retain earnings. In contrast, less Profitable firms are forced to resort to debt financing, because of their poor internal retention. (Gamini, 2008).Ashamed, (2011) the trade-off theory suggests a positive relationship between profitability and Leverage because high profitability promotes the use of debt and provides an incentives to firm to avail the benefit tax shield s on interest payments. The packing order theory postulates that firms refer to use internally Generated funds when available and choose debt over equity when external Finance is required. So this theory shows the Negative relationship between profitability & Leverage. Also the Several Empirical studies entrenched the relationship furthermore (Titman S, 1988), (Rajan,R.G, 1995).Nevertheless, weak legal protection and Uncertainty of the environment, most Sri Lankan large Companies do not depend on the Debt Market. In our point of view we also agree the Profitability & Capital Structure Leverage has Positive relationship.

There is considerable evidence that the financing pattern of firms varies with firm size. Large firms tend to be more diversified and hence, less prone to financial distress. Several reasons are given in the literature concerning the firm size as an important determinant of capital structure.

With reference to the firm size as an important determinant of capital structure, several reasons are given in the literature In line with the tradeoff theory; size is expected to be positively related to leverage (M.Sangeetha, 2013). However, size may also be a proxy for the information outside investors have, which should increase their preference for equity relative to debt". Their relationship between size and capital structure of a firm has been empirically proven to be positive by several-works such as: (Barclay Michael J. and Clifford W. Smith, 1996).

Capital intensity, or the employment of fixed assets, is very much important independent variable with the concept of operating leverage. There is mix correlation between tangibility and capital intensity and leverage types. In respect of capital intensity, this study hypothesizes that ceteris paribus, capital intensity to be negatively related to total debt and short-term debt and positively related to long-term debt (Andreea, 2010). Increased capital intensity implies increased risk of future earnings variation. "Top management's desire to retain control of the firm, and the concern of creditors to limit risk of default, should result in lower debt levels for firms choosing automation over labor as the primary factor of production" (Barton and Gordon;, 1998) Also the past papers, found For   instance, Gaud, (2005) find negative correlation between profitability and leverage, whilst (Jensen, (1986)) supports positive relationship between them.

Tangibility arguable variable when determining the capital structure of the firm evidences which support different capital structure theories. The relationship between tangibility and the proportion of debt was demonstrated through various empirical studies, although opinions are very different and discovered a positive relationship (Anandasayanan, 2015), normal in all companies following the trade-off theory. Also proved a negative correlation between fixed assets and leverage if companies face a high level of debt they are limited to use their internal funds because lenders are closely monitoring them. (Kamau, 2014),Vatavu, (2012) Supporting the static trade off theory, the assets tangibility will have a positive relationship with debt ratio because greater collateral may alleviate the agency costs of the debt itself. Tend to use more debt rather than issue new equity because costs associated with issuing equity.

If there are famous researchers concentrated about the above variables, there is minor consideration about affluent of the inflation when determining the capital structure. Considering the corporate financing decisions, the liquidity of long-term debt are essential as external factors for companies. However, inflation is very important for short-term debt, especially in developing countries where this is the main source of leverage. Changes in inflation rates have a direct influence on the cost of debt. Considering the relationships we focus to confirm to the arguments related to the capital structure furthermore.

Methodology

This section mentioned about the Scope of the Study, Sample size, Source of Data, Measurement of variables, Hypothesis Formulation and model Selection.

Population and Sample of the Study

The population of the study is the Listed Manufacturing companies in Sri Lanka .There are 37 Listed Manufacturing companies in CSE. According to random, we selected 25 Manufacturing firms. Our Sample to analyze the financial data published during the period 2009 - 2013.

Source of data

The secondary data was used for the present study during the five years of 2010-2014.The data were collected from the hand books of listed companies published by Colombo Stock Exchange (CSE), annual reports of the companies, journals and books etc.

Dependent variables

The study uses three different measures leverage, based on book value as dependent variables. They are, long – term Leverage (LTL) used to measure long term leverage, short – term Leverage (STL) used to measure long term leverage and total Leverage (TL) used to measure long term leverage

Independent Variables

The independent Variables used in these studies are profitability (PR), Firm Size (FS), Tangibility (TA), Capital Intensity (CI) and Inflation (IN).

Models of Study

To find out the impact of the independent variables which we focused in our study on capital Structure, the following Three Linier Multiple regression Analyze model is used based on the Study of Ram Kumar Kalkani et al (1998) with some modification according to selected firms in the Sample. .A well-known statistical package called "SPSS" (Statistical Package for Social Science) has been used to analyze the data the researcher collected. The upper level of statistical significance for hypotheses testing was set at 5%. All statistical test results were computed at the 2-tailed level of significance. Based on the dependent variables of the study, three multiple regression analysis models are used to identify the determinants of capital structure.

Model 01

$$LTL = \beta_0 + \beta_1 PR + \beta_2 FS + \beta_3 TA + \beta_4 CI + \beta_5 IN + \epsilon i$$

Model 02

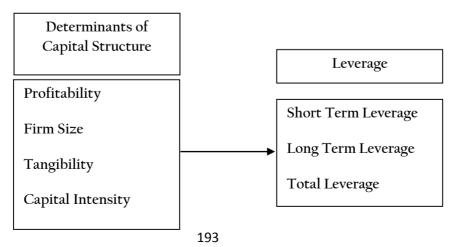$$STL = \beta_0 + \beta_1 PR + \beta_2 FS + \beta_3 TA + \beta_4 CI + \beta_5 IN + \epsilon i$$

Model 03

$$TL = \beta_0 + \beta_1 PR + \beta_2 FS + \beta_3 TA + \beta_4 CI + \beta_5 IN + \epsilon i$$

Where, β is constant, $\beta 1$, $\beta 2$, $\beta 3$, $\beta 4$, $\beta 5$, $\beta 6$, are coefficients of variables, ϵ is residual term.

Conceptual Framework

The following Conceptual Frameworks shows the relationship between dependent & Independent Variables in our framework.

Determinants of Capital Structure		Leverage
Profitability Firm Size Tangibility Capital Intensity	→	Short Term Leverage Long Term Leverage Total Leverage

Operationalization

The following Table 1 presents the operationalization of the variables in the analysis.

Table 01: Operationalization

	Variables	Indicator	Measurement
Dependent Variables	Short term Leverage	Short term Debt Book Value of Equity	STD/ Equity + STD
	Long Term Leverage	Long term Debt Book Value of Equity	LTD/Equity + LTD
	Total Leverage	Total Debt Total Assets	Total Debt / Total Assets
Independent Variables	Determinants of Capital Structure	Profitability	Earnings before interest & Tax / Total Assets
		Firm Size	Log of Sales(used "value" measurement level)
		Tangibility	Total Gross Fixed Assets/ Total Assets
		Capital Intensity	Total Assets/ Total Sales
		Inflation	Inflation formula

Inflation

Here identify the relationship between inflation and the capital Structure by help of Fisher effect. Fisher that describes the relationship between inflation and both real and nominal interest rates. The Fisher effect states that the real interest rate equals the nominal interest rate minus the expected inflation rate. According to that we identify the effect to the capital structure by the help of interest rate derived by the Fisher effect.

$$\mathbf{i}_{LT} = r + \pi^e$$

Where,

$\mathbf{i}_{LT}$ = Long term nominal interest rate

r = Real Interest Rate

π^e = expected Inflation or deflation

Data Analysis

Model one

Table 02: Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.376^a	.141	.095	.22911
a. Predictors: (Constant), LnFirm_size, Inflatoin, Tangibility, CI, profitability				

According to the above table (Table 02: Model summary) the strength of the linear association among the variables of the model held negligible. As a result, the explanatory power of the model depicted 14% implying a low explanation from the predictors of firm size, inflation, tangibility, profitability and capital intensity.

Table 03: ANOVA[a]					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	.811	5	.162	3.088	.013[b]
1 Residual	4.934	94	.052		
1 Total	5.745	99			
a. Dependent Variable: STL					
b. Predictors: (Constant), LnFirm_size, Inflatoin, Tangibility, CI, profitability					

Though the model corresponds with a low explanation, the overall model held significant at 10% level of significance.

Table 04: Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.735	.288		2.555	.012
1 profitability	.217	.289	.083	.752	.454
1 Tangibility	.065	.077	.081	.834	.406
1 CI	-.070	.023	-.327	-3.077	.003
1 Inflatoin	-.008	.027	-.030	-.312	.756
1 LnFirm_size	-.018	.011	-.168	-1.663	.100
a. Dependent Variable: STL					

Though the researchers of the study assumed significant association from the predictors to the dependent variable the variable CI was only showed a significant relationship to the dependent variable of STI. This relationship is significant under 5% level of significance.

Model two

Table 05: Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.357[a]	.128	.081	.14585
a. Predictors: (Constant), LnFirm_size, Inflatoin, Tangibility, CI, profitability				

According to the above table the explanatory power of the model and the liner association held very low as the model number one. 13% and 35% of explanatory power and linear association were held respectively.

Table 06: ANOVA[a]					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	.292	5	.058	2.750	.023[b]
Residual	2.000	94	.021		
Total	2.292	99			
a. Dependent Variable: LTL					
b. Predictors: (Constant), LnFirm_size, Inflatoin, Tangibility, CI, profitability					

The overall model of LTL was held significance at 10% level of significance implying an overall model fit of the model.

Table 07: Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-.206	.183		-1.128	.262
profitability	-.055	.184	-.033	-.298	.767
Tangibility	.014	.049	.028	.282	.778
CI	-.018	.015	-.132	-1.237	.219
Inflatoin	-.014	.017	-.076	-.790	.431
LnFirm_size	.021	.007	.309	3.043	.003
a. Dependent Variable: LTL					

While rejecting many of the variables assumed in the model of LTL, the variable of firm size held significant at 5% level of significance.

Model three

The researchers of the study performed the analysis of regression analysis and observed that the overall model was not fit to the model and thus we assumed to reject the model suggesting the need of overall model fit. The observations are demonstrated below.

Table 08: ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.289	5	.058	1.718	.138[b]
	Residual	3.164	94	.034		
	Total	3.453	99			
a. Dependent Variable: TL						
b. Predictors: (Constant), LnFirm_size, Inflatoin, Tangibility, CI, profitability						

Discussion and Conclusion

The Main objective of the Study was to find out the determinants of capital Structure of the Listed manufacturing Companies in CSE. The long term leverage, short term leverage and the total leverage were selected as the dependent variables of the study. Findings showed that capital intensity is a significant predictor of short term leverage, firm size is a significant variable of long term leverage and final model was rejected statistically.

The findings of the study revealed that the determinants of capital structure are not effective in capturing variability effect. Furthermore, these findings suggested that theories based on volatile factors are insufficient or even unlikely to offer explanations for the heterogeneity in capital structures in a time-series study. This is because an important time-invariant component seems to be missing in several specifications (Lemmon, Roberts & Zender 2008, Parsons & Titman, 2008 and Graham & Leary, 2011).

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