

Determinants of Capital Structure: Empirical Evidence from select Retail Firms Listed in BSE in India.

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Abstract

Purpose – The paper empirically examines the determinants of capital structure of select retail firms listed on the Bombay Stock Exchange (BSE) using data during the five-year period from 2015-16 to 2019-20.

Methodology – The study is empirical in nature and collected secondary data for analysis. The study employed balanced panel data for regression using three-estimation models namely, Pooled Regression Model (PRM), Fixed Effect Model (FEM), and Random Effect Model (REM). The regression equation has been estimated using debt-equity and debt to total assets ratios as the dependent variables and firm size, tangibility, growth, return on assets, non-debt tax shield, and liquidity as the independent variables. The Hausman test has been applied to select the appropriate model to be employed for the analysis.

Findings – The results of the Hausman test suggest that REM and FEM are appropriate models for estimating the regression equations using the debt-equity ratio and debt to total assets ratio as the dependent variable respectively and the value of the Durbin-Watson test statistic indicates that the independent variables are free from the problem of autocorrelation. The coefficient values of the first equation reveal a significant positive association among leverage and non-debt tax shields, while the remaining coefficients are statistically insignificant. The results also indicate that the REM could explain only thirty percent of the variation in the values of independent variables while the second equation explained eighty-four percent of the variability in the values of independent variables as evident from the value of R-squared. The variables, size of the firm, and ROA have a negative effect on leverage whereas, tangibility has a positive effect on leverage. Therefore, the study demonstrates that the variables non-debt tax shield, size of the firm, return on assets, and tangibility are the important determinants of capital structure of the retail firms listed in BSE in India.

Keywords: Capital structure, Leverage, Panel regression analysis, Firm size, ROA.

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Introduction

The stiff competition among businesses is causing serious threats within the business environment. To cope with the competition companies are aggressively restructuring their strategies by analysing the various aspects of the businesses. In financial management, there are three important decisions namely, investment decision, financing decision and dividend decision. Among these three, the most vital area of decision making is financing decision which mainly deals with the capital structure of a firm. It utilizes a proper mix of capital which minimizes cost and risk and maximizes the return to a firm. The cost of capital is a significant determinant of the profitability of firms and therefore companies try to optimize the capital structure. There are many sources for procuring capital but companies mostly relied on equity and debt capital for financing as the optimum mix of capital can be achieved by judicious use of equity and debt capital. Debt is a cheaper source of capital compared to equity capital hence, trading on equity is used as a tool to leverage the earnings of a firm. But unlike equity, debt attracts interest payment so it becomes a fixed financial expenditure to a company in spite of any situation. Therefore, in adverse conditions like decreasing sales or dropping market share etc., excessive use of debt triggered risk in the form of non-payment of interest and further leads to bankruptcy due to lack of liquidity.

Leverage is of two types, operating leverage and financial leverage. Operating leverage refers to investment or asset procurement activities while financial leverage refers to activities related to financing or obtaining funds. Degree of Operating Leverage (DOL) describes the effect on Earnings before Interest and Taxes (EBIT) due to change in sales. On the other hand, Degree of Financial Leverage (DFL) explains the effects of change in Earnings per Share (EPS) due to the change in EBIT. Hence, total or combined leverage deals with fixed costs of a firm and summarizes the effect of change of EPS due to change in sales. Leverage is good for a firm when the return on investment is sufficiently large and a large margin of income is available to meet the fixed financial charges whereas leverage is worse when the firm is in lack of liquidity and unable to meet the fixed financial obligations.

The relationship between leverage and profitability is explored much but it is still a researchable topic due to the inconsistency in the capital structure theories. It is still unclear what are the determinants of capital structure. So, the study tries to find out some consistency or at least some determinants that have wide acceptability in determining the capital structure of the firm. The present paper deals only with financial leverage and therefore discussion and analysis are confined only to financial leverage and financial risk. The study investigates the determinants of financial leverage of the top ten retail firms listed in BSE in India.

II. Literature Review

Capital structure theories have a positive impact on profitability as can be evident from Modigliani and Miller's theory, trade-off theory etc. while pecking order theory postulates a negative relationship between leverage and profitability. Therefore, capital structure theories describe inconsistent relationships and it is difficult to say about the changing relationship between leverage and profitability. In order to gain some more insights about the study, a few notable kinds of research that investigated the impact of leverage on firms' profitability for diverse sectors of the economy in the Indian backdrop are discussed below:

Pandey. K. and Sahu, T. (2017) articulated that financial leverage has a significant negative impact on the performance and value of the firms for Indian manufacturing firms listed and traded on BSE during the period 2011 to 2016.

Khedkar (2015) analyzed the impact of leverage on profitability for Dr. Reddy's Laboratories, a pioneer pharmaceutical company of the country, and documented that degree of operating leverage is significantly and negatively associated with the Return on Investment (ROI), degree of financial leverage is positively associated with the ROI and the degree of combined leverage is positively associated with ROI though for the latter two the observed relationship was not statistically significant.

Silambarasan (2015), investigated the effect of financial leverage on the profitability of IT firms using twenty-eight firms as samples from the IT sector. The study revealed that operating and financial leverage have a significant impact on the profitability of sample firms. The study also found that operating leverage has a negative impact while financial leverage bears a positive relationship with profitability. However, no significant impact of combined leverage on Return on Net Worth was found may be due to the significant negative effect of operating leverage on profitability.

Kalpana (2014), studied the influence of leverage on profitability using data of select steel companies that are listed in BSE and found that DOL is negatively associated with earnings per share (EPS); DFL and EPS; and DCL and EPS.

In a research article Karunaiathal (2014), examined the relationship between leverage and profitability through multiple regression analysis using ten large-scale paper companies operated in India for the period from 1997-98 to 2009-10. The study found that seven out of ten companies had a significant positive relation between leverage and return on equity whereas leverage has a significant negative relationship with return on equity for the remaining companies.

Kumar (2014), using data of Bata India Ltd. for the period from 2005-06 to 2012-13 examined the impact of leverage on profitability. The study found that the degree of operating leverage has a significant positive impact on ROI, the degree of financial leverage has a positive and insignificant effect on ROI, and the degree of combined leverage has a positive and insignificant impact on ROI.

Patel (2014) examined the relationship between Return on Capital Employed (ROCE), Return on Equity (ROE), Return on Asset (ROA), and EPS with operating, financial and combined leverage using data of Sabar Dairy co-operative society for the period from 1985-86 to 2013-14. The results indicate that the overall model is statistically significant where all the profitability measures are positively associated with the three measures of leverage except ROA which is negatively connected with DFL.

Chisti et. al. (2013), investigates the influence of financial leverage on profitability of automobile companies listed in India. The study documented that measure of financial leverage i.e., debt to assets ratio and interest coverage ratio has a positive and significant impact on the profitability of firms, another measure of leverage such as the debt to equity ratio has a negative and significant impact on the profitability of firms.

Pachori and Totala (2012) examined the effect of financial leverage on shareholder's return and market capitalization using seven major automotive public companies in Pithampur, M.P. The study revealed financial leverage has no significant relationship with shareholder's return and market capitalization and there might be some more non-quantitative factors.

Bhayani, S. (2009) investigated the influence of financial leverage on the cost of capital and firm value using data from the cement industry in India but didn't observe any significant linear relationship between them.

After the review of the literature, the study found some determinants from the capital structure theories and tries to inculcate those variables for analysis which is discussed in the database and methodology section.

Significance of the study

The retail industry is capital intensive and registered tremendous growth in the past few years in India. The highest number of people are engaged in this sector therefore in terms of employability the retail sector is important. The reason for the rapid expansion of the retail sector may be due to the entry of new players, the advent of foreign direct investment in the economy, and the growing middle class. As the decision of leverage is market-driven and industry-specific, an attempt is made to explore empirically the influence of leverage as well as some other determinants of capital structure on retail sector firms operating and listed in India. Therefore, the paper stresses Indian retail firms due to their untouched area of interest among the researchers in India.

III. Objectives of the Study

The objective of the study is to investigate the determinants of capital structure of the retail firms operating and listed in India. Briefly, the objectives are outlined below:

1. To find out empirically the determinants of capital structure of the retail firms listed in BSE.
2. To analyse the volume of debt and its impact on retail firms.
3. To investigate the impact of financial leverage on profitability in retail firms.

IV. Database and Methodology

The study is empirical in nature and all the data are collected mainly from secondary sources. The study employed the data of the top ten retail firms based on market capitalization on BSE as of 10th September 2020 from the website of www.moneycontrol.com. The study employed five-year data during the period from 2015-16 to 2019-20. The data of select firms are sourced from the annual report of the concerned companies as well as from the website of www.moneycontrol.com, screener.in and from BSE. Besides, a

few key financial ratios are calculated using the audited consolidated data from the balance sheet and income statement of the relevant companies collected from the annual reports.

The study used the debt-equity ratio and debt-to-total assets ratio as the dependent variable. The study employed various determinants of capital structure like firm size, tangibility, growth, return on assets (ROA), non-debt tax shield (NDTS), and liquidity of the firm as independent variables.

The results and discussion have been primarily carried out with the help of descriptive statistics to understand the spread of the data. Further, the study used panel data regression analysis to find out the empirical relationship among the dependent and independent variables using balanced panel data. Additionally, various tests have been performed to select the best model among pooled regression model (PRM), fixed effect model (FEM), and random effect model (REM). Finally, few diagnostic tests were conducted to look for any sampling error.

Sl. No.	Company name	Market Cap. (in Cr. Rs.)
1.	Avenue Supermart Ltd.	139210.02
2.	Trent Ltd.	24244.24
3.	Aditya Birla Fashion Ltd.	10989.68
4.	Future Retail Ltd.	5439.11
5.	V-Mart Retail Ltd.	3886.15
6.	Future Lifestyle Ltd.	2090.39
7.	Shoppers Stop Ltd.	1491.87
8.	Arvind Fashions Ltd.	1305.75
9.	Spencer's Retail Ltd.*	763.42
10.	Future Enterprises Ltd.	711.08
11.	V2 Retail Ld.	180.25

Source: moneycontrol.com

Table I represents the lists of the select sample companies for the study from the retail sector according to the market capitalization on BSE as of 10th September 2020 from the website of www.moneycontrol.com.

The largest company according to market capitalization is Avenue Supermart Ltd. and the V2 Retail Ltd. being lowest in the chart. Spencer's Retail Ltd. marked with asterisk (*) was excluded from the study due to the non-availability of data.

Table II: List of variable and basis of calculation

Sl. No.	Variable	Basis of calculation
1.	Size	Natural log of total assets
2.	Tangibility	Ratio of net fixed assets divided by total assets
3.	Growth	Percentage change in total assets on a year-to-year basis
4.	Profitability (ROA)	Ratio of EBIT to total assets
5.	Non-debt tax shield (NDTS)	Ratio of depreciation to total assets
6.	Liquidity	Current assets divided by current liabilities
7.	D_E	Total debt to total capital
8.	D_TA	Total debt to total assets

Table II describes the variables employed for analysis and the method of calculation of those variables. All the key financial ratios have been calculated using consolidated audited data from the annual reports of the select companies using a statistical package.

The determinants of capital structure are estimated using the following two regression equations:

$$D_E_{it} = \beta_0 + \beta_1 Size_{it} + \beta_2 Tangibility_{it} + \beta_3 Growth_{it} + \beta_4 ROA_{it} + \beta_5 NDTS_{it} + \beta_6 Liquidity_{it} \dots \dots \dots (i)$$

$$D_TA_{it} = \beta_0 + \beta_1 \text{Size}_{it} + \beta_2 \text{Tangibility}_{it} + \beta_3 \text{Growth}_{it} + \beta_4 \text{ROA}_{it} + \beta_5 \text{NDTS}_{it} + \beta_6 \text{Liquidity}_{it} \dots \dots \dots (ii)$$

V. Data analysis and empirical findings

Table III: Descriptive Statistics				
Variables	Mean	Maximum	Minimum	Std. Dev.
Size	8.1410	9.9776	5.4019	1.1684
Tangibility	0.5215	0.8056	0.0924	0.1795
Growth	43.9242	1118.8069	-45.1836	158.4220
ROA	4.9982	21.6359	-42.7371	9.5066
NDTS	0.0434	0.1104	0.0047	0.0234
Liquidity	1.4387	3.4959	0.5971	0.6946
D_E	0.7665	2.3331	0	0.6930
D_TA	0.1963	0.4974	0	0.1525

Source: Authors' own calculation

Table III reveals descriptive information on the variables undertaken for the study. The mean size of the sample firms revealed assets size with an average value of 8.14 and less dispersed from the mean. The mean value of tangibility is very less i.e., only 0.52 implies lower fixed assets compared to total assets. The average growth of the sample firms is very high at a mean value of 43.92 with a high value of standard deviation. Also, the values of growth are extremely scattered from 1118 to -45. The average value of ROA is much dispersed from the mean having high data points from 21 to -42 registering only 5% return on assets. The sample retail firms have managed their liquidity very well and also are less levered as evident from mean values with lower standard deviation.

Variables	PRM	FEM	REM
Size	0.2722196 (0.001)*	-0.3643766 (0.234)	0.1815068 (0.143)
Liquidity	-0.1767144 (0.166)	-0.182150 (0.282)	-0.2396078 (0.066)
ROA	-0.0059077 (0.546)	-0.0132248 (0.165)	-0.0106514 (0.239)
NDTS	8.048559 (0.042)**	20.08613 (0.007)*	8.834693 (0.057)**
Tangibility	0.2100236 (0.691)	-0.9748481 (0.389)	-0.1280187 (0.865)
Growth	1.6666667 (0.998)	-0.0003864 (0.442)	-0.0000976 (0.839)
R-squared (R^2)	46.06%	69.68%	29.05%
F-statistic	6.119605 (0.000)*	5.208687 (0.000)*	2.933892 (0.017)*
Durbin-Watsonstat	1.092649	2.056394	1.515751

Source: Authors' own calculation

* Significant at 0.01 or 1% level

** Significant at 0.05 or 5% level

Table IV describes the estimated results of the panel regressions model taking debt to equity as the dependent variable. The value in the parenthesis denotes the level of significance. Below is the chart, test statistics such as R^2 , F-statistic, and Durbin-Watson (DW) statistics indicate the overall significance of the regression model. The regression model is a good fit model evident from the value of R^2 and F-statistic. The p-values of all the F-statistic are significant at the 1% level. The DW statistic indicates the independent variables do not have the problem of autocorrelation as the test statistic lies in the range of 1.5 to 2. An acceptable range is 1.5 to 2.5 indicates that there is no first-order autocorrelation. The results of the coefficient in the PRM model reveal the size of the variables and NDTS are positively and significantly

related with the D_E at 1% and 5% levels of significance respectively. The other variables are not significant determinants of leverage however, the PRM explained that 46% of the data fit the regression model. In FEM, only NDTS is positive and significant at a 1% level of significance. The model revealed approximately 70% of the data fit the regression model. Again, in REM only the variable NDTS is positively and significantly correlated with the D_E at a 5% level of significance. However, the model does not well fit as only 30% of the data fit the regression model. Except for the variable NDTS, all the other variables are not significant in the FEM and REM. Hence, only the variable NDTS in PRM, FEM, and REM is a positive and significant determinant of the capital structure of the sample retail firms. Size is the only significant variable in PRM. Although, FEM is the best fit model considering the value of R² compared with the PRM and REM. The sample firms are not highly levered and ROA is negatively correlated however, not significant.

Table V: Parameter estimates (Dependent variable: D_TA)

Variables	PRM	FEM	REM
Size	0.0634756 (0.000)*	-0.1172674 (0.021)**	0.018414 (0.479)
Liquidity	-0.0431534 (0.108)	-0.0063152 (0.815)	-0.0470109 (0.051)**
ROA	-0.0042905 (0.041)**	-0.0045932 (0.004)*	-0.0045995 (0.004)*
NDTS	-0.8669361 (0.288)	-0.0962944 (0.932)	-1.658559 (0.060)**
Tangibility	0.1306404 (0.242)	0.374986 (0.045)**	0.2657667 (0.073)
Growth	-0.0000895 (0.437)	-0.0000725 (0.371)	-0.0000354 (0.676)
R-square	51.00%	83.77%	31.76%
F-statistic	7.458171 (0.000)*	11.69880 (0.000)*	3.335758 (0.009)*
Durbin-Watson stat	0.581443	1.695693	1.024894

Source: Authors' own calculation

* Significant at 0.01 or 1% level

** Significant at 0.05 or 5% level

Table V represents the estimated results using debt to total assets as the dependent variable. The value of R-square reveals the regression models are a good fit and all the values of F-statistic in the regression models are significant at a 1% level of significance. The Durbin-Watson stat indicates there is a presence of positive autocorrelation in PRM and REM. However, no such issue was found in FEM as the DW statistic is 1.69 which is within an acceptable range of 1.5 – 2.5. So, FEM does not have an autocorrelation problem. In PRM, the size of the variables and ROA are significant with positive and negative coefficients respectively. The variable size is significant at a 1% level and ROA is significant at a 5% level. The other variables in the PRM are not significant. In FEM, the variable size and ROA are significant with a negative coefficient and tangibility is significant with a positive coefficient. Size and tangibility are significant at a 5% level and ROA is significant at a 1% level. Liquidity, NDTs, and growth are not significant variables in the FEM. In REM, the variables liquidity, ROA and NDTs are significant with negative coefficients. Liquidity and NDTs are significant at a 5% level whereas ROA is significant at a 1% level. The other variables are not significant in the REM. Therefore, ROA is found significant and negatively correlated in all the three-regression models, and size is found significant in PRM and FEM only. FEM reveals approximately 84% of the data fit the regression model. PRM and REM disclose that 51% and 32% of the data fit the regression model. So, taking debt to total assets as the dependent variable, the study found more determinants of capital structure with better data fit in comparison to debt-to-equity ratio as the dependent variable.

Further, for the selection of an appropriate model among FEM and REM, the study conducted the Hausman test. The test was conducted twice taking each dependent variable namely the debt-equity ratio and debt to total assets ratio.

Table VI: Model Selection				
Dependent Variable: D_E				
Objective	Test	Null Hypothesis	Test Statistic	Result
REM vs. FEM	Hausman	REM appropriate	6.34 (0.2748)	REM
Dependent Variable: D_TA				

Objective	Test	Null Hypothesis	Test Statistic	Result
REM vs. FEM	Hausman	REM appropriate	15.56 (0.0163) *	FEM

Source: Authors' own calculation

* Significant at 0.05 or 5% level

Table VI describes the results of the Hausman test conducted for finding out the best model among the FEM and REM. The test statistic reveals REM is a suitable regression model when debt to equity is used as the dependent variable. The test statistic of the Hausman test signifies the p-value is greater than the 5% level of significance hence the null hypothesis has been accepted i.e., REM is accepted as an appropriate model. Similarly, FEM is found suitable when debt to total assets is used as a dependent variable. The Hausman test indicates the p-value is less than 5% level of significance and subsequently the null hypothesis has been not accepted. So, FEM is accepted as an appropriate regression model.

VI. Conclusion

The study evaluated the determinants of capital structure of the top ten retail firms based on market capitalization listed in BSE. The study used panel data regression analysis and estimated two regression equations with the help of three-panel models. The study found REM as an appropriate model taking D_E as a dependent variable and FEM as an appropriate model taking D_TA as a dependent variable as per the Hausman test. The independent variables have no autocorrelation issue and the regression model is found well fitted.

The value of R-squared in REM is explaining only thirty percent of the model signifying NDTS as the only independent variable at a 5% level of significance. The coefficient of NDTS signifies a positive relationship with the debt-equity ratio meaning as the NDTS will increase there will be an increase in the debt-equity ratio which is a very unusual estimation found in the study.

The FEM is a good fit model explaining eighty-four percent of the model as can be evident from the value of R-squared. The variables size and ROA have a negative effect on D_TA whereas, tangibility has a positive effect on the debt to total assets ratio.

Therefore, from the study, it can be concluded that the variables NDTS, size of the firm, ROA, and tangibility are the few determinants of the retail firms listed in BSE. However, there might present many more determinants of the retail firms which are not considered for the study.

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