Is Equity Market Timing the Sole Criteria for Capital Structure Decisions? An Insight from Indian Firms

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Abstract

Work done on capital structure mainly focuses on developed economies and only few studies have been conducted for developing economies, especially for India. The present study is the first one which explores the validity of equity market timing for the Indian market. The paper tried to overcome the limitations of previous studies by capturing the individual year effect and by categorizing the firms into three sectors of the economy- primary, secondary, and tertiary. The present study broke the myth about the capital structure decisions, in which it is believed that market timing plays a dominant role, while all other variables are not considered as important as market timing. The period of the study ranges from the year 1992-2011 and the findings revealed that Indian firms have started relying more on their internal firm level characteristics like profitability rather than on market timing for their capital structure decisions. The results were similar when the firms were classified into three sectors, even though the effect of equity market timing was more pronounced for secondary sector firms as compared to the primary and tertiary sector firms. Therefore, the decision-makers should focus on strengthening the firm level characteristics (like profitability) rather than relying solely on equity market timing.

Keywords: capital structure, equity market timing, IPO, three sectors of an economy

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The financial decisions of a firm are the most critical ones for the financial managers. Firms require finance for acquiring the resources needed for its growth and survival. There are two major sources of financing - debt and equity, associated with different levels of risk, benefit and control. The mix of a company's debt and equity is its capital structure. A capital structure is an optimal one, which minimizes the average cost of capital and improves the financial performance of the company.

There are several theories of capital structure, which try to explain the debt-equity choice of the firm- starting from the Modigliani and Miller's (1958) "irrelevance theory of capital structure" to the relevant theories. Over the years, the three major theories of capital structure that have emerged are - *the trade-off theory, which states that debt is taken up to the level at which the* tax benefits of debt are balanced against the bankruptcy costs (Kraus & Litzenberger, 1973); *the pecking-order theory* in which the firms finance their investments first with retained earnings, then with debt and finally, with equity (Myers & Majluf, 1984) and the market timing theory, which states that the firms attempt to issue equity or debt when their market values in general are over- or under- valued relative to the book and past market values respectively.

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Recently, the market timing theory (Bougatef & Chichti, 2010) has challenged the trade-off and pecking order theories, on the basis that they are unable to explain the changes in debt-equity ratio, which come with respect to change in time, changes in government policies, changes in market conditions etc. Even in the survey done by Graham and Harvey (2001), the CFOs have admitted that they try to time the equity market and that the market timing plays an important role in their financing decisions. The timing of raising funds is very crucial because the correct decision would not only reduce the cost of capital, but would also increase the power of the firms to face the losses. Baker and Wurgler (2002) have also argued that market timing theory is the most natural explanation for the capital structure choice.

This study analyzes the impact of equity market timing on the capital structure of Indian firms. The reason for selecting Indian market is twofold, first- Indian economy is one of the fastest growing economies in the world and second- as far as authors' knowledge, no work has been done on equity market timing for Indian market. Therefore, the authors are interested in knowing whether the Indian Firms time the markets or not and what are the other factors which affect the capital structure decisions. A novel approach is used to capture the individual year's effect on the capital structure of the Indian firms by taking different IPO years separately.

The paper examines whether the firms issue equity when their market values are over- valued relative to the book and past market values or not. It also analyzes the effect of other variables like asset tangibility, profitability, and size on capital structure of the firms. Further, the study also analyzes the effect of equity market timing on the capital structure of the firms by categorizing them into the three sectors - primary, secondary, and tertiary.

Market Timing Theory

The market timing theory states that, whichever market looks more favorable (i.e., debt or equity), managers will issue that security. Accordingly, there are two types of timing: equity market timing (related to the equity market) and debt market timing (related to debt market) (Kaya, 2007). Equity market timing indicates that firms are likely to issue equity when their market values are high relative to book and past market values, and to repurchase equity when their market values are low (Baker & Wurgler, 2002). Whereas, the debt market timing theory says that the managers tend to issue debt when the current interest rates are low compared to past rates (backward-looking timing) and tend to issue long-term debt when future excess bond returns are predictably low (forward-looking timing) (Kaya, 2007).

The theories say that, either the managers may create the conditions favoring the equity issue by releasing positive information (time-varying mispricing in the equity market) or they may time the market, i.e., they issue equity only when they believe its cost is irrationally low and repurchase equity when they believe its cost is irrationally high (costs of adverse selection). The bottom line of equity market timing is that the managers try to exploit the temporary fluctuations in the cost of equity relative to the other forms of capital, in order to decide whether to issue equity or not. It is vital for the finance policy-makers to understand what drives the financing of firms and find the perfect capital structure in terms of risk / reward payoff for shareholders.

Review of Literature

Traditional theories explain that either firm's capital structure is due to the trade-off between costs and benefits of debt and equity (Fischer, Heinkel, & Zechner, 1989 ; Jensen & Meckling 1976; Ross 1977; Stulz, 1990), or they follow the pecking order theory (Myers & Majluf, 1984; Shyam-Sunder & Myers, 1999). Fama and French (2002) stated that, the firms preferred debt to equity when in need of external finance.

It is argued that equity market timing is an important aspect of corporate financial decision-making. A recent study of Baker and Wurgler (2002) shows that market timing has large and persistent effects on capital structure of US firms and the changes in leverage come through net equity issues. Supporting the persistent effect of market timing theory, the stock returns are seen as the primary drive of capital structure changes (Welch, 2004). Contrary

to these studies, Bie and Haan (2004) does not find a strong and persistent effect of market timing on capital structure of the firms; Alti (2006) and Hovakimian (2006) support the negative and short-term impact of market timing on the capital structure choice. Even, Elsas, Flannery, & Garfinkel (2006) finds that less than 10% of changes in leverage levels can be explained by market timing and pecking order considerations. Further, Feng, Ghosh, and Sirmans (2007) says that attributing to the special regulatory environment of REITs, the management of REITs preferred issuing debt to equity while raising funds.

Providing evidence for the market timing theory of capital structure, there are the studies done by Kayhan and Titman (2007), Elliott, Koëter-Kant, & Richa (2007), Huang and Ritter (2009), and Islam and Heaney (2009). In addition, the work done by Khanna, Srivastava, and Medury (2013) on the market timing theory in India, reveals that the firms significantly time the market, but at the same time they strengthen their firm level characteristics.

From the above literature, one can say that market timing plays an important role in defining the capital structure of the firms. It influences the issuing and the repurchasing decisions of the firms. The firms issue equity when the market is high and repurchase equity when the market is low. The managers, who are able to take the advantages of market fluctuations, lower the overall cost of capital and add to the shareholder value.

The above literature concentrates on the effect of market timing on capital structure of the firms as a whole. As is predicted by the theories, the firms' capital structure is systematically different across the sectors, so now let us have a look at what the theories have to say when the firms are classified into various sectors. Love and Peria (2005), while studying the financing patterns of Indian firms, found that manufacturing firms have higher debt ratios than service firms. The computer industry is riskier and more volatile than others are, so the financial institutions might not be willing to give them credit. Thus, computer firms finance mainly with equity finance, primarily coming from their retained earnings. Woodruff (2007) in his study identified that the industry classification and the proportion of property, plant, and equipment to assets were statistically significant variables in explaining the debt capacity. He found that the manufacturing sector (non-high technology) had higher debt capacity. The regression results of Abor (2007) indicate that the agriculture, pharmaceutical, medical, manufacturing, construction and mining industries are more likely to use the long term debt while information and communication, wholesale and retail trade industries are more likely to use short-term debt.

Although the existing literature explains, the nature of capital structure decisions of firms from different perspectives, but a few research gaps have been identified which should be addressed carefully to get a better understanding about the nature of capital structure decisions taken by firms. The main research gaps identified are as follows :

(1) We did not find any work which could explain the nature of equity market timing for Indian firms.

(2) The previous studies did not take into account the individual year effect.

(3) To the best of our knowledge, there is no study which explains the effect of equity market timing when the firms are classified into the three sectors of the economy, that is, primary, secondary, and tertiary.

Therefore, to address these research gaps, the present study has taken the following steps :

(1) This study provides an opportunity to examine whether the equity market timing theory can explain the capital structure decisions of Indian firms or not. Most of the research studies done in this area have used the data from U.S., UK, Australia, Hong Kong, and so on.

(2) The study uses a novel approach to capture the year effect on the capital structure of the firms. In the previously done studies, the authors have clubbed the firm's data according to different levels of the IPO years, even if the actual IPO year was different for different cases. For example, Baker and Wurgler (2002) have taken the firms with IPO dates appearing between 1968 and 1998 for their study and have clubbed all the firms IPO+1 data together,

without considering the year in which the IPOs were issued, i.e. the firms with IPO year 1968, 1969, 1970 and so on, had their IPO+1 clubbed together. The data for IPO+2 of all the firms were again combined together irrespective of the actual IPO years of the firms and so on up to IPO+10. Others followed a similar pattern in their studies. Therefore, no previous studies took into consideration the year in which the IPOs were issued, which may be an important factor because the economic conditions change with time. In the present study, the firms' data have been club together according to different levels of IPO year, taking into consideration the year in which the firms issued their IPO. Therefore, the present study is supposed to provide better results as compared to earlier studies because it captures the year effect also, which has not been discussed so far.

(3) Further, the study compares the results of the regression analyzes when the firm's IPO+1, IPO+2 etc. of all the IPO years are clubbed together without considering the year in which the IPOs were issued (i.e., they are clubbed in the same way as is done by the authors of the previous studies done in this area) with the results of the regression analysis when the firm's IPO+1, IPO+2 etc. are clubbed taking into consideration the years in which the IPOs were issued.

(4) This study also tries to explore the effect of equity market timing on the capital structure of the firms by categorizing them into different sectors – primary, secondary and tertiary. As far as authors' knowledge is concerned, this would be the first study, which explores the effect of equity market timing on the three sectors.

(5) In order to make the results more robust, they are checked for heteroskedasticity using the White's test and if they are found so, then the heteroskedasticity is removed using the weighted least square method.

Methodology

The paper analyzes the capital structure choice of the firms around the IPO (initial public offering) years, holding the number of years, since the IPO, constant. Alti (2006) argues that IPOs are the most robust measure of market timing. The investors face more uncertainty and a higher degree of asymmetric information, while valuing the IPO firms than in the case of mature public firms.

Here, the firms that have issued their IPOs and have gone public are the ones, taken into consideration while studying the capital structure of the Indian firms. The sample consists of the firms which are listed on the BSE and the period of the study is 1992-2011 (from the IPO year 1992 up to the IPO year 2001 and it goes up to the year IPO + 10 respectively, for each IPO year). The IPO year 1992 is taken because of the fact that the growth of Indian capital market started after the beginning of liberalization, i.e., since 1991. The IPO year has been restricted up to the year 2001 only, since the study takes into consideration of up to IPO+10 years of data, therefore for the firm having an IPO year 2001, the data goes up to 2001 +10 year, i.e. 2011.

The Table 1 shows different variables used in the study along with their formulae. Authors using the definition of variables from COMPUSTAT have computed all the variables. The raw data have been taken from the database CMIE PROWESS.

For a year, the firms with the missing information on the variables like total assets, profitability, asset tangibility and sales have been dropped from the list for that particular year only. Apart from this, in order to avoid the effect of outliers, all those firms, which had book leverage values greater than one in a year, were also dropped for that particular year. It was done because if book leverage is greater than one, then book equity would be negative for that year and would have high default risk. Therefore, the academicians and practitioners exclude negative BE stocks from analysis (Brown, Lajbcygier, & Li , 2008).

The Table 2 shows the number of firms used in the study, for all the IPO years considered. The present study focuses on two objectives – first, to study the effect of equity market timing on the capital structure of the Indian firms and second, to study the effect when the firms are categorized into the three sectors of the Indian economy. The impact of different factors, which are supposed to be relevant according to the capital structure theories like-

Table 1. Variables and their Computations

Variable Name	Computation
Total Liabilities	Minority interest reserves + Borrowings (including Convertible Debt) - Convertible Debt + Current Liabilities + Deferred Tax liability
Book Equity, BE	Total Assets - Total Liabilities - Preferred Stock + Convertible Debt
Book Debt	Total Assets - Book Equity
Book Leverage, $\left(\dfrac{D}{A}\right)$	Book Debt / Total Assets
Market Equity	Common Shares Outstanding x Weighted Average Price
Net Equity Issues, e	Δ Share Capital = Δ Book Equity - Δ Balance carried to Balance Sheet
Net Equity Issues, $\left(\dfrac{e}{A}\right)$	Net Equity Issue / Total Assets
Newly Retained Earnings, $\left(\dfrac{\Delta RE}{A}\right)$	Δ Balance carried to Balance Sheet / Total Assets
Market-to-Book, $\left(\dfrac{M}{B}\right)$	(Total Assets - Book Equity + Market Equity) / Total Assets
Residual Change in Leverage, $\left[BE_{t-1}\left(\dfrac{1}{A_t}-\dfrac{1}{A_{t-1}}\right)\right]$	Lagged Book Equity divided by Total Assets minus lagged Book Equity divided by lagged Total Assets.
Asset tangibility, $\left(\dfrac{PPE}{A}\right)$	Net land and buildings + Net plant & machinery, computers and electrical assets + Net transport & communication equipment and infrastructure + Net furniture, social amenities and other fixed assets / Total Assets
Profitability, $\left(\dfrac{EBITDA}{A}\right)$	Earnings before Interest, Taxes and Depreciation / Total Assets
Size	Log (Sales)

Source: Authors' computation (using COMPUSTAT) (Δ = change operator)

Table 2. Number of Firms for Different Levels of IPOs for the IPO Years 1992-2001

IPO Year	1992	1993	1994	1995	1996	1997	1999	2000	2001
IPO+1	57	142	391	318	150	7	19	60	7
IPO+2	122	265	487	494	184	12	21	65	8
IPO+3	166	305	513	505	189	14	20	63	8
IPO+4	162	287	481	495	205	11	21	64	10
IPO+5	150	263	445	478	209	13	21	60	10
IPO+6	133	247	408	466	204	15	18	61	9
IPO+7	126	256	397	470	218	15	18	63	9
IPO+8	118	234	387	473	211	13	18	58	9
IPO+9	111	225	367	466	221	15	20	60	7
IPO+10	109	221	352	450	223	14	18	26	6

Source: Authors' compilation (using CMIE PROWESS)
Note : The number of firms here is after dropping the firms with missing values and applying the outliers.

asset tangibility, profitability, and size, are also studied.

Using Baker and Wurgler's (2002) market timing model, the first objective uses the full data set and for the second objective, the firms are first categorized into the different sectors of the Indian Economy and then the capital structure choice is analyzed for each sector. For both the objectives, the firms' data are clubbed according to

different levels of IPO, that is, IPO+1, IPO+2 and so on upto IPO+10, keeping into mind the year in which the IPOs were issue. The present study is different from the earlier studies done in this area, because here the regression is also run when the firm's data are clubbed according to different levels of IPO without taking into consideration the year in which the IPO was issued, i.e. IPO+1 of all the IPO years were clubbed together, then IPO+2 of all the IPO years and so on upto IPO+10. Therefore, this study clearly brings out the difference in the results of the regression analysis of the two methods. Since, it captures the year effect, so it is supposed to provide better results.

The Model Used

The capital structure of the firms is analyzed by studying the effect of the variables defined above on the change in leverage. The focus of the paper is to study the effect of market timing on the capital structure of the firms and for that, Market-To-Book (MTB) ratio is used as a proxy. This study also takes into consideration the effect of other variables like Asset Tangibility, Profitability and Size on the leverage of a firm (Rajan & Zingales, 1995). In order to capture the yearly timing of financing activities, change in leverage is taken as dependent variable (Islam & Heaney, 2009).

To study the effect of MTB and other variables on the change in leverage, the following equation (Equation 1) as discussed by Baker and Wurgler (2002) is used:

$$\left(\frac{D}{A}\right)_t - \left(\frac{D}{A}\right)_{t-1} = \alpha + \alpha_1 \left(\frac{M}{B}\right)_{t-1} + \alpha_2 \left(\frac{PPE}{A}\right)_{t-1} + \alpha_3 \left(\frac{EBITDA}{A}\right)_{t-1} + \alpha_4 \log(S)_{t-1} + \alpha_5 \left(\frac{D}{A}\right)_{t-1} + \varepsilon \quad ....(1)$$

Here α_1 is the constant, α_1, α_2, α_3, α_4, α_5 and are the coefficients of MTB, asset tangibility, profitability, size, and lagged leverage respectively and ε is the error term.

$\left(\frac{D}{A}\right)_t - \left(\frac{D}{A}\right)_{t-1}$ = change in book leverage and is the dependent variable,

$\left(\frac{M}{B}\right)_{t-1}$ = market -to - book ratio,

$\left(\frac{PPE}{A}\right)_{t-1}$ = asset tangibility,

$\left(\frac{EBITDA}{A}\right)_{t-1}$ = profitability; and to reflect the size of the firm, log of Sales has been taken $(S)_{t-1.}$

The subscript "t" reflects the time period and "t-1" reflects the lagged time. To capture the time series effects, lagged leverage is also included in the model in the form of $\left(\frac{D}{A}\right)_{t-1}$ as a control variable.

Since, leverage is bounded between zero and one, so whenever leverage is near one of these boundaries, the change in leverage goes in other direction regardless of the values of the other variables. Thus, lagged leverage has an inverse relation to the change in leverage.

To study the effects of the independent variables defined above on the change in leverage, the above Equation (1) is run for each level of IPO year, for all the IPO years (1992, 1993 and so on up to 2001) independently. For example, the level IPO+1 for the IPO year 1992, 1993 and so on up to 2001, represent the year 1993, 1994 and 2002 respectively; in the same way analysis of different levels of the IPO year up to IPO+10 level, has been done. The above equation is also run for different IPO levels, when the data of the firms are clubbed without taking into consideration the year in which the IPOs were raised.

Table 3. The Expected Sign of Coefficients of Different Variables

Dependent variable	Independent Variables		Profitability	Size
	MTB	Asset Tangibility		
Change in leverage	-ve	+ve	-ve	+ve
Net equity issue	+ve	+ve	+ve	+ve
Change in retained earnings	-ve	-ve	+ve	+ve
Residual change in leverage	-ve	-ve	-ve	-ve

Source: Authors' compilation based on different studies on Market Timing

Thereafter, the results of the regression equations are checked for heteroskedasticity using White's test and if they are found so, then the heteroskedasticity is removed using the weighted least square method. Since, the change in leverage depends upon net equity issue, change in retained earnings and residual change in leverage (which depends on the total growth in assets from the combination of equity issues, debt issues and newly retained earnings) therefore, the change in leverage has been divided into the three factors (Baker & Wulger, 2002). The relationship is shown below in the Equation 2.

$$\left(\frac{D}{A}\right)_t - \left(\frac{D}{A}\right)_{t-1} = -\left[\left(\frac{BE}{A}\right)_t - \left(\frac{BE}{A}\right)_{t-1}\right] = -\left(\frac{e}{A}\right)_t - \left(\frac{\Delta RE}{A}\right)_t - \left[BE_{t-1}\left(\frac{1}{A_t} - \frac{1}{A_{t-1}}\right)\right] \quad ...(2)$$

Here $\left(\frac{e}{A}\right)_t$ is net equity issue or change in share capital, $\left(\frac{\Delta RE}{A}\right)_t$ is change in retained earnings and $\left[BE_{t-1}\left(\frac{1}{A_t} - \frac{1}{A_{t-1}}\right)\right]$ is residual change in leverage. The meaning of "t" is same as discussed above.

Each of these three components of Equation (2) is regressed on MTB ratio and other independent variables of the Equation (1) separately to find out the factor, which affects change in leverage. First net equity is taken as the dependent variable and is regressed on the independent variables of Equation (1), thereafter; in the same way change in retained earnings and residual change in leverage are taken as the dependent variable and are regressed. If the change in leverage comes through the net equity issue, then it is in accordance with the equity market timing theory.

The results are again tested for heteroskedasticity using the White's test and if found to be positive, then the heteroskedasticity is removed using the weighted least square method. The expected sign of different variables used in the study, according to the equity market timing theory are shown in the Table 3.

Hypotheses

The following hypotheses were developed and are applicable for Equation 1 when the change in leverage is the dependent variable and also when the change in leverage is replaced by its three components (i.e., net equity, change in retained earnings, and residual change in leverage).

Hypothesis for Individual Variables:

⮑ **H0:** The variables like market-to-book, asset tangibility etc. do not have a significant impact on the change in leverage as per the equity market timing theory.

⮑ **H1:** The variables like market-to-book, asset tangibility etc. have a significant impact on the change in leverage

Table 4. Results of Regression for All Firms' Data

Panel A	Change in Leverage			
IPO Year	Market-To-Book Ratio	Asset Tangibility	Profitability	Size
1992	+1,+2,+3,+4	+9@,+10@	+3	+1,+2@,+6,+9@
1993	+1,+2,+4,+6,+8,+9@	+4,+6,+9	+3,+6@,+7,+8,+9	+1,+8@
1994	+1,+2,+6,+8@	+1,+2,+3,+4,+5,+6,+8,+10@	+1,+5,+7,+8,+9	+1,+2,+3,+4,+9,+10
1995	+1,+2@,+3,+7@,+9,+10	+2,+3@,+7,+8@	+4@,+5,+6,+8,+10	+2,+4@,+5,+7@,+8,+9,+10
1996	+2@,+4@,+5@,+6	+2@,+3,+4@,+5@,+6,+7,+8@	+1,+5@,+7,+8,+10	+1,+4@,+5,+7,+8
1997	+8@	+3,+4@	+8@	+8@
1999		+2,+6	+5	+2
2000		+1	+2,+3,+5@	+1,+2,+4@,+7@
2001				
All	+2,+6,+7,+8,+9,+10	+1,+2,+3,+4,+6,+7,+8,+9,+10	+1,+3,+5@,+8,+9	+1,+3,+4@,+5,+7@,+8,+9
Panel B	Dependent Variable = Net equity to assets			
IPO Year	Market-To-Book Ratio	Asset Tangibility	Profitability	Size
1992	+1,+5	+5,+8@,+9,+10@	+1,+2,+3,+4@,+5,+7,+10@	+1@,+8,+9,+10
1993	+1,+4,+5,+6@,+7@,+8	+4@,+5,+6@,+8,+9	+1,+2,+3,+4@,+5@,+6,+7	+1@,+2@,+5,+7,+9@
1994	+1,+2,+5,+6,+7,+8@,+9	+1,+2,+8,+9	+1,+2,+3,+5,+6@,+9	+1@,+2@,+8,+9@
1995	+1,+3,+4,+5@,+6,+7,+8@,+10	+3,+4,+5@,+6,+7,+8@	+1,+2,+3,+4,+5,+6,+7,+10	+1@,+3,+4@,+6,+7
1996	+3,+4,+6,+9	+2,+5@,+6@,+8@	+2@,+3,+4@+9	+2,+5@,+9@
1997	+2,+3,+4		+3,+4	+4@,+8
1999		+3,+6@		
2000	+3@,+4,+5	+4,+5@	+3,+5	+3@,+8
2001	+3,+4,+5			
All	+2,+3@,+4,+6,+8@,+10	+1,+2,+3@,+4,+5@,+6,+8	+1,+2,+3,+4@,+5,+6, +7,+8,+9,+10	+1@,+2@,+3@,+5,+6, +8,+9@,+10
Panel C	Dependent Variable = Change in retained earnings to assets			
IPO Year	Market-To-Book Ratio	Asset Tangibility	Profitability	Size
1992	+2,+3,+8@,+9@	+3,+7,+8@,+10@	+4,+6,+8	+2,+5,+6,+8@,+10@
1993	+2,+7@,+9,+10	+6,+7,+9@,+10@	+1,+2,+3,+4,+5,+6@, +7@,+8	+1@,+2,+3,+5,+6@, +7@,+9@, +10
1994	+2@,+4@,+6@,+8@	+5,+6,+8,+9	+1,+2,+3,+4,+5,+6,+8,+9@,+10	+1@,+4@,+8@
1995	+5@,+7,+8@	+1,+3,+5@,+8@	+1,+2,+3,+4,+5,+7@,+8,+10	+5,+6,+7@,+8@
1996	+3,+8@,+9@	+1,+8@,+9@	+1,+2,+3,+6,+7,+9@,+10	+3@,+4,+6,+8@,+9
1997	+3	+4@	+2,+3	+3@,+4@
1999	+3@,+4@,+8	+3@	+3,+6,+7,+8@	+8
2000	+4,+10@	+3,+7	+2,+3@,+5,+7@,+9,+10@	+3,+4,+7,+8@
2001		+6	+5,+6	
All	+1@,+2@,+3@,+4@,+5@,+7@,+8@	+1,+3@,+4,+5,+6@, +7,+8	+1,+2,+3@,+5@,+6@,+8,+9, +10	+2@,+3,+4,+6,+7, +8@
Panel D	Dependent Variable = Residual change in leverage			
IPO Year	Market-To-Book Ratio	Asset Tangibility	Profitability	Size
1992	+2@,+3@,+5,+10	+3,+6,+7@,+9	+4@,+5,+7	+1@,+3,+5,+6,+7,+8,+9
1993	+1,+2@,+7@,+8,+9	+1,+6@,+8,+9,+10	+1,+2,+3,+4,+5,+6,+8@	+1@,+6,+7,+8@,+9@,+10

Year				
1994	+2,+4,+5,+6,+8@,+9	+1,+2,+3,+5@,+6,+8,+9	+1,+2,+3,+4,+5,+6@,+8,+9,+10	+2@,+3,+8,+9@
1995	+2,+4,+5@,+6,+7,+10	+1@,+3@,+5,+7	+1,+2,+3,+4,+5,+7,+8,+9,+10	+1@,+5,+6,+7@,+8,+9
1996	+3@	+8@	+2@,+3,+6,+7,+8@,+9,+10	+1@,+2,+6
1997	+3@,+8,+9@,+10@	+9@	+3,+10	+7,+10
1999	+4		+1	+1@,+5
2000	+7@,+8,+9@,+10		+2,+3,+4,+6,+7@,+8	+9
2001				
All	+2,+3,+4,+5,+,8,+9,+10	+1,+2,+3@,+4,+5@,+8,+9	+1,+2,+3,+4@,+5,+6, +8,+9,+10	+1@,+2@,+3,+5,+6, +7,+8@, +9@,+10

@ the sign is opposite to what expected

Note : IPO levels for which the regression results are significant for the particular IPO year. Here, @ means the sign of the coefficient is opposite to what was expected.

Table 5. Results of Regression for Primary Sector Firms

Panel A	Change in Leverage			
IPO Year	Market-To-Book Ratio	Asset Tangibility	Profitability	Size
1992	+1,+2,+9	+1@,+7@	+3,+10	
1993	+1,+8.+10@	+8@,+9,+10	+2,+6,+9	+1,+2,+9,+10@
1994	+1,+2		+1,+5,+7,+8	+1
1995	+1,+10	+4@,+5,+7,+8,+10@	+4@,+5,+7	+1,+4@,+7
1996	+5@,+6		+5	
All	+2,+3@,+5@,+6,+9	+3@,+4,+5,+9,+10	+1,+3,+5,+7,+8	+4@,+8,+10@

Panel B	Dependent Variable = Net equity to assets			
IPO Year	Market-To-Book Ratio	Asset Tangibility	Profitability	Size
1992	+1,+4@,+9		+3,+5,+8@	+8
1993	+5,+6,+8	+6,+8	+2,+5,+6,+8,+9	+1@,+8@,+9@
1994	+1,+3,+7@,+10		+9	
1995	+1,+2,+4,+9	+1,+4@,+5	+1,+5,+7,+8@,+10	+1@,+7@,+8
1996	+6	+6@,+8@	+1,+6,+8,+10	+1@,+6@,+8@
All	+2,+4@,+6,+8@,+10	+1,+2,+5,+8	+1,+2,+3,+7,+8@,+9,+10	+1@,+2@,+3@,4, +8,+9@,+10 @

Panel C	Dependent Variable = Change in retained earnings to assets			
IPO Year	Market-To-Book Ratio	Asset Tangibility	Profitability	Size
1992		+2,+6,+10@	+4,+5,+6,+7,+8,+10	+4@,+5,+7,+8@
1993	+3,+7	+8	+4,+7,+9@,+10	+9
1994	+1,+3@,+6	+6@,+7,+8,+9	+4,+5,+6,+7,+8,+9,+10	+3,+4,+6@,+7
1995	+5,+10	+6,+9	+4,+6,+7,+8,+10	+9,+10@
1996	+1@,+2	+1,+2,+7		
All	+3,+8@	+7,+8,+10	+1,+4,+6,+7,+8,+9,+10	+4,+6,+7,+8@

Panel D	Dependent Variable = Residual change in leverage			
IPO Year	Market-To-Book Ratio	Asset Tangibility	Profitability	Size
1992	+4@,+8	+8@	+3,+4,+5,+6	+7,+8
1993	+1@,+2@,+4,+9,+10	+9	+1,+2,+3,+6,+7@,+9@	+1@,+9,+10@
1994	+1@,+2@,+3,+5@	+1,+7@	+5,+6,+7,+8,+9,+10	+1,+3,+5@,+8
1995	+1,+2,+5@,+7@,+9,+10@	+5,+6,+7,+8	+3,+4,+5,+6,+7,+8,+9,+10	+6,+7,+9
1996		+2@	+1,+4,+6,+9,+10	+1@
All	+3,+5,+6@,+7,+8,+10	+1,+3@,+4,+6@,+7@,+9,+10	+1,+2,+3,+4,+5,+6,+7	+1@,+3@,+4,+8,+10@

@the sign is opposite to what expected

Note : IPO levels for which the regression results are significant for the particular IPO year. Here, @ means the sign of the coefficient is opposite to what was expected.

Table 6. Results of Regression for Secondary Sector Firms

Panel A	Change in Leverage			
IPO Year	Market-To-Book Ratio	Asset Tangibility	Profitability	Size
1992	+1,+3,+4,+7	+9	+3	
1993	+1,+2,+4	+4	+3,+8	+1,+2@,+8
1994	+1,+2,+6@,+9	+1,+2,+6,+10@	+1,+5,+6,+7,+8	+1,+3@,+9,+10
1995	+1,+2@,+3,+4,+10	+2,+3@,+4,+7,+10	+1,+4@,+5,+6	+1,+2@,+4@,+10
1996		+3,+9	+6,+8,+9@	+8,+9@,+10
2000	+6	+6@	+6	
All	+1,+4,+6@,+7,+8@,+10	+1,+4,+6,+7,+8,+9,+10@	+1,+2@,+3,+5,+6,+7,+8,+9	+1,+2@,+3,+6,+8,+9,+10

Panel B	Dependent Variable = Net equity to assets			
IPO Year	Market-To-Book Ratio	Asset Tangibility	Profitability	Size
1992	+5,+7,+8	+5	+3,+4@,+5	
1993	+1,+4,+9	+1,+7@	+1,+2,+3,+6,+7	+1@,+7,+9@
1994	+1,+2,+7,+9,+10	+2,+4,+8@,+9	+1,+2,+3,+4@,+5,+6,+8@,+9@	+1@,+2@,+4,+8,+9@,+10
1995	+1,+2@,+3,+4,+5,+6,+7	+1,+2@,+3,+4,+5,+6,+7,+10@	+1,+2@,+3,+4,+5,+6@,+7,+8,+10	+1@,+2,+4@,+5@,+7,+6
1996	+1@,+2@,+4,+6	+6	+3,+6@	+6@
2000	+6@,+7		+6	
All	+1,+2,+4,+5@,+6@,+8@,+10	+2,+3,+4@,+5@,+6,+8@	+1,+2,+3,+4@,+5,+6,+7	+1@,+2@,+3@,+4@,+5@

Panel C	Dependent Variable = Change in retained earnings to assets			
IPO Year	Market-To-Book Ratio	Asset Tangibility	Profitability	Size
1992	+2,+3,+8	+8@,+9	+3,+8,+9	+2
1993	+1,+2,+6@,+10	+1@,+2@,+10	+3,+4,+5,+6@,+7,+8	+2,+6,+9,+10
1994	+1,+2,+7,+8@,+10@	+6,+7,+10@	+2,+3,+4,+5,+8,+9,+10	+1,+4@,+6,+8@,+10
1995	+4,+5@,+6@,+8	+1,+7,+5@,+6@,+8,+10	+2,+3,+4,+5,+6@,+7@,+8@,+10	+3,+4@,+5@,+6@,+8,+9
1996	+3,+5,+6@	+3,+4,+6@,+8,+10@	+1,+2,+5,+6@,+8,+10	+4@,+6@
2000		+1,+7	+8	
All	+1,+2,+4,+5@,+6@,+10	+1,+3@,+5@,+6@,+10@	+1@,+2,+3,+4,+5, +6@,+8,+10@	+1,+2@,+3,+4@,+6@,+10

Panel D	Dependent Variable = Residual change in leverage			
IPO Year	Market-To-Book Ratio	Asset Tangibility	Profitability	Size
1992	+1@,+2@,+3@,+5,+8	+1,+3	+1,+3,+4@,+5,+7,+9	+2,+6
1993	+1,+2@,+4,+6@,+8,+10	+1,+4,+6,+8,+10	+1,+2,+3,+4,+5,+7,+8@,+9	+1@,+10
1994	+4,+5,+6,+7@,+9,+10	+1@,+2,+7@,+9	+1,+2,+4,+5,+7,+8,+10	+1@,+2@,+3,+8,+9@,+10
1995	+3,+4,+5@,+6@	+1@,+3@,+4,+5,+9@,+10@	+1,+2,+3,+4,+5,+7,+ 8,+9@,+10	+1@,+2@,+4@,+5@, +6@,+8,+9
1996	+1@,+3,+4,+6,+9	+2@,+4,+8@,+10	+1,+3,+5,+8,+9	+1@,+6@,+8,+9@,+10
2000				+1@
All	+1,+3@,+4,+5@,+6,+9,+10@	+1@,+2,+3,+6,+9,+10	+1,+2,+3,+4,+5,+8@,+9@	+1@,+2@,+3,+4@, +8,+9@,+10

@the sign is opposite to what expected

Note : IPO levels for which the regression results are significant for the particular IPO year. Here, @ means the sign of the coefficient is opposite to what was expected.

Table 7. Results of Regression for Tertiary Sector Firms

Panel A	Change in Leverage			
IPO Year	**Market-To-Book Ratio**	**Asset Tangibility**	**Profitability**	**Size**
1992	+1			+1,+6
1993	+1,+2,+3,+6	+3,+4,+6,+8,+9	+6@,+7	+1,+8
1994	+1,+2,+6,+8@	+2,+3,+8	+2@,+5,+8	+1,+8,+9,+10
1995	+1,+5,+7@,+9	+2,+9	+7@,+8	+7@
1996	+4@	+2@,+4@,+6	+2@,+5@,+7	+4@,+7
1999		+2,+6	+5	
2000		+9	+2,+3,+5@	+2,+4@
All	+3@,+5,+9	+2,+3,+4@,+5,+9	+3@,+5@,+6@,+8	+1,+4@,+6@,+7@,+10
Panel B	**Dependent Variable = Net equity to assets**			
IPO Year	**Market-To-Book Ratio**	**Asset Tangibility**	**Profitability**	**Size**
1992	+5	+9	+2	+1@,+9
1993	+5,+6,+7@,+8,+9@	+8	+2,+9	+2@,+7
1994	+1,+4@,+8@	+1,+2,+4@,+6,+8	+1,+2,+4,+5,+6@,+9	+1@,+2,+4@,+8,+9@
1995	+1,+3,+4,+5,+6 +7,+8@,+10	+3,+7	+2,+3,+4,+7	+1@,+3,+7@
1996	+3@,+4,+9	+1,+9	+2@,+3,+4@,+9	+2,+9@
1999	+8,+9	+3,+6@		
2000	+4,+5		+3,+5,+9	+3@,+8,+10@
All	+3@,+4,+7@,+8@,+10	+3@,+4,+5@,+7@,+8	+1,+2,+3,+4@,+5,+7, +8,+9	+1@,+3@, +4@,+7@, +8,+9@
Panel C	**Dependent Variable = Change in retained earnings to assets**			
IPO Year	**Market-To-Book Ratio**	**Asset Tangibility**	**Profitability**	**Size**
1992	+3,+9@		+6	
1993	+2,+3,+4,+7@	+1,+5,+7	+2,+4,+6@,+7@,+10	+1@
1994	+2@,+4@,+8@	+2,+5,+8	+3,+4,+5,+6,+8,+9,+10	+1@,+4@,+8@
1995	+2,+7,+8@,+9	+2,+8@,+9	+2,+3,+4,+5,+8,+10	+7@,+8@
1996	+2@,+3,+6@,+8@	+1,+8@	+1,+2,+3,+5,+7,+9@,+10	+6,+8@,+9
1999	+4@,+8		+6,+7	+8
2000	+4@	+7	+2,+3@,+7@,+10@	+3,+7,+8@
All	+2@,+3@,+4,+5@,+7@,+8@	+3,+4@,+6@,+7@	+1,+2,+3@,+4@,+6,+7@, +8, +9@,+10	+2@,+3,+4,+5@,+6, +7,+8@,+9@
Panel D	**Dependent Variable = Residual change in leverage**			
IPO Year	**Market-To-Book Ratio**	**Asset Tangibility**	**Profitability**	**Size**
1992	+1@,+3@,+5+10	+9@	+2,+3	+4,+5,+6,+9
1993	+2@,+7@,+9@	+7@,+8	+2,+4,+9	+1@,+6
1994	+6	+1,+2,+3,+8	+1,+2,+3,+4,+5, +8	+1@,+2@,+8
1995	+4,+5,+6,+7		+2,+3,+5,+7,+8,+9,+10	+7@
1996	+4,+7		+2@,+3,+4@,+7,+9,+10	+2
1999	+4		+1	+1@
2000	+7@,+8,+9@,+10	+9@	+2,+4,+6,+8	+9
All	+3,+4,+8,+7@	+4,+3@,+7,+8	+1,+2,+3,+4@,+5,+6,+8,+9,+10	+3,+4@,+6,+8@

@the sign is opposite to what expected

Note : IPO levels for which the regression results are significant for the particular IPO year. Here, @ means the sign of the coefficient is opposite to what was expected.

as per the equity market timing theory.

The significance level for both the cases is 5%. The Table 3 shows the relation of the variables according to the equity market timing theory. This model is used for the all firms' data and when they are categorized into the three sectors.

Data Analysis and Results

The results of regression analysis are shown in the Tables 4, 5, 6, and 7 for all firms data, primary, secondary and tertiary sectors respectively. The tables show only those levels of IPO years for which the regression results are significant (to avoid cluttering of information). In each table, Panel A, B, C, and D shows the results when the dependent variables are change in leverage, net equity issue, change in retained earnings and residual change in leverage, respectively.

The regressions were run separately for all the IPO levels of the firms with IPO years 1992, 1993 and so on up to the year 2001. The results are shown separately in different rows for the different IPO years respectively. The first row of each table shows the levels of the IPO year 1992 for which the results are significant, the second row for the IPO year 1993 and so on. In the same way, Tables 5, 6, and 7 represent the results of the regression analysis when the firms are categorized into the three sectors of the economy. Thereafter, the last row of each table shows the results of the regression when the firm's data are clubbed without considering the year in which the IPO's were issued i.e. in the same way as the authors of the previously done studies had clubbed the data. In addition, to make the results more robust, they were check for heteroskedasticity and the heteroskedasticity was removed if found any. Some of the IPO years have been drop from the analysis where it was not possible to run regression because of less number of firms. The IPO year 1998 from the Table 4; IPO years 1997 to 2001 from Table 5; IPO years 1997 to 1999 and 2001 from Table 6; and the IPO years 1997, 1998, and 2001 from Table 7 have been dropped.

From Table 4, it is found that for the IPO years 1992-1995, the coefficient of MTB has a negative sign and is significant for the most of the IPO levels and the effect comes through net equity (as expected, rejecting the null hypothesis). For the IPO years 1996 and 1997, the coefficient of MTB is significant with a positive sign (opposite to the theory, failing to reject H0) and for the firms with IPO years 1999, 2000 and 2001 the MTB is not significant at all. The coefficient of profitability has a negative sign, implying an inverse relation with change in leverage (according to the theory; rejecting H0) and is significant for most of the cases, for all the IPO years. The coefficients of asset tangibility and size have a positive sign (as per theory, again rejecting the null hypothesis) and are significant for most of the IPO levels of the IPO years.

In a similar way, it could be said that in case of primary sector firms (Table 5), for the IPO years 1992-1995, MTB is inversely related to change in leverage (according to the theory, rejecting the null hypothesis) but is significant only for few cases and it comes through net equity as well as through residual change in leverage. Talking about secondary sector firms from Table 6, it could be seen that for the firms with IPO years 1992 to 1995 MTB coefficient is significant and inversely related to change in leverage (as expected, rejecting H0) and this change comes through net equity (as MTB is positively related) for most of the cases. In case of tertiary sector firms, from Table 7 an inverse relation of MTB with change in leverage is seen but is significant for some cases only and it is due to net equity (rejecting the null hypothesis) and change in retained earnings for the firms with IPO years 1992 -1995. For the firms with IPO years beyond 1996, MTB is not significantly related in most of the cases for all the three sectors. The values of F - test are significant (at 5% level) for most of the cases, indicating that the models discussed in the present study are significant.

Discussion

From the results of the regression analysis of all firm's data (Table 4), a transition is seen from the IPO years where MTB is significant and is inversely related to the change in leverage (i.e. the IPO years 1992-1995) to the IPO years

where MTB is not significant (i.e. IPO years1999-2001). The transition comes through the IPO years where MTB has a direct relation to the change in leverage and is significant in few cases only (i.e. IPO years 1996&1997).

It has also been found that the effect of MTB, for the IPO years 1992-1995, mainly comes through net-equity issue which is in accordance with the equity market-timing theory (from Table 4). This signifies that when the market values are high, firms take the advantages of the opportunities present in market and issue equity, which leads to decrease in the change in leverage. However, for the firms with IPO years 1996 through 2001, the results are not matching with the theoretical expectation of equity market timing. Here, an increase in MTB is associated with an increase in change in leverage, which means that the firms either raise debt or repurchased equity when MTB was high (opposite to what the theory says). Talking about the IPO years 1999-2001, MTB is not significant for most of the cases, so it seems that equity market timing did not play a significant role for them. In periods when firms do not seem to time the equity markets, maybe they are not trying to avoid the unfavorable conditions in the equity markets (i.e. low firm valuations or high cost of issuing equity), but are just trying to take advantage of the favorable conditions in the debt markets (i.e. low interest rates or low cost of issuing debt) (Kaya, 2007).

Firms with IPO years 1992 through 1995 rely on the market as well as on their internal strengths (i.e. profitability and asset tangibility), for their sources of funds. For the firms with IPO years 1996-2001, only profitability plays a major role in explaining the change in leverage than the market timing. Khare and Rizvi (2011) and Prabhakaran (2013) on analyzing the financial structure of Indian firms and its determinants found that the firms have strengthened their internal strengths and have decreased their dependence on equity for raising funds. Hence, the firms with IPO years1996-2001 relied on their internal strengths more than on market timing.

As far as other variables are concerned, it is found that all of the three variables, namely - asset tangibility, profitability and size are significantly related to the capital structure of the firms as per the theory, for all the IPO years considered.

The last row of the Table 4 shows that MTB is significant and inversely related to change in leverage for almost all the IPO levels. This change in leverage comes due to net equity issue. From this, one concludes that market timing plays an important role in the capital structure of the Indian firms for almost all the levels of the IPO. On the other hand, from the results of the regression analysis done for each IPO year separately, a transition is seen in the result as discussed above. Thus, the year in which the IPO's were issued, plays an important role in the equity market timing theory of capital structure.

Now, the question arises that why is it so that for the Indian firms, market timing plays an important role for earlier years and not for later years? As suggested by Samuel (1996) that variations in the debt-equity mix depend on the macroeconomic environment as well as on controls and interventions in domestic capital markets. Therefore, to answer the question, it is necessary to understand the macroeconomic environment in which the Indian firms have operated since 1991.

Talking about the Indian economy, the decade of the 1990s has witnessed radical changes in public policy that has an effect on the macroeconomic environment within which the firms operate (Khanna, 1999 ; Pal, 2001). Liberalization encouraged the economic development by further "opening up" the economy for foreign as well as for domestic capital and investments. Until 1991, there was a lack of transparency in the equity market; the trading was limited to a few cities dominated by big brokers and so on. However, after liberalization, the access to equity market was less restrictive. This led to an increase in the number of firms listed on the stock exchange, the amount of capital listed, market capitalization and value of shares sold and purchased on the exchanges. The firms took advantage of it and started raising money from the primary marketof the stock exchange.

The year 1992-1996 was a boom period for the Indian stock market, first due to the liberalization of the economy, the second due to a pricing bubble, which came in equity market due to the Harshad Mehta Scam, where the market index went up by 143% between September 1991 and April 1992 (Fernando, 2009). Further, to make the market more efficient and to provide a platform for the Indian firms to raise money through equity, Securities and Exchange Board of India (SEBI) got its statutory powers in 1992 (though formed in the year 1988). This increased the market activity by building trust among the investors. The boom continued to grow further and with

an increase in the number of IPOs/FPOs year-after-year. Therefore, the firms also encashed these opportunities and went to public through their IPOs which were supported well by the investors. The firms gave preference to market conditions over their internal strengths (like profitability).

A liberalized economy always has a threat of being more sensitive to the economic shocks. More integrated an economy with the world economy, more sensitive it becomes towards the global shocks. The same thing happened with Indian economy. It was negatively affected by the financial contagion of the East Asian Financial crisis (of the year 1997), though Indian economy was not highly integrated at that time, so the effect of the shock was less. The Indian economy decelerated also due to the Dot Com Bubble Burst of the year 2000, Ketan Parekh Scam in 2001, American Economic Crisis of the year 2002 and finally the Subprime crisis of 2008. The investors lost confidence in the stock market because of these events. Hence, the dependence of the firms for raising funds through equity got reduced.

Finally, from the above discussion, it could be said that for the firms with IPO years 1992 to 1995, market timing plays an important role in defining their capital structure, but not for the firms with the IPO years 1999-2001. Hence, the year in which the IPOs were issued play an important role in timing the market, which has not been discussed in the former studies of equity market timing theory. In addition, unlike the previous studies, this study reveals that the firms do not follow the equity market timing theory blindly and consider the changes in the economic conditions as well as to their firm level characteristics while raising finance. An inter-sectoral variation also exists in the capital structure decisions of the firms (from Tables 5, 6, and 7, respectively). MTB affects the capital structure of the firms belonging to secondary sector more as compared to the capital structure of the primary & tertiary sector firms. The secondary sector firms are the capital-intensive firms and they require huge amount of funds, so they time the markets quite often in comparison to the other two sectors. Amongst the other variables, again the effect of profitability is more pronounce, for all the three sectors.

Research Implications

Capital structure decisions are important decisions for the firms as they not only affect the value of the firms, but also provide useful recommendations for policy makers and management of the firms. The policy makers must match the firms' requirement of funds, according to the changes in the economic conditions and should strengthen the firm level characteristics like profitability and asset tangibility. Managers should place greater emphasis on the facilitation of the finance, as the correct decision would reduce the cost of capital and would help in maximizing the value of the firms.

Conclusion

The paper aims to study the effect of Equity Market Timing on the capital structure of Indian firms. The equity market timing theory supports the issuance of equity when the market is high, so it was expected that after the liberalization of the Indian economy the firms would rely more on equity because of the expansion /development of the financial market. However, from the results, it is seen that, the Indian firms keeps on changing their capital structure strategies according to the changes in the Indian economy.

The study also reveals that the year in which the IPOs were issued, plays an important role while designing an optimal capital structure - the firms moved from equity (IPO year 1992-1995) to debt (IPO year 1996-1997) and finally to their internal sources of funds (IPO year 1999-2001). This shows that mere expansion of the economy will not be the only factor, but the stability in the economic environment also plays an important role in deciding about the choice of capital structure for the firms. Similar results have been seen when the firms are classified into the different sectors, but the effect of equity market timing was more pronounce for secondary sector firms as compared to the primary and tertiary sector firms. At the same time, profitability influences the capital structure of the firms for all the three sectors. It implies that Indian firms were quite vigilant and matched their requirement of

funds according to the changes in the economic conditions; they did not follow the equity market timing theory blindly. Thus, the results justified the authors' approach of taking each IPO year separately for analyzing the effect of equity market timing on the capital structure decisions of Indian Firms.

Limitations of the Study and Scope for Future Research

The limitation of this study is that the paper concentrates on the capital structure decisions of one nation only, that is, India. A study that explores the validity of equity market timing for the firms belonging to different nations by capturing the individual year effect, would add insights to the existing literature. In addition, efforts may be made to empirically analyze the effects of the economic conditions on the capital structure decisions of the firms in context to equity market timing theory.

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