Analyzing the Relationship Between Management Efficiency, Capital Structure, and Firms' Performance in a Turbulent Environment : Evidence from India

** Sakshi Khanna*
*** Amit Srivastava*
**** Yajulu Medury*

Abstract

The financing policy plays an important role in attaining strong economic fundamentals for the firms in the long run. For obtaining a unified financing policy, it is important to study the linkage between the firms' financing policy and their performance in different phases of the cycle. This study analyzed the effect of the 2008 business cycle on the performance of Indian firms with respect to management efficiency in terms of their choice of capital during the period of recession (2008-09). It is a panel data study and the sample consists of the firms listed on BSE for the time period from 1997-2013. The results showed that there is a difference in the performance of the firms depending upon their choice of capital. It also discussed the possible actions the managers could undertake while raising finances in order to maximize the value of the firms.

Keywords: **capital structure decisions, value of firm, recession, panel data**

JEL Classification: E320, G30, G32

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A mix of debt and equity on the liability side of a firm's balance sheet, showing how the firm is financed is its capital structure. The objective of capital structure decisions is the judicious use of different sources of funds that minimizes the cost of capital and maximizes the stockholders' wealth. Such a combination of debt and equity is known as optimal capital structure. An optimal capital structure enhances the competency of a firm and imparts higher returns to shareholders compared to the returns provided by an all equity firm (Khanna, Srivastava, & Medury, 2014). Therefore, it is very important for a firm to know how it would obtain its financing.

The dependence of a firm's performance on its capital structure has always been an important topic of research amongst the financial scholars. Several theories of capital structure have been developed -the irrelevance theory of capital structure given by Modigliani and Miller (1958), and the relevance theories such as the trade-off theory (Kraus & Litzenberger, 1973), pecking-order theory (Myers, 1984), and market timing theory (Baker & Wurgler, 2002). In the framework of these theories, a lot of work has been done on the determinants of capital structure. Prior studies (Booth, Aivazian, Demirgu-Kunt, & Maksimovic, 2001) found that a firm's decision - whether to go for equity or debt depended on both the internal firm level characteristics as well as on the external macroeconomic conditions. For enhanced performance of firms, it is important for the managers to understand the implications of these factors on the capital structure decisions.

* *Research Scholar,* Department of Humanities and Social Sciences, Jaypee University of Information Technology, Waknaghat, Solan, Himachal Pradesh. E-mail: email2.sakshi@gmail.com
** *Assistant Professor,* Department of Humanities and Social Sciences, Jaypee University of Information Technology, Waknaghat, Solan, Himachal Pradesh. E-mail: sriam_2000@yahoo.com
*** *Director - Higher Education,* Bennett, Coleman and Co. Ltd., New Delhi. E-mail: yaj.medury@gmail.com

We observed that in the area of capital structure, comparatively less work is done, which takes into consideration the effect of the macroeconomic factors. In order to obtain a unified financing policy that reduces the consequences of the economic cycle on firms' performances, the linkage between the firms' financing policy, and their performance in different phases of the cycle is an important area of study.

The debt and equity financing choice is the main responsibility of the financial managers, and how efficient they are in taking these decisions is reflected in the performance of the firms. The objective of this paper is to investigate whether there is a difference in the performance of the Indian firms depending upon the choice of capital during the period of recession (2008-09). The choice of a firm's capital structure is measured by the debt to equity ratio, which is used as a proxy for management efficiency and a firm's performance is measured by return on total assets.

The Subprime Crisis and the Choice of Capital for Indian Firms

Since the last couple of decades, the world economy has been experiencing frequent financial crises, and almost every firm is affected by economic shocks (Tang, Habibullah, & Puah, 2007). The recent financial crisis of 2008-09 provides an opportunity to investigate the effects of the financial shocks on capital structure decisions of the Indian firms. The economic slump began when the U.S. housing market went from boom to bust and large amounts of mortgage-backed securities and derivatives lost their significant value. The crisis quickly spread to other economies around the world including India. A slowdown in the U.S. economy was bad news for India. Indian companies have major outsourcing deals from the U.S., so India's exports to the US decelerated. The crisis started from the withdrawal of capital from India's financial markets; a decline of 63% could be seen in India's balance of payments (Bajpai, 2010). The recession led to panic in the Indian stock market ; on the other hand, the Indian banking system had comparatively less exposure to the crisis. The net effect of the financial crisis was that it disrupted the financial markets ; thus, reducing the amount of debt and equity financing available to the firms. Most of the firms faced difficulties in raising capital - they had trouble in accessing the stock markets, faced higher costs of borrowing, and had difficulties in opening or renewing a credit line. The firms sold their assets to get cash in order to support their operations (Campello, Graham, & Harvey, 2010).

In order to understand the choice of capital of Indian firms during recession, the financial data of the firms was analyzed, and it was found that there were some firms that had raised equity during the period of recession, that is, in 2008-09. This raised curiosity in our minds - that why did these firms take a risk and issued equity during recession? What backed the decisions of the firm managements while taking risks? Is there a difference in the performance of the firms depending upon their choices of capital, which in turn depends upon the efficiency of the firm managements ? In order to find the answers to these questions, this paper explores the efficiency of firm managements in taking decisions regarding the choice of capital and how this affects the performance of firms. The paper tries to examine whether there is a difference in the performance of those firms which raised equity in the period of recession (i.e. 2008-09) with respect to those which did not raise equity during recession.

The pre-issue comparison of the financial data of the firms over the years shows that the firms which had issued equity had a stable and high performance in comparison to those companies which did not issue equity. Further strengthening this finding, a panel data analysis is conducted to examine how the choices of capital during the financial frictions affected their performance over time and across firms for the period from 1997-2013.

Review of Literature

The financial crisis started at the end of 2007 in the subprime credit market and led to a liquidity crisis in the short-term money markets (Brunnermeier, 2009; Fosberg, 2012). The crisis had its consequences not only in the U.S., but it spread to other countries as well. The financial crisis not only affects the economy of a nation, but also leaves many firms financially constrained. Consequently, most of the financially constrained firms face difficulties in

raising capital. To study the preference of the firms for their choice of capital during recession, let us have a look at the various studies done in this area.

The literature shows mixed effects of the crisis on the choice of capital structure during recessions. Supporting the usage of internal funding and the dependence of firms more on bank credit is visible in the survey conducted by Campello et al. (2010) on the real effect of financial constraints during financial crises. On the other hand, there are studies that support the usage of debt and equity. The study conducted by Pattani, Vera, and Wackett (2011) observed that there was an increase in public debt as well as in the public equity issuance by UK firms in 2008-09 and a decline in debt in 2009-10 (post recession). At the same time, studies by Fosberg (2012) and Kahle and Stulz (2013) reported a significant increase in debt ratios of U.S. firms over the pre-crisis period of 2006-08 followed by a gradual decline in debt levels by the end of 2010 (i.e. the post-crisis period). Supporting the usage of debt before and during the crisis was also shown in the work of Srivastava (2014) for the Indian steel and banking industries listed on BSE 500 for the period from 1999-2000 to 2012-13.

In addition to these studies, there are studies that opined that the crisis did not have a significant impact on the financing of firms. One such study is that of Akbar, Rehman, and Ormrod (2013) that was conducted for private UK firms. They found that the long-term financing was not affected by the crisis, but the crisis impaired the financing channels of short-term debt and trade-credit. The authors also suggested that in order to hedge against the negative impact of credit contractions, the firms held more cash and issued more equity. Similarly, Brun et al. (2013) argued that an increase in equity of French firms after the crisis resulted mainly from the increase in retained earnings, particularly for SMEs and an increase in the issue premiums received by large firms.

From the literature, it can be seen that there is no pronounced confirmation that the financial crisis triggered substantial changes in firms' capital structure choices. Firm-level characteristics and effort in timing the market are still the strongest factors that influence the determinants of the firms' capital structure choices (Kayo & Kimura, 2011; Khanna, Srivastava, & Medury, 2013).

As it is known that the choice of capital structure of a firm affects its performance, so now, let us see what the studies have to say about the relationship between capital structure in different phases of a cycle and firm's performance. Opler and Titman (1994) observed a significant negative relation of firm performance and financial distress. Asgharian (2003) observed similar results for Swedish firms. He tested the performance-distress relationship and found that the highly leveraged firms in distressed industries faced relatively lower stock returns. In contrast to a negative relation, a weak relationship between financial distress and firm performance was also observed. A study conducted by Claessens, Djankov, and Xu (2000) on a sample of more than 850 publicly listed firms in four crisis countries (Indonesia, Malaysia, the Republic of Korea, and Thailand) and two comparators (Hong Kong and Singapore) claimed that firm-specific weaknesses that existed before the crisis was an important factor in the deteriorating performance of the corporate sector. The study conducted by Bergstrom and Sundgren (2002) on financially distressed firms of Sweden; Sufian and Habibullah (2010) on an Indonesian bank; Pradhan (2011) on some 450 Indian manufacturing firms; Dolenc, Grum, and Laporsek (2012) on Slovenian firms; Tan (2012) on a sample of 277 firms from eight East Asian economies, and so forth indicated that the financial crisis had a negative and significant impact on the profitability of firms during the financial crisis.

The literature suggests that the financial crisis had a mixed impact on the firms' choice of financing and had an inverse relation with firm performance. Therefore, this study will contribute in bolstering the research methodology and will provide some useful insights in designing a more appropriate policy for Indian firms.

Methodology

The study analyzes the differences in the performance of Indian firms for the period from 1997-2013, depending upon whether they issued equity during the period of recession (2008-09) or not. The firms taken for the analysis are listed on the BSE and had released their IPOs before the year 1997. In the study, the dependent variable is the firm's performance, measured by return on total assets ; the independent variable is the firm's choice of capital

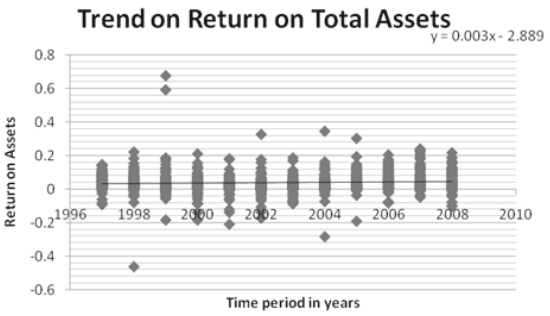
Table 1. Variables and their Computations

Variable Name	Computation
Return on Total Assets	Profit after tax/Total Assets
Book Leverage	Borrowings
Share capital	Paid up equity capital
Debt to equity	Book leverage/Share capital

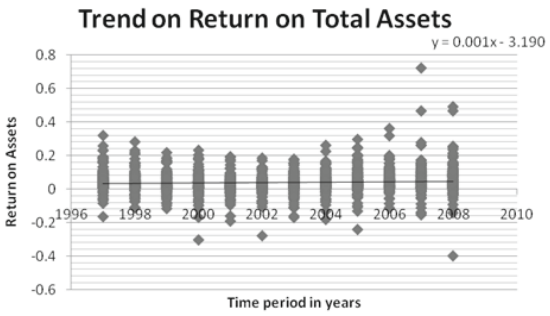
Table 2. Number of Firms for the Years 1997-2013

Firms	No. of firms
Issued Equity	82
Not Issued Equity	168

Figure 1. Pre-Issue Financial Data Analysis



(a) Firms which Issued Equity



(b) Firms which did not Issue Equity

represented by debt to equity ratio, which is the proxy for management efficiency.

The Table 1 shows how the variables are computed. All the variables have been computed using the definition of variables from COMPUSTAT. The raw data were taken from the database CMIE PROWESS.

The objective of the present study is to analyze whether there is a difference in the performance of firms with respect to management efficiency, in terms of their choice of capital during the period of recession (2008-09). For this, the firms were first categorized into two datasets depending upon whether they had issued shares in the year 2008-09 or not. Both the datasets contain the firms belonging to the same set of industries. The paper analyzes the performance of the firms over time and across firms.

For a particular year, the firms with missing information on the variables like assets, sales, borrowings, equity capital were dropped from the list for that year. The Table 2 shows the number of firms used in the study. From the Table 2, it is clear that there were comparatively fewer firms that had issued equity during recession.

↳ **Pre - Issue Financial Analysis :** In order to find answers to the questions that why the managers had taken the risk of issuing shares during recession, what backed their decision of issuing shares, and so forth, a pre-issue financial analysis of the firms was conducted. The Figure 1 shows the trend of return on total assets of the firms, which had issued shares during recession and of those that did not issue shares.

The pre-issue comparisons of the return on total assets of the firms over the years (from Figure 1) show that the firms, which had issued equity, had high performance in comparison to those firms that did not issue equity. A

Table 3. Fixed Effects and Random Effects Model

Variable	Fixed Effects Model		Random Effects Model	
	Coefficient	Prob.	Coefficient	Prob.
Const.	0.040089	0.00***	0.039669	0.0000***
Debt-to-Equity	-0.000176	0.00***	-0.000149	0.0151**

Note : *, **, *** means the values are significant at 10%, 5%, and 1% levels, respectively

Table 4. Hausman Test

Test summary	Prob.
Cross-section random	0.02910**

Note : **means the values are significant at the 5% level

profitable firm is able to generate more than enough cash to cover its operating expenses, taxes, and payments to creditors. This gave confidence to the managers of the firms to take risks and issue equity, even in a turbulent environment. This provided us an insight to study the differences in the performance of the firms in context of the efficiency of their managements. Further, to test this empirically, a panel data analysis is conducted.

The Model Used : In order to analyze the impact of the financing mix on the value of firms over time and across firms, panel data analysis was conducted. As noted by Schulman, Deborah, Sellers, and Kennedy (1996), panel data analysis allows in-depth analysis of complex economic and related issues which could not be treated with equal rigor using time-series or cross-sectional data analysis alone. The panel data analysis uses the effects of time as much as the effects of the cross sections (Wooldridge, 2002). This technique is preferred over the other techniques because this technique gives results that are more accurate. In panel data analysis, the most commonly estimated models are the fixed effects model and the random effects model. The fixed effects model is based on the assumption that the coefficients change between the units and do not vary over time, that is, they are time invariant. On the other hand, the random effects model accepts constant coefficients among the units. In this model, the individual effects of the firms are coincidental, and it assumes that the constant will be determined randomly. In order to determine which model should be applied, the Hausman Test is used. For both sets of firms-first the fixed effect model, then the random effect model, and finally the Hausman Test is run.

Data Analysis and Results

This section discusses the results of the panel analysis for the two sets of firms-those that issued equity in recession and those that had not issued the same. Let us talk about the results of firms that issued equity in recession. First, the fixed effects model is run, then the random effects model, and finally the Hausman test.

The Hausman test of the random effects model (from Table 4) rejects the null hypothesis that the preferred model is random effects. Hence, the fixed effects model is run for the firms. Fixed effects explore the relationship between management efficiency and firm's performance within the entity (i.e. firm). Each firm has its own individual characteristics that influence its performance. This model removes the effect of the time-invariant characteristics. The results (from Table 3, fixed effects model) show that debt-to-equity has an indirect relation with firm performance and is significant. This shows that the management is efficient and is able to take decisions regarding the choice of capital structure efficiently.

Further, dummy variables are used to account for individual (company) effect, and the coefficients are shown in the Table 5. From the Table 5, it can be seen that the intercepts differ across the firms, and each firm's intercept does not vary over time. Out of 82 firms, 42 firms have negative coefficients, which mean that they have an

Table 5. Dummy Variable Coefficient

ID	Coefficient	ID	Coefficient	ID	Coefficient	ID	Coefficient
1	0.046034	22	0.084520	43	-0.004977	64	0.031357
2	0.011997	23	0.010327	44	0.021994	65	-0.009121
3	0.032846	24	-0.030167	45	-0.016716	66	0.009249
4	-0.033439	25	-0.042304	46	-0.022788	67	-0.018701
5	-0.029520	26	-0.001901	47	-0.027850	68	-0.033536
6	0.004631	27	-0.002124	48	0.011863	69	0.068739
7	0.001240	28	-0.019428	49	0.026398	70	0.053471
8	-0.022229	29	-0.033581	50	0.031612	71	0.058076
9	-0.017552	30	-0.022215	51	0.004358	72	-0.012387
10	-0.011080	31	0.024204	52	-0.034034	73	-0.024149
11	0.007416	32	0.037435	53	0.011559	74	-0.039608
12	-0.011392	33	-0.019977	54	-0.021258	75	0.019116
13	-0.028192	34	0.035051	55	-0.027960	76	0.050251
14	-0.054231	35	0.007630	56	-0.019196	77	0.083846
15	-0.003349	36	0.049363	57	0.002664	78	-0.009571
16	-0.071932	37	0.014937	58	-0.060688	79	-0.025245
17	-0.013795	38	-0.007954	59	-0.009570	80	0.034336
18	0.002044	39	0.014064	60	0.014406	81	0.019167
19	0.017233	40	-0.014692	61	-0.015857	82	-0.014775
20	-0.035202	41	-0.020794	62	-0.039234		
21	-0.026570	42	0.138045	63	-0.030638		

Table 6. Fixed Effects and Random Effects Model

Variable	Fixed Effects Model		Random Effects Model	
	Coefficient	Prob.	Coefficient	Prob.
Const.	0.041771	0.0000***	0.041571	0.0000***
Debt-to-Equity	-0.000103	0.0611*	-8.78E-05	0.0817*

Note : *, **, *** means the values are significant at 10%, 5%, and 1% levels, respectively

Table 7. Hausman Test

Test Summary	Prob.
Cross-section random	0.4871

inverse relation with firms' performance. Next is the analysis of those firms, which did not issue equity during recession. The tables show the results of the fixed effects, random effects, and the Hausman test. The Hausman test of the random effects model (from Table 7) fails to reject the null hypothesis that the preferred model is random effects. Hence, the random effects model is run for the firms. The rationale behind the random effects model is that the variation across entities is random, and it generalizes the inferences. It can be seen from the Table 6 (random effects model) that debt-to-equity has no significant impact on the firm's performance. Thus, one can

say that for these firms, the efficiency of the management does not play an important role in the decisions regarding the choice of capital.

Discussion

The results shown in the previous section are very interesting. This study shows that for the firms that issued equity during recession, individual characteristics of each firm influenced its performance, but this was not so in case of firms that did not issue equity during recession. There is no variation among the firms which did not issue equity during the recession and the effect is determined randomly. The results show that there is a significant impact of management efficiency on the performance of firms that had issued equity during recession and not for the firms that did not issue equity.

The pre-issue data analysis of the two sets of firms shows that the firms which took the risk of issuing equity during the recession had high performance in comparison to the firms that had not issued equity. Hence, the financial managers were right in taking risks, and the firm managements were able to time their decisions regarding the choice of capital efficiently. Thus, the stability of the firms helped the firm managements in taking efficient decisions regarding the choice of capital, and in turn, these efficient decisions improved the performance of the firms.

Thus, it could be said that the managements of those firms that had issued equity were more efficient than the managements of those firms that did not issue equity. Efficient managers can time the markets properly and are able to take correct decisions regarding the choice of capital. The results of the manager's choice of capital structure are reflected in the performance of the firms. Efficient decisions by firm managements not only help them in carrying out the operations of the firms smoothly, but also increases the efficiency of the firms during periods of recession.

Research Implications

The appropriate goal of financial managers is to maximize the current value of a firm's stock price. One of the factors that affect the stock prices of a firm is the future cash flows a firm can generate, and the managers can affect the cash flows by selecting the appropriate source of finance that minimizes the overall cost of capital. Here, it is seen that efficiency of the managers plays an important role in the capital structure decisions of the firms and the result of their choice of capital is reflected in the performance of the firms. Therefore, the managers must identify the windows of opportunity during which capital issuance is less costly and raise the source accordingly (i.e. debt or equity). The efficient decisions of the managers not only helps them in carrying out the operations of the firms smoothly, but also increases the efficiency of the firms during the periods of recession.

Conclusion

This paper shows that the stability of a firm backs the decisions of its management regarding the choice of capital and these efficient decisions, in turn, improve the performance of the firms. It also shows that there exist differences in the firms' performance based on the efficiency of the firm managements. The efficiency of its management not only provides a competitive advantage to a firm, but also provides a firm with the capability to tolerate a financial crisis. A sound financial management would result in superior performance of a firm.

Limitations of the Study and Scope for Future Research

The main limitation of the study is that only one proxy, that is, debt-to-equity is used to measure the efficiency of a

firm's management. To make the results more robust, more proxy variables could be used. Another limitation is that the analysis does not consider the sectoral classification of the firms. The firms in different sectors behave differently ; hence, future studies can analyze the firms on the basis of sectoral classification.

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