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Naliniprava Tripathy and Aman Asija

THE IMPACT OF FINANCIAL CRISIS ON THE DETERMINANTS OF CAPITAL STRUCTURE OF LISTED FIRMS IN INDIA

ABSTRACT

This study investigates the impact of 2007 financial crisis on the performance of capital structure of 88 non-financial companies listed on National Stock Exchange of India during the period between January 2003 to May 2014 by using Fixed Effect (FE) and Random Effect (RE) Models. The study has divided the data period into two distinct time intervals: (2003 -2007) as "pre-crisis" periods and (2008 – 2014) as "post-crisis" periods. The determinants of capital structure such as size, liquidity, profitability, and tangibility are used in the analysis. The findings show that tangibility and size have a greater influence on capital structure decision before crisis period. The findings also show that the coefficient of profitability is negative, displaying an inverse relationship with leverage. The study concludes that pecking order theory has more explanatory power in comparison to other theories in explaining the factors that determine the capital structure decision of listed firms of India.

Key Words: capital structure, determinants of capital structure, financial crisis, fixed effect model, random effect model

Naliniprava Tripathy
Professor, Indian Institute of Management Shillong, Meghalaya, India

Aman Asija
Doctoral Student, Indian Institute of Management Shillong, Meghalaya, India

Correspondence:
Naliniprava Tripathy
Finance Department, Indian Institute of Management Shillong, Meghalaya, India, PIN 793 014
E-mail: nalini_prava@yahoo.co.in/nt@iimshillong.ac.in
Tel: 91-364-2308037(0)8075®

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INTRODUCTION

Capital structure theory is one of the most controversial topics in the finance literature. Academicians and practitioners have been struggling continuously to figure out the right composition of debt and equity for financial decisions of firms. Most capital structure theories argue that the combination of debt and equity used by a company render considerable proportional effects on its capital structure choice. Modigliani and Miller (1958) have debated that capital structure decision is irrelevant to both firms' value and cost of capital. On the other hand, several theories such as trade-off theory, signalling theory, agency cost theory, and pecking order theory have each observed with different considerations. Myers (2001) has argued that there is no unifying theory that exists for the choice of debt and equity. However, several theories have tried to conditionally explain the choice of capital for financing decision. Researchers have failed to come out with a unified theory, leaving the subject open for further research.

The financial crisis of 2007 significantly distracted the financial markets. As a result, the issue of capital in security market remains tight. Since capital structure decisions maximize the return to various stakeholders and augment the firms' ability to operate in a competitive environment, the present study tries to identify specific variables that cover the effect of financial crises on the capital structure of Indian firms. In addition, the study attempts to shed light on the explanatory power of capital structure theories during financial crises period. However, little research work has been undertaken so far to find the impact of the recent financial crisis on the determinants of capital structure in India. The present research study seeks to address this gap. The present study raises two research questions. First, the study investigates the impact of the global financial crises in 2007 on the determinants of capital structure of non-financial firms in India. Secondly, the study compares the determinants of the capital structure before and after the financial crises period of 2007. Therefore, the present study improves on the earlier studies and offers a value addition to the existing literature and proves to be useful to the firms as well as regulators. The major contribution of this study is that it will guide to Indian firms to adjust their capital structure to optimize their exposure to financial risk. The paper is organized as follows: section two describes the literature review; the methodology and data are outlined in section three; the empirical results are presented in section four' and section five deals with concluding observation.

LITERATURE REVIEW

Capital structure theories have remained as an important topic among researchers. Marsh (1982) finds that tangible assets and leverage have positive correlation. Titman and Wessels (1988) investigate factors affecting leverage among US firms. They conclude that asset structure, non-debt tax shields, growth, uniqueness, industry classification, size, earning volatility, and profitability have significant impacts on capital structure decision of a firm. Rajan and Zingales (1995) identified the determinants of leverage across G-7 nations and found that tangibility, market to book ratio, size, and profitability are significant parameters that affect capital structure choice of a firm. Michaelas, Chittenden, and Poutziouris (1999) exhibited that asset structure, age, profitability, growth, operating risk, size, stock turnover, and industry significantly influence firm's financing decision. They concluded that an increase in short-term leverage were found during the periods of economic recession and vice-versa.

Booth et al. (2001) examined the effect of debt on tax in ten developing countries such as Brazil, India, Jordan, Malaysia, Mexico, Pakistan, South Korea, Thailand, Turkey, and Zimbabwe. They found that debt ratio is negatively related to tax rate. Khasnobis and Bhaduri (2002) identified size, asset structure, profitability, and financial distress cost as significant determinants of optimal capital structure among Indian firms. Brounen and Laak (2005) showed the dominance of trade-off theory as an explanatory model and found that tax and bankruptcy costs affect debt ratio.

Jong, Rezaul, and Thu (2008) investigated the influence of firm-specific and country-specific factors in the capital structure choice of firms. They found that firm-specific factors have a significant impact on the capital structure choice in most countries but in a few countries, capital structure is inconsistent with the predictions of different theories of capital structure. They further found that adequate creditor protection, bond market development, and GDP growth have a significant impact on the corporate capital structure decision.

Diamond and Rajan (2009) argued that markets favour a capital structure that relies heavily on short-term leverage during good times but favour a capital structure that relies mainly on long-term capital during the crisis period. Sinan (2010) concluded that there is a negative correlation between market to book ratio and leverage ratio. However, Lemmon, Roberts, and Zender (2008) found a positive relationship between market to book ratio and leverage ratio. Chakraborty (2010) concluded that pecking order theory and trade-off theory explains financing decisions in the Indian context. Akbar, Rehman, and Ormrod (2013)

found that the crisis has decreased the financing channels of short-term debt and trade credit, but does not have a significant impact on the long-term financing channel. The study also suggests that UK private firms held more cash and issue more equity to hedge against the negative effects of credit contractions. Fosberg (2012) showed that global debt/equity issuance ratio increased in 2008 and then decreased gradually towards the end of 2010.

Zarebski and Dimovski (2012) examined the effect of each chosen variable in the short term, long term, and total leverage of Australian Real Estate Investment Trusts before and after the crisis period. They found that global financial crisis as affected the capital structure. Iqbal and Kume (2013) investigated the impact of the recent financial crisis on the capital structure decision of UK, French, and German firms and revealed that equity and debt levels change during crisis and post-crisis period. The study also found that leverage increases during crisis and post-crisis period. Harrison and Widjaja (2014) found that the coefficients of tangibility and market to book (MTB) ratio employs a stronger influence on capital structure choices before 2008, but the coefficient of profitability exercises less influence on capital structure choice after the crisis.

The above literature review clearly shows mixed evidence in capital structure decision behaviours in different countries' depending on the data, methodology, and time periods. Since India is a fast-growing economy, this motivates us for exploring research on the impact of 2008 financial crisis on capital structure decision of firms in India.

DATA AND METHODOLOGY

The required panel data have been collected from January 2003 to May 2014 from the CMIE-Prowess database. The dataset consists of all non-financial firms listed on National Stock Exchange of India. Finance companies of India are involved in providing financial assistance to business enterprises. Debt is a resource to financial firms. Moreover, cash is the trading asset of finance companies, and level of cash holding are significantly higher than other non-financial firms. Since finance companies are highly regulated, are unique in nature of capital structure characteristics, have different nature of the financial statement and balance sheet from non-finance firms, they are excluded from the study to remove any anomalies that may be relevant with this sector.

The initial number of non-financial firms are 1563.However due to data availability issue, missing data points and need of maintaining a balanced panel, final sample size was reduced to 88 non-financial companies from different sectors in India. The effects of the

crisis are examined by dividing the data period into two breaks as the 'pre-crisis' period (2003-2007) and 'post-crisis' period (2008-2014).

The study has used panel data known as the cross-sectional time-series data. The reason for using panel data is that it increased the degree of freedom, reduced collinearity problem, controlled heterogeneity, and increased efficiency of estimates. There are two preliminary tests which was used before applying the panel data methods to the data set. The tests are Pairwise Correlation Test and Hausman Specification Test. The purpose of the pairwise correlation test is to detect the occurrence of multi-collinearity problem. Hausman Specification Test is used to examine whether the individual-specific effects are correlated or uncorrelated with certain variables across individual.

The two estimated traditional techniques in panel data are fixed effect model and random effect model. FE model explores the relationship between predictor and outcome variables within an entity. So, the estimated coefficients of the fixed-effects models cannot be biased. On the other hand, RE model removes the impact of time-invariant differences between individual variables.

It controls the individual differences in the error term by regarding them as random disturbances (Gujarati and Porter, 2009). To determine the appropriate model to be applied, Hausman Test is used. The Breusch-Pagan Lagrange Multiplier test is used to determine the practicability of using either fixed effect model or random effect model for the study.

The study has used developed econometric panel unit root tests by Levin, Lin, and Chu (2002) and Breitung and Das (2005) to know the restrictions in the autoregressive process across cross-sections series or not. Levin, Lin, and Chu (LLC) and Breitung tests assume that there is a standard unit root process so that *p* is identical across cross-sections. The LLC test employs a null hypothesis of a unit root. LLC and Breitung both consider the following basic ADF specification:

$$\Delta y_{it} = \alpha y_{it-1} + \sum_{j=1}^{pi} \beta_{ij} \Delta y_{it-j} + X'_{it}\,\delta + \epsilon_{it}$$

$\alpha = p - 1$, but allows the lag order for the difference terms, p_i , to vary across cross-sections. The null and alternative hypotheses for the tests are written as:

$$Ho: \alpha = 0$$

$$H_1 := \alpha < 0$$

Under the null hypothesis, there is a unit root, while, under the alternative, there is no unit root.

The RE/FE model regression equation consists of the dependent variable and independent variable. The dependent variable is the leverage such as Long-Term Debt Ratio (LTDR) and the independent variables is the Profitability (PRO), Tangibility (TANG), Size (SIZE), Liquidity (LIQ), Debt Service Capacity (DSC), Cost of Debt (COD), and Non-Debt Tax Shield (NDTS).

The panel data fixed effect regression model is:

$$y_{it}(\,LEV) = \beta_0 + \beta_1 PROF_{it} + \beta_2 TANG_{it} + \beta_3\, SIZE_{it} + \beta_4 LIQ_{it} + \beta_5 DSE_{it} + \beta_6 COD_{it} + \beta_7 NDTS_{it} + u_{it} + \varepsilon_{it}$$

The panel data random effect regression model is:

$$y_{it}(\,LEV) = \beta_0 + \beta_1 PROF_{it} + \beta_2 TANG_{it} + \beta_3\, SIZE_{it} + \beta_4 LIQ_{it} + \beta_5 DSE_{it} + \beta_6 COD_{it} + \beta_7 NDTS_{it} + (u_{it} + \varepsilon_{it})$$

Where: y_{it} (Lev) is the dependent variable. β_0 is the intercept. Profitability (PRO), Tangibility (TANG), Size (SIZE), Liquidity (LIQ), Debt Service Capacity (DSC), Cost of Debt (COD) and Non-Debt Tax Shield (NDTS) are the independent variable. $u_{it} + \varepsilon_{it}$ are the error terms. i is the number of firms and t is the number of time periods

Lev (long-term debt): Long-term debt is commonly used in capital structure (Titman and Wessels, 1998; Demirguc-Kunt and Maksimovic, 1999; Booth et al., 2001; Hall, Hutchinson, and Michaelas, 2000). This ratio indicates that long-term debt finances firm's total asset. The long-term debt ratio computed as long-term debt/total assets. The study excludes short-term debt since it includes trade credit that may give inconsistent results.

Trade credit is not influenced by the same determinants as leverage's determinants (Jong et al., 2008).

Profitability (PRO): Profitability influences capital structure. According to the pecking order theory, firms prefer to finance with retained earnings rather than external finance. (Myers and Majluf, 1984; Donaldson, 2000; Ozkan, 2001). This theory expects that there is a negative relationship exist in between profitability and leverage. On the other hand, trade-off theory suggests that profitability of firm should use more debt in the capital structure to avail tax shields from interest payments. It suggests that there is an inverse relationship found in between profitability and leverage. Hence, the profitability of a firm is an important determinant of its capital structure. We use ratio of earnings before interest, tax, depreciation and amortization (EBITDA) to total assets as an indicator of firm's profitability.

Tangibility (TANG): According to trade-off theory, the firm holds more tangible assets are likely to have high leverage ratios. Because the firm uses tangible assets as collateral on debt taking. Thus, a significant positive relationship is expected (Titman and Wessels, 1988; Rajan and Zingales, 1995). During crunch liquidity period, tangibility is one of the most important factors for lenders. The study has used Tangibility as the ratio of net fixed assets to total assets.

Size: Size of the firm impacts the capital structure (Titman and Wessels, 1988; Rajan and Zingales, 1995). The trade-off theory proposes that there is a positive relation between firm size and debt. It indicates that large firms normally have more leverages. Large firms have stable cash flows that make them less prone to bankruptcy (Handoo and Sharma, 2014). Larger firms raise normally long term at lower transaction cost when compared to small firms (Wald, 1999). Marsh (1982) showed that large firms prefer long-term debt while small firms favour short-term debt. The study has used natural log of assets as a proxy for size.

The cost of Debt (COD): Cost of debt is the interest rate that a company pays on its current debt. Since interest expenses are deductible, the after-tax cost of debt is mostly used. The cost of debt is one of the parameters that determines WACC. The optimal capital

structure of a firm minimizes WACC (Myers, 2001). This study measures the cost of debt by using a ratio of before-tax interest expense to long-term debt.

Liquidity (LIQ): According to Pecking order theory, firms with higher liquidity will borrow less. Prowse (1990) argued that the liquidity of assets of the company is used to show the extent to which these assets can be manipulated by shareholders at the expense of bondholders. Therefore, a negative relationship is expected. Firms with low liquidity face high business risk. For the purpose of our study, the liquidity of a firm is measured using a ratio of current ratio to current liabilities.

Debt Service Capacity (DSE): Debt service capacity of a firm indicates firm's ability to repay its liabilities. If earnings are lower than interest expenses, the company is at greater risk of insolvency. Such situation leads to increase in the cost of debt. Interest coverage ratio acts as a proxy of default probability, which means that a lower interest coverage ratio indicates a higher debt ratio. High debt service capacity reduces default risk and increases the confidence of creditors. The interest coverage ratio such as the ratio of EBITDA to total interest is used as a proxy for debt service capacity of a firm.

Non-Debt Tax Shield (NDTS): Tax shield is one of the benefits of debt financing. Trade-off theory suggests that using debt instead of equity is saving of corporate tax. A firm with high non-debt tax shields is expected to use less debt. (DeAngelo and Masulis, 1980). Thus, the amount of non-debt tax shield can impact financing choice of a firm. Since, a higher non-debt tax shield reduces the potential tax benefit of debt, affect leverage negatively. Therefore, this study measures non-tax debt shield as a ratio of depreciation to total assets.

The panel data model is used to determine the relationships of the determinants of capital structure in corporate debt. The hypothesis has been formulated by considering above determinants and assumption of trade-off and pecking order theory. The hypothesis is confirmed when significant relationship and coefficients result are achieved. The study has used R Software for data analysis.

EMPIRICAL ANALYSIS

Table 1 shows descriptive statistics of the dependent and explanatory variable used in the study. The mean of total debt ratio for the whole period is 23.3 % with a standard deviation of 13.1 mean, and median values of most of the variables are showing symmetric distribution. The average value of liquidity is 2.46 suggesting that firms can repay their short-term debt obligations out of current assets. The average debt service capacity of the firms is 16.3% thus indicating that companies are maintaining higher debt ratio. It is also observed that average cost to the company is 8 %. The average non-debt tax shield of firms is 3.2 % indicating that it increases the potential tax benefit of debt.

The mean of long-term debt ratio is 24.2 % for pre-crisis period and 22.6 % for post-crisis period. It reveals that the use of long-term debt decreases after financial crises. It is observed that there is a declining trend in profitability from 14.2 % to 12.9 % during post-crisis period in comparison to pre-crisis period. Mean of debt service capacity during pre-crisis period is negative (--0.033).

Size is taken as a proxy for total assets in this study. It is noticed from the above table that size is increased from pre-crises period to post crises period. This suggests that non-financial firms accumulated cash from financial liabilities and hold cash to serve as a safeguard against surprises to cash flows during pre-crises period. It is evident that size appears to be a very important determinant of capital structure not only in pre-crises period but also in post-crises period.

Table 1. Descriptive statistics

	Pre-crisis period			Post-crisis period		
Variable	**Mean**	**Median**	**Std Dev**	**Mean**	**Median**	**Std Dev**
LTD	0.242	0.232	0.135	0.226	0.215	0.125
PRO	0.142	0.137	0.065	0.129	0.126	0.075
TANG	0.386	0.385	0.155	0.359	0.358	0.157
SIZE	3.830	3.804	0.648	4.241	4.206	0.657
LIQ	2.636	2.019	2.539	2.329	1.941	1.530
DSC	-0.033	0.178	6.656	0.304	0.203	0.748
COD	0.078	0.072	0.039	0.083	0.078	0.039
NDTS	0.035	0.032	0.017	0.030	0.028	0.015

Before using panel data, there are two preliminary tests such as the Pairwise correlation and Hausman Specification test to be conducted. Pairwise correlation test identifies the

occurrence of multi-collinearity problem. If there is a strong bivariate correlation among variables, then the multi-collinearity problem arises. Multi-collinearity indicates how much the independent variables are correlated. If the correlation coefficients for all variables are less than 0.8, it implies that there is no severe multi-collinearity ascending in the study (Gujarati, 2003; Cooper and Schindler, 2008).

Table 2 reveals that there is a positive correlation between long-term debt ratio and tangibility, size, non-debt tax shield for the pre-crises period. So, the results are in line with the trade-off theory. The positive relationship between the size of a company and debt ratio suggests that the greater the size of an organization, the greater the use of borrowed funds. Similarly, positive correlation of tangibility with leverage signifying more collateral is available to raise long-term loans financing for the firms. This may attribute to easier access to funds with high tangible assets of firms. The positive relationship between non-debt tax shield and leverage indicates that leverage position of the firms' increases with the presence of other non-tax shield variable. Hence, firms are not able to grip the tax benefit.

Table 2. Correlation matrix

	LTD	PRO	TANG	SIZE	LIQ	DSC	COD	NDTS	VIF
Pre-crisis period									
LTD	1	-	-	-	-	-	-	-	-
PRO	-0.18	1	-	-	-	-	-	-	1.11
TANG	0.41	-0.02	1	-	-	-	-	-	1.37
SIZE	0.15	0.00	0.062	1	-	-	-	-	1.07
LIQ	-0.19	-0.00	-0.14	-0.09	1	-	-	-	1.08
DSC	-0.05	0.07	-0.04	-0.00	0.012	1	-	-	1.02
COD	-0.05	-0.01	-0.02	-0.20	-0.18	0.04	1	-	1.09
NDTS	0.09	0.24	0.47	-0.05	-0.01	-0.07	-0.03	1	1.44
Post-crisis period									
LTD	1	-	-	-	-	-	-	-	-
PRO	-0.26	1	-	-	-	-	-	-	1.07
TANG	0.39	0.03	1	-	-	-	-	-	1.57
SIZE	0.06	-0.02	-0.15	1	-	-	-	-	1.25
LIQ	-0.06	0.17	-0.13	-0.18	1	-	-	-	1.18
DSC	0.24	-0.15	0.00	-0.10	-0.01	1	-	-	1.06
COD	-0.14	-0.03	-0.00	-0.31	-0.16	0.16	1	-	1.22
NDTS	0.23	0.09	0.58	-0.13	-0.12	-0.03	0.06	1	1.56

Table 2 shows that there is a negative correlation among long-term debt ratio, profitability, liquidity, debt service capacity, and cost of debt. These findings support the

pecking order theory. Profitability leads to increased equity value and prefers to use internal financing rather that debt financing. However, static trade-off theory contrasts this view. Opposite to trade off theory, long-term debt is positively related to non-debt tax shield.

The pre-crises and post-crises period show that long-term debt and profitability are negatively related. This happens because profitable firms usually utilize internal funds. Leverage is more negatively related to profitability before crisis period. It indicates that profitable firms relied more on internal funds during post-crisis periods. Long-term debt and cost of debt show high negative correlation in contrast to pre-crisis period. Hence, firms with the high cost of debt avoid raising debt, particularly after crisis period. Correlation of tangibility with leverage is positive in the post-crises period, but it reduces from 0.41 to 0.39 compared to the pre-crises period. It suggests that association of tangibility with leverage is reduced due to information asymmetry in firms with limited tangible assets after crises period, and hence less collateralised debt is available to monitoring the employees. The results propose that banks or credit providers become more alert in lending and require sufficient collateral after crises period.

Variance Inflation Factor (VIF) is used to test the multi-collinearity problems of variables. Table 2 exhibits that VIF is less than 8, so there is no multi-collinearity problem occurs among variables. Therefore, all explanatory variables can be used for panel data analysis.

Table 3. Specification test results

LTDR	Statistic	Pre-crisis	Post-crisis
Hausman Specification Test Results	Chi-squared statistic	43.325(0.000)	45.325(0.000)
Fixed Effect	F-test	7.402(0.000)	1.578(0.151)
Breusch-Pagan Test	BP-statistic	28.19(0.003)	96.86(0.000)
Panel Unit Root Test	Levin, Lin & Chu	-36.1771	-24.6847
	Breitung t-stat	-23.2448	-23.1068

This study has used the Hausman Test for determining the usage of fixed effect, or the random effect model. The null hypothesis proposes that Cov(ϵ_i, X_{it})=0 where ϵ_i is entity-specific error term. Random effect is efficient compared to fixed effect when Cov(ϵ_i, X_{it})=0. The fixed effect is a better choice when Cov(ϵ_i, X_{it})≠0. (Baltagi, 2008; Allison, 2009; Hsiao, 2014). It is noticed from Table 3 that Hausman Test rejects the hypothesis due

to the absence of co-relation between unobservable effects and explanatory variables. It proposes that fixed effect model is more useful than random effect model. Hence, the panel data regression is analyzed by using fixed effect model in the study.

The result of F-test for fixed effect model shows that p-value is lower than 0.05 for all of the cases in the pre-and post-crisis period. The null hypothesis is rejected for the post-crises period and pre-crisis period, indicating the explanatory power of time factors.

If the errors have non-constant variance, heteroscedasticity problem arises. An error model can be estimated when the error variance relationships are known. Hence, the study has tested for panel-level heteroskedasticity by using Breusch-Pagan Test. The Breusch-Pagan Lagrange Multiplier Test is used to determine the suitability of either fixed effects or random effects model (Gujarati and Porter, 2009) by analyzing whether the estimated variance of the residuals from a regression is correlated with the coefficients on the time-varying explanatory variables. The Breusch-Pagan Test assumes that the error variance varies with a set of regressors. The null hypothesis is that error variance was homoscedastic. It observes from Table-3 that chi-square value is statistically significant at 1% level. The null hypothesis of constant variance is rejected and displays the existence of heteroscedasticity.

The study employs the panel unit root test to avoid spurious regression results and examine the time series properties of concerned variables. The output is provided in Table 3. The results indicate the presence of a unit root, as the LLC and Breitung Tests fail to reject the null hypothesis of a unit root.

Table 4. The effect of independent variables on the leverage using the fixed effect and random effect model

Independent Variables	Fixed Effect Estimation				Random Effect Estimation			
	Coef.	SE	t-stat	probability	Coef.	SE	t-stat	probability
Pre-crisis period								
C	-	-	-	-	0.043	0.06	0.66	0.50
PRO	-0.318	0.07	-4.07*	0.00	-0.311	0.07	-4.17*	0.00
SIZE	0.098	0.02	3.60*	0.00	0.046	0.01	3.12*	0.00
TANG	0.315	0.06	5.05*	0.00	0.328	0.05	6.43*	0.00
COD	-0.300	0.13	-2.2*	0.02	-0.338	0.12	-2.80*	0.00
LIQ	0.00	0.00	0.30	0.75	0.000	0.00	0.41	0.67
NDTS	-0.791	0.51	-0.54	0.12	-0.932	0.42	-2.17**	0.03
DSC	0.000	0.00	-036	0.71	-0.000	0.00	-0.41	0.67
R^2	0.17				0.17			
Adjusted R^2	0.14				0.17			
F-statistics (p-value)	11.38 (0.00)				13.93 (0.00)			
Hausman	Chisq =19.88, p-value= 0.00, Null hypothesis is rejected							
Post- crisis period								
C	-	-	-	-	0.223	0.05	4.03*	0.00
PRO	-0.112	0.05	-2.20**	0.02	-0.156	0.04	-3.17*	0.00
SIZE	-0.02	0.02	-0.967	0.33	0.001	0.01	0.11	0.90
TANG	0.176	0.04	4.05*	0.00	0.223	0.03	5.91*	0.00
COD	-0.599	0.10	-5.70*	0.00	-0.627	0.09	-6.31*	0.00
LIQ	-0.008	0.00	-2.15**	0.03	-0.006	0.00	-1.95**	0.05
NDTS	-0.540	0.40	-1.34	0.18	-0.145	0.36	-0.40	0.68
DSC	0.030	0.00	7.62*	0.00	0.031	0.00	7.79*	0.00
R2	0.16				0.18			
Adjusted R2	0.15				0.18			
F-statistics (p-value)	16.16 (0.00)				21.27 (0.00)			
Hausman	Chisq = 55.81, p-value = 0.00, Null hypothesis is rejected							

Table 4 reports fixed effect and random effect model results of pre-and post-crises period. Profitability, size, and tangibility are significant determinants of long-term leverage during the pre-crisis period. In trade-off theory, firm size, and tangibility are significantly correlated with leverage. Tangible assets are one of the mechanisms to mitigate the risk

which occurs in shareholder and bondholder conflict (Jensen and Meckling, 1976). Fixed effect result shows that size has a significant impact on the leverage during the pre-crises period. The coefficient indicates a positive relation between firm size and leverage. This also conforms in line with the majority of empirical studies (Gaud et al., 2005; Janbaz, 2010). This is consistent with trade-off theory as well. The analysis demonstrates that size of firm increases with long-term debt increases. This implies that Indian firms are much more dependent on debt. The analysis illustrates that large firms have taken more debt because of more diversification and have a lower risk of bankruptcy. Since larger firms are more diversified, there is little chance of exposed to financial distress (Rajan and Zingales, 1995). Further, the analysis suggests that the larger firms reduce the level of information asymmetries in the market and obtain financial resources easier (Padron et al., 2005). Most Indian firms are financing their activities by using bank loans since it is readily available in a cheaper way. This may be due to the better credit history of firms. The reason is that large firms are positively viewed by credit rating agencies. They are bestowed with a higher grade of credit rating that enables the firms to get a higher amount of loan at a lower cost and stimulates the firm to lever up their capital structure.

However, it is observed that size has a negative relationship with leverage in the post-crises period. It indicates that firms with aggressive leverage in the pre-crisis period gradually reduced their dependence on debt in the post-crisis period. The reason is that debt reaches a certain level during pre-crises period. Hence, additional borrowing during post-crises period causes the inability of the firm to meet its financial obligation that creates a liquidity problem to the firm during post-crises period. It is also evident from the Table 4 that liquidity shows a negative impact on leverages. It indicates that size is not a significant determinant of leverage after the crisis period. Hence, it suggests that it is not easy even for large firms to raise capital through debt. Results for random effect model also exhibits similar results like fixed effect models

Tangibility has a significant positive impact on leverage during pre-and post-crises period. Tangibility is used as proxies for collateral by firms to obtain loans. The significant and positive value of tangibility indicates that Indian firms are conventional and prefer to use the higher value of assets as collateral since it mitigates the adverse selection problem when loaning capital. However, tangibility decreased in the post-crises period since firms are trying severely to reduce their loans.

The cost of debt has a significant impact on long-term leverage but is negatively related to leverage ratio. This implies that mangers are taking precaution while raising debt with the

high cost. This clearly displays that both the firms and lenders are cautious after the crisis period. Random effect model identifies that cost of debt is an important determinant since negative relation with leverage expecting a high discount rate to decrease the number of possible investments. The cost of debt and debt service capacity gain more importance during post-crisis period than a pre-crisis period. Further, Table 4 shows that non-debt service capacity does not have any impact on the leverage ratio. The results specify similar findings observed in random effect model. A high debt service capacity of firms makes repayments easier and generate confidence of creditors. The results show that debt service capacity is a significant parameter which is positively related to the amount of debt in firms' financing structure after crisis period. It may be due to the conservative behavior of firms and lenders after crisis period

It is evident from the results that the relationship between profitability and leverage are negative and statically significant. It implies that profitability has a significant negative influence on leverage. This supports pecking order theory. This is similar with the findings of Chakraborty (2010) and De-Miguel and Pindado (2001) which support the pecking order hypothesis. The analysis proposes that Indian firms prefer to use internal sources of funding when profits are high. Additionally, the coefficient of profitability is statistically different during the crisis period leading to a negative relationship with the leverage ratios. This result implies that firms with higher profitability are using a lower amount of debt financing than before post crises period.

As per pecking order theory, firms with high liquidity normally borrow less. Moreover, managers manipulate liquid assets for shareholders against the interest of debt holders, increasing the agency cost of debt. Hence a negative relationship between liquidity and leverage is expected. If liquidity is having a positive impact on leverage, it acts as an indication of the capability of firms to meet short-term obligations. The positive impact of liquidity also acts as a tool to reduce the asymmetry of information in the public field. High solvency firms normally increase its borrowing capacity. It is observed that the firm uses its cash and other short-term assets in an efficient way during pre-crises period. Therefore, additional borrowing increased during that period. This additional borrowing causes the inability of Indian firms to meet its financial obligations after financial crises period. The results of study exhibit that liquidity has significant negative impact on leverage during post crises period. This finding is in line with the results of Ozkan (2001) and Prowse (1990). It suggests that after post-crises period, firms that do not meet its short-term obligations and specify the liquidity, are not able to condense the asymmetry of information in the public

sphere. The problem of asymmetric information affects the reduction of lending. The inclination of parties to lend money to each other becomes pretentious and cause a weakening of trust and eventually in liquidity. The results of the study indicate that private lenders have superior information than market dominated system. It appears from the outcomes that firms are more inclined to use internal funds after post-crisis period.

Theories state that profitability increases with decreased liquidity. Ross (2000) as well as Gitman (2003) indicate a negative relationship between profitability and liquidity. If firms heavily invest in current assets tend to increase holding costs leading to reduced profitability. Since significant leverage level crops up agency problem between shareholders and creditors (Fama and French 1998), negative relation is anticipated between leverage and profitability. The results of the study exhibit that profitability has significant negative impact on leverage during post and pre-crises period. This result is in conformity with Hall et al.'s (2000) study. Low and negative liquidity generates negative profitability due to larger needs for loans. Low and negative profitability arises in the study that may attribute to insufficient cash flows during both periods.

Tangibility is about having a substantial influence on the leverage of firms after financial crises period. Profitability, the cost of debt, liquidity, and debt service capacity are negatively impacted to leverage a firm. It clearly specifies that profitability has less explanatory power in post-crisis period in comparison to the pre-crisis period. Hausman Test reports that Chi-squared statistic is significant and indicates that fixed effect model is more appropriate than the random effect model since P-values is significant at 1% level. The results acclaim that crisis period has had a significant impact on the leverage of our non-financial firms in India.

The coefficient of determination, R^2, reflects the goodness of fit of the regression. According to Table 4, R^2 is 17 and Adjusted R^2 is 0.14 during pre-crises period. R^2 is 16 and Adjusted R^2 is 0.15 during post-crises period suggesting that only 15 % of the variance of leverage is explained by the model, and 85 % are unexplained. So, it suggests that 85 %of variation may be caused by other variables. This indicates that the regression model does not fit the data well (Bougie and Sekaran, 2010). These values are low compared to other studies on the impact of the crisis on capital structure decision. Similar findings are also noticed in the pre-crises period (Deesomsak, Paudyal, and Pescetto, 2004; Iqbal and Kume, 2013; Zarebski and Dimovski, 2012)

CONCLUSION

This study has investigated the impact of financial crises on determinants of capital structure of listed non-financial Indian firms by using the fixed effect and random effect models. The study finds that coefficient of profitability, size, and tangibility are significant determinants in capital structure choice decision of companies. It also discovers that coefficient of tangibility is having a greater influence on capital structure decision during pre-crisis and post-crisis period. It exhibits that tangible assets support as collateral for debt during these periods. Trade-off Theory suggests that tangibility and leverage have a positive relationship with them. The firm can utilize their tangible assets and get more external finance against their tangible assets. However, the analysis displays that tangibility has decreased from 0 .315 to 0 .176 during pre-crises to post-crises period. It suggests that firms are less likely to acquire debt during post-crises period.

The study has found that coefficient of profitability is negative but significant at 1% level. It indicates that coefficient of profitability is inversely related to leverage during pre-crisis and post-crisis period. So, it implies that the firms with higher level of profitability tend to use less debt in their capital structure. The study indicates that most of the Indian firms increase their equity value by decreasing their debt ratio during post-crises period. The results support to pecking order theory. These findings are also in conformity with Titman and Wessels (1988), Rajan and Zingales (1995), Graham (2000), Antoniou, Guney, and Paudyal (2008), Jong et al. (2008), and Sinan (2010). The coefficient of size reveals that there is a significant positive relationship exist in-between firm's size and leverage during the pre-crises period indicating that large size firms prefer to have more debt in their capital structure. It supports the trade-off theory. During post-crisis period, size shows negative relations with leverage indicating that lenders are apprehending to lend the firms because of the unsuitable market environment of the country. The study also displays that cost of debt and liquidity are significant determinants and their effects increased during post-crisis period. The coefficient of liquidity is negative and exhibits an insignificant association with leverage. It indicates that firms have sufficient liquid assets to finance their operations. The study also reveals that there is negative, and insignificant relationship exists between leverage and Non-Debt Tax Shield indicating that amortization value of the assets is not taken into consideration in the case of long-term debt. The study suggests that pecking order theory has more explanatory power in comparison to other theories explaining the factors which determine the capital structure decision of listed firms of India.

In supplementary to it, the capital structure decision is not only a product of company-specific factors but also the result of good corporate governance and market environment of countries in which firms operates. The contribution of study has three implications. This study provides an evidence of firm-specific factors such as size, tangibility, profitability, liquidity, and tax shield matters prominently in deciding the financial policy of firms. Secondly, this study is relevant to decision makers of firms since it will give an idea to know the behavior of capital structure in crises period so that it will enable them to take suitable policy actions to stabilize their firms Thirdly, this study will help to both researchers and academicians to understand the importance of institutional and market factors in determining the capital structure policy of firms in an economy. However, further research can be carried out by taking more firms and some macroeconomic factors to discover the relevant determinants impacting capital structure decision of firms. The results of the study have important implications at the firm and macro levels. The study suggests that it is high time for all firms to implement an effective and efficient credit policy, which will improve the performance level of firms' growth.

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