

DEBT CAPITAL IN INDIAN CORPORATE SECTOR: AN EMPIRICAL STUDY WITH REFERENCE TO SELECTED AUTOMOBILE COMPANIES

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Abstract

Debt Maturity period refers to the period of repayment of loan along with principal and interest amount. On the basis of maturity period, it may be of short-term or long-term. Debts are also classified as secured and unsecured with respect to their security. Debt capital involves both the costs and benefits. At the time of loan sanction, borrower and investor conducted a contract of maturity period. As per the contract, the maturity of debt may be short-term or long-term. In this study, we have taken long-term debt as debt maturity structure. Most of the cases long-term debt used to fulfill the long-term goal of the organisations.

In this paper, we have tried to examine the impact of firms' internal factors on debt maturity structure. For this purpose, we have selected nine automobile companies for ten years; from 2010 to 2019. For ascertaining the impact of internal factors on debt maturity structure, we have carried out descriptive analysis, correlation matrix and regression analysis. The results of the study, exhibit that size of a firm has significant positive relation to the debt maturity structure. But Firm's quality has significant negative relation with the debt maturity structure. It indicates that firm having reserves does not use long-term borrowings; it may due to higher cost of interest from outside. On the other hand, such firms use long term borrowings which asset size is sound for use them as security or mortgage for the long-term loans. However, profitability does not have significant impact on the debt maturity structure.

Keywords: Debt maturity structure, Leverage, Firms Size, Firms Quality.

Jel Classification: L25, G30, G32.

INTRODUCTION

Financing policies are varies from company to company and industry to industry. When the firm is financed entirely by common stocks, all those cash flows belong to the stockholders. If a company includes debt instruments in their capital structure, the risk will increase. In this context, if a company includes debt in its capital structure, how efficiently they are managing their debt is the vital question? Managers choose a debt maturity to maximize the value of the firm. Debt is the important factor of the capital structure of every company. The portion of debt in capital structure will differ from one company to another. There are a few studies on the corporate debt structure. However, there is a little number of studies explaining the corporate debt structure. In most of the studies, it is seen that capital structure will depend on the costs and benefits related to equity and debt. The different sources of debt capital are banks, non-bank financial institution, public, government, group of companies and foreign investors. Bonds, debentures, loans and deposits, etc. are the different forms of debt capital. In most cases, bank loans are preferred first as debt capital followed by debentures & bonds. The important theories that explain the choice of capital structure are Trade-off theory and pecking order theory. The other theories like net operating income approach (NOI) and Modigliani & Miller (MM) theory explain how firms' valuation affected by their capital structure.

LITERATURE REVIEW

For the purpose of the study, we have gone through different literature on debt maturity structure covering the India and foreign context. Brief discussions of some of the literature have been presented here.

Titman and Wessels (1988) conducted a study on the determinants of capital structure choice; short-term debt is inversely related to firm's size. Their results also examined that there was no effect of non-debt tax shield, collateral value and future growth on debt ratios. In a study by **Michael and Smith (1995)** on the Maturity Structure of Corporate Debt, it was concluded that a business firm with large size issued large amount of long-term debt and also described that there is no significant effect of tax in determining corporate debt maturity choice. **Shane A. Johnson (1997)** conducted a study on An Empirical Analysis of the Determinants of Corporate Debt Ownership Structure; he found the relationship between the debt ownership and firm characteristics strongly control the maturity effects. Small firms are likely to access more short-term bank debt. **Joseph T.L. Ooi (1999)** conducted a study on the debt maturity structure of UK property companies; it was found that large firms have more long-term debt in their capital structure whereas the small firms have more short-term debt. A study was conducted by **Aydin Ozkan (2000)** on an empirical analysis on corporate debt maturity structure, it was examined that corporate debt structure negatively affected by the firm's growth opportunity. It was also found that there is a negative association between profitability of the business and long-term debt maturity. In a study by **Esperanca and Gulamhussen (2003)** on Corporate Debt Policy of Small Firm, they found that firm size was a major discriminatory factor for access to financing, particularly long-term debt and also expressed that collateral was the determining factor for undertaking credit operation. A study on The Determinants of Corporate Debt Maturity Structure: Evidence from Czech Firms was conducted by **Pavel Körner (2007)**, it was observed that the debt maturity choices were not depended on financial system whether it was bank-based or capital based financed. He concluded that the debt maturity choice was determined by various factors like size of the firm, features of the firm, assets maturity and leverage of the firms. A study was conducted by **Attaullah Shah and Shahid Ali Khan (2009)** on Empirical Investigation of Debt-Maturity Structure: Evidence from Pakistan, examined that small firms used more short-term debt and growing firms were used more long-term debt. They also found assets maturity was positively related to debt maturity. **Fan, Titman et al. (2012)** in their study on An International Comparison of Capital Structure and Debt Maturity Choices, found that a country's legal and taxation system, level of corruption, and the preferences of capital suppliers explain a significant part of the differentiation in leverage and debt maturity ratios. **Sandra Correia et al. (2014)**, conducted a study on Corporate debt maturity an international comparison of firm debt maturity choices. They applied Kruskal Wallis H test and suggest there is a significance difference in debt maturity among the European firms. Firm's Debt maturity is positively affected by firm size, assets maturity, leverage ratio and there is negative relationship with firm quality. A study on The Determinants of Corporate debt maturity: a study on listed companies of Bombay Stock Exchange 500index by **Raveesh Krishnankutty & Kiran Sankar Chakraborty (2014)**, concluded that large companies and firms having high growth opportunities prefer long term debt maturity but in case of tax rate and rate of interest, it negatively determines the long term debt. **PornpenThippayana (2014)** conducted a study on Determinants of Capital Structure in Thailand, the result shows that Firms' size has positive relationship and profitability has negative relationship with Capital Structure in determining the capital structure' of Thailand.

A study was conducted by **Mohamed Belkhir et al. (2015)** on Corporate Debt Maturity in the MENA Region, they found that in MENA region, firm size, assets tangibility, leverage were strongly associated with the use of long-term debt.

They also examined that firms which were better quality, better regulatory, better legal protection of creditor took long-term borrowings. A study on Determinants of capital structure: an empirical study of firms in Iran by **Mohammad Alipour et al. (2015)**, expressed that Short-term debt is highly preferred in a total debt structure in Iranian business sectors. There have negative impacts of financial flexibility, share price, sales growth and return on assets in debt financing. In a study by **Anjala Kalsie and Aishwarya Nagpal (2018)** on The Determinants of Corporate Debt Maturity for NSE-Listed Corporates, described that firm size, liquidity, asset maturity and base rate have significant impact in determining the debt maturity choice. They also suggested that internal characteristics of the firm are the determinant factor of debt maturity choice, not the external environment.

RESEARCH GAP

Based on the review of literature, it is found that most of the studies related to the choice of debt maturity (i.e. long-term or short-term) and determinants of debt structure. But most of the studies were done in foreign countries. There are a very few studies on the debt maturity structure conducted in India. Therefore, we have undertaken the study on the debt maturity structure of Indian automobile companies.

OBJECTIVES OF THE STUDY

To examine the impact of determining factors on the debt maturity structure of sample companies during the study period: 2009-10 to 2018-19.

HYPOTHESES

The following hypotheses are tested for fulfilling the objectives of the study.

H₀₁: There is no significant relationship between firms quality and debt maturity of the sample companies.

H_{A1}: There is significant relationship between firms quality and debt maturity of the sample companies.

H₀₂: There is no significant relationship between firms size and debt maturity of the sample companies.

H_{A2}: There is significant relationship between firms size and debt maturity of the sample companies.

H₀₃: There is no significant relationship between firms profitability and debt maturity of the sample companies.

H_{A3}: There is significant relationship between firms profitability and debt maturity of the sample companies.

H₀₄: There is no significant relationship between leverage and debt maturity of the sample companies.

H_{A4}: There is significant relationship between leverage and debt maturity of the sample companies.

RESEARCH FRAMEWORK

A schematic figure of the current research framework is provided below.

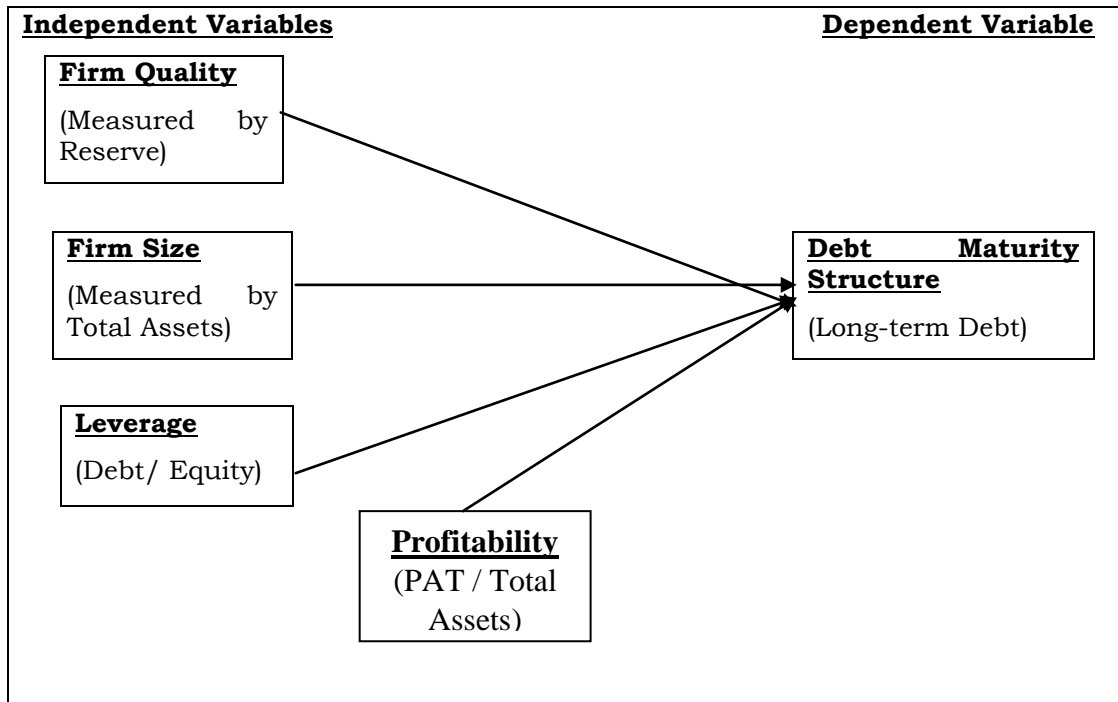


Figure: Current research framework

RESEARCH METHODOLOGY

Basic Model of the Study:

$$DMS = f(\text{Firm Quality, Firm Size, Leverage, Profitability}).$$

The equation for the fixed effects model: $Y_{it} = \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \alpha_i + u_{it}$

Where, Y_{it} = Debt Maturity structure (DMS)

X_{1it} = Firm Quality; X_{2it} = Firm Size; X_{3it} = Leverage; X_{4it} = Profitability;

$\beta_1, \beta_2, \beta_3$ and β_4 are the coefficients

α_i ($i=1\dots n$) is the intercept for each entity

u_{it} is the error term; i = different companies; t = time

The equation for the random effects model:

$$Y_{it} = \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \alpha_i + u_{it} + \epsilon_{it}$$

Where, u_{it} = Between entity error; ϵ_{it} = Within entity error

Variables used and their Measurement

To study the impact of long-term debt on the growth of the business, we have used the following variables

Table-1

Variable	Abbreviation	Measurement
Debt Maturity Structure	DMS	Natural log of long-term debt
Firm Quality	Firm_Qtl	Natural log of reserve
Firm Size	Firm_Size	Natural log of total assets
Leverage	lever	Debt/Equity
Profitability	Profitability	Return on Assets (PAT/Total Assets)

Firm’s Quality (Reserve): The credit quality of the firm has direct relationship with the debt capitals. We are expecting a negative relationship between Firm’s quality and Debt Maturity Structure.

Profitability: There is a relationship between profitability and capital structure. The Pecking order theory explains that firms prefer more internal source of finance rather than the external source. We are predicting that there is a significant negative relationship between profitability and Debt Maturity Structure.

Firm’s size (Total Assets): Debt maturity is affected by Firm size since it is depended on firm size. We are assuming that a significant positive relationship between firm size and Debt maturity.

Leverage (debt-equity ratio): debt-equity ratio is strongly related to Debt maturity. We are expecting a positive relationship between Leverage and Debt maturity.

Sources of Data

For the purpose of the study, we have selected companies from the automobile sector on the basis of total assets as well as availability of data. Ultimately, we have selected nine companies. The sampling procedure that has been followed is the purposive sampling.

Study Period

Ten-year study period from 2010 to 2019 has been considered for this study and secondary data are collected from the capitaline database package.

Tools and Techniques Used: For ascertaining the impact of determining factors on debt maturity structure, we have taken the help of descriptive statistics, correlation matrix and regression analysis.

ANALYSIS AND FINDINGS

Table 1: Descriptive Statistics

Variables	Observations	Mean	Std. Deviation	Min.	Max.
DMS	90	5.4279	2.9973	-2.04	9.717
Firm_Qtl	90	8.4403	1.4974	5.166	10.736
Firm_Size	90	8.7611	1.4596	5.614	10.787
Leverage	90	0.3274	0.3465	0	1.4220
Profitability	90	0.1481	0.1256	-0.115	0.59

Source: Authors’ own calculation

Table 1 shows that mean value of DMS is 5.4279 and the standard deviation is 2.9973. Firm_Qtl ranges from 5.166 to 10.736 with mean value of 8.4403 and it has standard deviation of 1.4974.

The mean value of Firm_Size is 8.7611 and its standard deviation is 1.4596. The mean value of Leverage is 0.3274 and its standard deviation is 0.3465. Profitability extends from -0.115 to 0.59 and its standard deviation is 0.1256.

Table-2: Correlation Matrix

DMS	DMS	Firm_Qtl	Firm_Size	Lever	Profitability
	1.0000				
Firm_Qtl	0.3557* 0.0006	1.0000			
Firm_Size	0.4965* 0.0000	0.9848* 0.0000	1.0000		
Leverage	0.5842* 0.0000	-0.1307 0.2195	0.0389 0.7159	1.0000	
Profitability	-0.2797* 0.0076	0.1120 0.2934	0.0185 0.8628	-0.5697* 0.0000	1.0000

Source: Authors' own calculation

It is seen from Table 2 that DMS has significant positive relationship with Firm_Qtl, Firm_Size and Leverage. But it has significant negative relationship with Profitability.

Table 3: Panel Data Analysis of Automobile sector (Dependent Variable: DMS)

Model / Independent Variable	Fixed Effect Model Coefficients (p-value)	Random Effect Model Coefficients (p-value)	Hausman Test Chi ² (p-value)	Preferred Model
Constant	18.88 (0.002)	-1.57 (0.624)	16.16 (0.0028)	Fixed Effect Model (As the p-value of Chi ² < 0.05)
Firm_Qtl	-9.28 (0.008)	-10.60 (0.002)		
Firm_Size	7.67 (0.034)	11.11 (0.002)		
Leverage	-4.69 (0.067)	-3.22 (0.217)		
Profitability	-5.42 (0.143)	1.50 (0.601)		
R²	0.30	0.19		
F / Chi²	8.21 (0.000)	31.25 (0.000)		
*Significant at 5% level				
DMS: Debt Maturity Structure				

Source: Authors' own calculation

Table 3 exhibits the result of Panel Data Analysis under both Fixed and Random effects models. The Hausman Test accepts the Fixed Effects Model as the expected model for panel data analysis. The p-value (0.000) of the Chi² (8.21) of the Fixed effects model shows that the model is good fit for the study. The value of R² indicates that the model is explaining 30% variation of DMS.

The p-values of the Coefficients of Firm_Qtl (-9.28) and Firm_Size (7.67) are lying below the significance level 0.05. So, we can reject the null hypotheses and can say that the Firm's Quality and Firm Size have statistically significant effect on DMS. But, Firm_Qtl has significant negative impact and Firm_Size has significant positive impact on Debt Maturity Structure. For every 1% increase in the Reserve, the DMS will decrease by 9.28% and for every 1% change in Total Assets; the DMS will increase by 7.67%. However, Leverage and Profitability have no significant impact on Debt Maturity Structure.

CONCLUSION

In the study, we have dealt with the impact of firms' internal factors on debt maturity structure. Accordingly, we have considered major determinants, namely, firm quality, firm size, leverage and profitability (as mentioned by Pavel Körner) which have bearing on the debt maturity structure. The Panel Data analysis shows that Firm Quality and Size of the firm have significant relation with the Debt maturity structure. But, Firm's quality has significant negative relation with the debt maturity structure. This indicates that firm having sufficient reserve does not use long term debt that may be costly to the firm. Rather, they may use internal source like reserve which costs might be cheaper than interest on borrowings from outside sources. On the other hand, such firms use long term borrowings which asset size is sound for use them as security or mortgage of the long term loans (as mentioned by Michael and Smith; Joseph T.L. Ooi; Sandra Correia et al.). The results of both the variables, Firms Quality and Firms Size are in line with the expectations.

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