DO INSTITUTIONAL INVESTORS NON-LINEARLY AFFECT THE CAPITAL STRUCTURE OF FIRMS: EVIDENCE FROM INDIA

Pankaj Chaudhary*

Abstract   *Our study examines the non-linear relationship between institutional investors and capital structure of the Indian firms, to understand its applicability in an emerging economy. We find the applicability of a quadratic relationship between leverage and institutional ownership. We notice that at a lower level of institutional ownership, the relationship is negative, because it initially reduces the debt level of the firms; however, as ownership increases, it is more lucrative to increase the leverage in order to magnify the gains. We also classify the institutional investors into two categories – pressure sensitive and pressure insensitive investors. The behaviour of pressure-sensitive investors and pressure-insensitive investors are different from each other. The behaviour of pressure-insensitive investors is similar to aggregate institutional investors, whereas we found contrasting behaviour for pressure-sensitive investors in our study. Investors should understand that simply having more proportion of institutional investors in a firm's equity is not going to resolve agency conflicts. It is the presence of pressure-insensitive investors that will help mitigate the agency.*

Keywords: *Agency Problems, Leverage, Institutional Investors, Pressure-Sensitive Investors, Pressure-Insensitive Investors*

INTRODUCTION

Prior researches concentrate on studying the role of ownership class, mainly focusing on owner-controlled firms and management-controlled firms (Herman, 1981; Sorensen, 1974). Unlike family and individual owners, it was earlier believed that institutional investors generally do not use their power to check on management, and even if they made an attempt, they hardly succeeded (Chaganti & Damanpour, 1991). Ownership has its influence on the capital structure decisions of the firms. Financial goals and the priorities of the firms change in response to changes in ownership class; for example, as the ownership of institutions and professionals increases, financial targets and capital composition of the firms also change, thereby reflecting the influence of ownership on capital structure (Donaldson, 1984). There is extensive literature available that examined agency problems in ownership and its influence on the performance of the firm (Morck et al., 1988), while ignoring the impact of ownership class on the capital structure of the firm. Jensen and Meckling (1976) argue that management may adopt the capital structure that enables them to enhance their wealth, even at the cost of foregoing the wealth maximisation goal, reflecting that it is popularly called the classical owners-

management agency conflict. Jensen (1986) suggests the use of debt as a tool to deal with an agency conflict situation.

There is latent, rather than an active, influence of institutional investors in management-dominated firms (Chaganti & Damanpour, 1991). Latent power reflects the ability to constrain a few decisions, against the active power to directly influence the decisions that are exercised by the top executives of the firm (Herman, 1981). Institutional investors can exert pressure by making a campaign on specific issues or using the stock market for buying and selling shares in the firms (Mintzberg, 1984). Because of their heavy investment in a firm, institutional investors always seek more information regarding different aspects of decision-making and respond by taking the stock market route that directly affects the value of the firm (Harper Ho, 2011). It is also observed that the countries with weak corporate governance and lack of adequate publicly available information witness increased information trading by institutional investors, because these investors can enhance their gains by utilising the superior information they possess (Diamond, 1985; Maffett, 2012).

Further, researchers also found that major institutional investors have a direct influence on the firms' decisions by taking positions in board, or indirectly, via share trading

_____

*   Assistant Professor, Department of Finance and Business Economics, University of Delhi, Delhi, New Delhi, India.
    Email: pankaj.du04@gmail.com

(Gillan & Starks, 2003), reflecting the role of institutional investors in influencing the decision making of the firm. Excessive selling of shares by institutional investors may be interpreted as a negative sign regarding the firm's prospects and can lead to further fall in its value, consequently resulting in an increase in the cost of raising funds, ultimately leading to change in the capital structure of the firm (Parrino et al., 2003). Trading by institutional investors plays a significant role in affecting the liquidity of the stock. There are two contrasting views available about stock liquidity. Grossman and Stiglitz (1980) state, that as per adverse selection hypothesis, stock liquidity decreases due to the presence of informed traders by reducing information asymmetry, whereas trading hypothesis suggests that markets gain information efficiency, thereby reducing information risk, leading to more trading of the stocks (Admati & Pfleiderer, 2009).

Myers & Majluf (1984) argue that managers' preferences and goals have a substantial influence on the financing decisions of the firm. Grossman & Hart (1980) argue that institutional investors with large shareholding are capable of actively monitoring management activities relative to minority shareholders. Chen et al. (2009) find that small investors are not capable of placing a check on management as they do not attend board meetings; they are diffused and usually do not exercise their voting power to participate in decision making. Concentrated ownership represented by block shareholders can lead to improved managerial monitoring and it may reduce the owner-management conflict (Shleifer & Vishny, 1986). Managerial opportunism can be largely restrained by an active monitoring system; therefore, it has the potential to take care of the managerial behaviour of choosing a capital structure serving their personal goals (Sun et al., 2016). Active monitoring by institutional investors is in their interest as they can reap high benefits by proper monitoring and ensuring that the management does not compromise the goal of wealth creation (Shleifer & Vishny, 1986). When institutional investors act as traders rather than owners, they tend to exert their influence on short-term developments, thereby instilling a sense of fear among the management that this situation may lead to more selling by investors, causing further fall in the value of the firm (Graves & Waddock, 1990).

It is discussed earlier and found that many pieces of research have been conducted to understand the role of institutional investors in influencing the corporate leverage in the developed countries. We attempt to contribute to the existing literature by conducting our study of one of the emerging economies of the world, India. We take a closer look at institutional ownership and leverage for firms listed in the Bombay Stock Exchange. We take up our study to examine new dimensions of institutional investors in an emerging economy. Firstly, most of the studies are confined to learning the linear influence of institutional investors on corporate leverage. The non-linear relationship is largely ignored or not paid much attention to in researches. A few studies have been conducted to understand the non-linear relationship between institutional investors and leverage (Jelinek & Stuerke, 2009; Stulz, 1988). Brailsford et al. (2002) empirically examined and found a non-linear relationship between managerial shareholding and leverage. The main objective of our study is to examine the role of an institutional investor in influencing corporate leverage. We examine the non-linearity issue of the Indian firms to understand its applicability in an emerging economy. Secondly, we classify the institutional investors (INO) into two types – pressure-sensitive (PSEN) institutional investors and pressure-insensitive (PISEN) institutional investors. Pressure-sensitive investors have a business relationship with firms, which includes banks and insurance companies, whereas pressure insensitive investors have only a portfolio relationship, which includes mutual funds, brokerage houses, and so on (Muniandy et al., 2016). It is believed that they have a different influence on corporate leverage. We examine the relationship between pressure-sensitive and pressure-insensitive groups and corporate leverage, in both linear and non-linear forms. The plan of the study is as follows. Section II discusses the literature and hypothesis formation. Section III explains sample data and methodology. Empirical results are discussed in Section IV. Section V provides the summary.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

The capital structure decision of the firms is one of the most important decisions; it is widely discussed and debated in academics. Jensen (1986) argues that managers are more concerned about the risk of bankruptcy as it can lead to non-payment of interest and principal to the creditors, which may force the firms to cut back salaries and perks to the managers, thereby forcing them to use less debt. It may not opt for the optimal level of debt that may lead to a decrease in the firm's value. However, managers may prefer their personal goals instead of choosing what is best for the firm. Shleifer and Vishny (1986) mention that institutional investors have superior skill set and motivations to properly monitor the firm, as they can reap high benefits because of wealth maximisation decision-making by the firms. They also possess superior information and skill set to actively monitor the firms. Michaely and Vincent (2012) state that the institutional investors can help resolve agency problems, due to their superior information and alignment of interest with wealth maximisation goals; thus they can be treated as a substitute for the debt. Efficient monitoring hypothesis

argues that institutional investors, due to their skill set, can better monitor the firms relative to minority shareholders, thereby predicting a positive relationship of the institutional investor with corporate leverage. Based on this discussion, we formulate the following hypothesis.

H1: Institutional investors (INO) do not affect the corporate leverage of the firms.

Institutional investors are outside investors, whose chief aim is to earn high returns from their investments; however, due to their substantial shareholding, their pursuit for high returns leads them to force management to take better decisions (Jara-Bertin et al., 2012). Further, they document that at a low level of institutional ownership, they may not find enough power to challenge the management, and thus may collude with them, resulting in reducing the value of the firm, whereas a higher level of ownership puts them in the commanding position to make a decision that will serve the wealth maximisation goals of the firm, leading to the increased value of the firm.

H2: There is no non-linear relationship between institutional investors and corporate leverage in the emerging economy.

Pressure-resistant investors have only an investment relationship with the firm and they are well placed to actively monitor the activities of the firms; they can vote freely on relevant issues without any fear and compulsion (Muniandy et al., 2016). Existing literature suggests a positive relationship between firm performance and pressure-resistant institutional investors. Almazan et al. (2005) found that pressure-resistant firms play a significant role in monitoring the management, resulting in improved firm performance, by forcing the management to focus on wealth maximisation activities, rather than pursue their personal goals. Similar conclusions are observed in other studies. Aggarwal et al. (2014) observed that active monitoring is not done by all types of institutional investors; it is the pressure-resistant investors that play a major role in actively monitoring the management, and their presence is associated with less fraudulent activities by the firms. Wahal (1996) found that long-term performance of stock returns is not changed after the targeting; moreover, there is no change in net income due to monitoring activities of the public pension funds. Therefore, our study attempts to understand the relationship between PISEN institutional investors and corporate leverage. It leads us to form our next hypothesis.

H3: Pressure-insensitive (PISEN) institutional investors do not affect the corporate leverage of the firms.

Next, we discuss the pressure-sensitive (PSEN) investors, which are mostly the banks and insurance companies. Brickley et al. (1988) argue that PSEN investors have commercial interests in the firms; therefore, these institutions are considered sensitive to the pressure created by the firms and usually vote along the lines of the management due to fear of losing business deals with the firms, which can be detrimental to their personal growth and perks. Payne et al. (1996) conducted a study to understand the role of banking institutions in influencing the decision making of the firm; they found that banks have a business relationship with firms or potential business interests, and found that banks vote in favour of management proposals. However, some contrasting results are also found in the existing literature; for instance, Gillan and Starks (2003) observed that banks, due to their business relations, have access to private information, which is not available to the general public; this superior information results in better monitoring by banks, which may tend to reduce agency conflicts. Yao and Ouyang (2007) argued about over-investment hypothesis, wherein banks try to pursue their closely controlled clients to over-borrow and over-invest to maintain their earnings, which will ultimately result in high loan ratio for firms, leading to poor performance. We intend to examine the role of pressure-sensitive investors on corporate leverage, leading to our last hypothesis of the study.

H4: Pressure-sensitive (PSEN) investors do not affect the capital structure of the firm.

In the next section, we present and discuss the results obtained by using dynamic panel data methodology.

SAMPLE DATA AND METHODOLOGY

We take the data for the firms listed in the Bombay Stock Exchange for the period 2010-2019. Our sample includes all the non-financial firms that form a part of the S&P BSE-500 of the Bombay Stock Exchange. We have excluded finance companies from our analysis, as these institutions operate in a regulated environment and have mandatory reserves and capital requirements. After eliminating the financial firms and other firms whose complete data is not available, the number of firms included in the study is 408. As per the description given by the BSE, "The S&P BSE 500 index is designed to be a broad representation of the Indian market. Consisting of the top 500 companies listed at BSE LongD, the index covers all major industries in the Indian economy." This index consists of 500 firms across 22 industries in India. The source of the data set is the Prowess database.

Welch (2011) states that there is no single way of defining leverage. We construct two book-value-based measures of leverage, namely total book value and long-term book value leverage, based on the work of Feidakis and Rovolis (2007) that are scaled by total assets of the firm. In addition to two book-value-based leverage, we also form two market-value-based leverage along the lines of the work of Keefe and

Yaghoubi (2016). The first total market leverage is computed as follows:

$$TMKTL = \frac{TotalD}{Assets - Book\ value\ of\ Equity + Market\ value\ of\ Equity}$$

Long-term market leverage is defined as:

$$LMKTL = \frac{LongD}{LongD + Market\ value\ of\ equity}$$

Institutional Ownership (INO) is defined as the percentage of shareholding by institutional investors in a firm. We further classify INO into two groups, namely PSEN and PISEN. The first group is PSEN investors, which comprises banks and insurance companies. The second group includes mutual funds, investment advisors, and venture capitalists; this group is called PISEN investors. We use both linear and non-linear forms of institutional investors to understand the dynamics of their relationship with capital structure.

We apply the following regression model to study the relationship between leverage and institutional investors:

$$Leverage_{it} = \Omega_i + \phi_1 Leverage_{i,t-1}$$
$$+ \phi_2 INO_{it}(Total, Pressure\ Sensitive, Pressure\ Insensitive)$$
$$+ \sum_{j=3}^{n} \phi_j\ Control\ Variable_{it} + \varepsilon_{it}$$

$$Leverage_{it} = \Omega_i + \phi_1 Leverage_{i,t-1}$$
$$+ \phi_2 INO_{it}(Total, Pressure\ Sensitive, Pressure\ Insensitive)$$
$$+ \phi_3 INO_{it}^2(Total, Pressure\ Sensitive, Pressure\ Insensitive)$$
$$+ \sum_{j=3}^{n} \phi_j\ Control\ Variable_{it} + \varepsilon_{it}$$

Where INO is institutional ownership. We included various control variables based on the review of the existing literature. TANG is tangibility, measured as tangible assets divided by total assets; tangible assets provide a cushion to the lenders, as intangible assets become worthless in the event of bankruptcy (Antoniou et al., 2008). PROF is profitability that is defined as PBIT divided by total assets (Michaelas et al., 1999; Titman & Wessels, 1988). We take the natural logarithm of sales to measure the firm size (Huang & Song, 2006), which is defined in the model as SIZE. Non-debt tax shield (NDTS) is computed as a depreciation scaled by the total assets. MTBR is the market-to-book-value ratio, which is the measure of growth opportunities of the firm. TAX is the amount of corporate tax of the firm scaled by total assets.

We estimate our regression models using the dynamic panel data methodology, wherein leverage is taken as a dependent variable. Corporate finance literature is filled with endogeneity issues that lead to biased results (Roberts & Whited, 2013). To overcome the endogeneity issue, we use dynamic panel data method specified by Arellano and Bond (1991), which is based on the generalised method of moments methodology. The main limitation of the Arellano and Bond (1991) model is that it removes the time-invariant variables; this problem can be overcome by using the system GMM model of Arellano and Bover (1995) and Blundell and Bond (1998).

We need two specification tests to use the system GMM model; the first is the AR (2) test, wherein the second-order serial correlation should not be significant, and the second is the Sargan test of over-identification, whose test statistics should not be significant for robust results (Roodman, 2009).

EMPIRICAL RESULTS

Descriptive Statistics

In this section, we discuss the results obtained by applying the dynamic panel data methodology to our sample data set. We report descriptive statistics in Table 1.

Table 1: Descriptive Statistics

Variable Description	Variable Name	Observations	Mean	Std. Dev.
Total Debt	TOTALD	3,996	0.4818	0.2119
Long-Term Debt	LONGD	3,996	0.1551	0.1412
Total Market Leverage	TMKTL	3,991	0.3479	0.2989
Long-Term Market Leverage	LMKTL	3,971	0.2214	0.3000
Institutional Investors Ownership (%)	INO	4,080	19.441	14.492
Pressure-Sensitive Investors Shareholding (%)	PSEN	4,080	3.3783	5.2587
Pressure-Insensitive Investors Shareholding (%)	PISEN	4,080	16.063	13.010
Tangibility	TANG	3,996	0.2604	0.1737
Profitability	PROF	3,996	0.1292	0.1208
Size of the Firm	SIZE	3,996	10.350	1.6874
Non-Debt Tax Shield	NDTS	3,996	0.0259	0.0195
Market-to-Book-Value Ratio	MTBR	4,080	4.5987	18.080
TAX	TAX	3,996	0.0357	0.0363

Source: Obtained by author.

Table 2: Correlation Analysis

	TOTALD	LONGD	TMKTL	LMKTL	INO	PSEN	PISEN	TANG	PROF	SIZE	NDTS	MTBR	TAX
TOTALD	1												
LONGD	0.5469*	1											
TMKTL	0.5401*	0.3630*	1										
LMKTL	0.3926*	0.4140*	0.8265*	1									
INO	-0.1380*	-0.0125	-0.3612*	-0.3870*	1								
PSEN	0.0272	0.1328*	-0.024	0.0547*	0.4489*	1							
PISEN	-0.1644*	-0.0681*	-0.3912*	-0.4069*	0.8325*	0.0958*	1						
TANG	0.1322*	0.4121*	0.1302*	0.1804*	-0.0125	0.0536*	-0.0358*	1					
PROF	-0.4212*	-0.2854*	-0.3248*	-0.2644*	0.0711*	-0.0233	0.0885*	-0.0519*	1				
SIZE	0.1346*	0.2519*	-0.0066	-0.0356*	0.4142*	0.4054*	0.2948*	0.1292*	-0.0193	1			
NDTS	0.0327*	0.1341*	-0.0303	0.0275	-0.0296	-0.0662*	-0.0058	0.5936*	0.0503*	0.0082	1		
MTBR	-0.0129	-0.0463*	-0.1662*	-0.1354*	0.0177	-0.0301	0.0319*	-0.0272	0.0034	-0.0331*	0.0047	1	
TAX	-0.3432*	-0.3651*	-0.3977*	-0.2900*	0.0480*	-0.0087	0.0569*	-0.1462*	0.7456*	-0.1271*	0.0547*	0.0871*	1

Source: Obtained by author. * denotes statistical significance at 5% significance level.

We can notice from Table 1 that LONGD is about 15.51% of the total assets. The TOTALD is an average 48.18%. The variability of the LONGD and TOTALD is 14.12% and 21.19%, respectively. It shows very high variability in debt ratios. On the other hand, the TMKTL debt is around 34.79%, whereas LMKTL is an average 22.14% of the total assets. The LMKTL and TMKTL have 30% and 29.89% standard deviations, respectively. The result shows huge variability in debt ratio for the firms, irrespective of whether these are measured on the basis of book value or market value.

The main variable of our study is the institutional investor. We find that the average shareholding of aggregate institutional investors is about 19.4%. This is because, in emerging economies, a major percentage of shares is owned by the promoters and owner groups. Further, we observe that the shareholding of PSEN institutional investors is about 3.37%, whereas PISEN investors hold about 16.06% of the shares. We limit our discussion of descriptive analysis to only dependent variables and the main variable, and skip the discussion of the control variable.

Next, we discuss the results of the correlation analysis provided in Table 2. We notice that all four measures of leverage are highly positively correlated with each other. It is obvious as they present the same idea in a different form. It is not a cause of concern for us because these variables are used in different models and do not enter the model simultaneously. We can observe a significant negative correlation of the institutional variable with all the measures of leverage. Further, more interestingly, we find a positive significant correlation of pressure-sensitive investors with leverage, while pressure-insensitive investors are significantly negatively correlated with the leverage. It gives us a hint regarding the different behaviours of these two classes of institutional investors about capital structure decisions. This is the main premise of our study. We also observe that correlation among the variables is not very high, to have any impact on our results. The highest correlation is found between tax and profitability, ignoring institutional investors and pressure-insensitive investors, which is bound to occur due to the nature of the variables.

Results of the Regression Model

We present and discuss the estimation output of our main model, showing a linear relationship between leverage and institutional ownership, in Table 3.

Table 3: Linear Effect of Institutional Ownership on Leverage

	Panel A				Panel B			
	LONGD	**TOTALD**	**TMKTL**	**LMKTL**	**LONGD**	**TOTALD**	**TMKTL**	**LMKTL**
Lagged Leverage	0.640***	0.450***	0.494***	0.644***	0.639***	0.449***	0.485***	0.639***
	(23.45)	(17.98)	(22.43)	(26.64)	(23.34)	(17.96)	(22.05)	(26.36)
INO	−0.243**	−0.215*	−0.254***	−0.395***				
	(−2.95)	(−2.11)	(−6.08)	(−4.94)				
PSEN					0.0297	0.049	0.111	0.004
					(0.56)	(0.59)	(1.21)	(0.10)
PISEN					−0.050	−0.314	−0.193**	−0.113***
					(−0.83)	(−1.17)	(−2.93)	(−4.11)
TANG	0.088***	−0.025	-0.015	0.052***	0.088***	−0.026	−0.019	0.051***
	(5.16)	(−0.96)	(−0.51)	(3.87)	(5.15)	(−0.98)	(−0.67)	(3.80)
PROF	-0.098***	-0.809***	−0.877***	-0.088***	-0.098***	-0.809***	-0.877***	−0.089***
	(−5.32)	(−27.93)	(−27.76)	(−6.08)	(−5.32)	(−27.94)	(−28.01)	(−6.13)
SIZE	0.012**	0.033***	0.015*	0.011***	0.012**	0.033***	0.016*	0.011***
	(2.96)	(5.22)	(2.25)	(3.56)	(2.96)	(5.23)	(2.31)	(3.59)
NDTS	-0.464***	−0.141	−0.436	−0.464***	-0.463***	−0.140	−0.413	−0.457***
	(−3.52)	(−0.68)	(−1.93)	(−4.47)	(−3.51)	(−0.67)	(−1.84)	(−4.41)
MTBR	0.000	-0.000***	−0.000	−0.000	0.000	-0.000***	−0.000	−0.000
	(0.25)	(−3.65)	(−1.62)	(−0.35)	(0.25)	(−3.64)	(−1.63)	(−0.33)
TAX	0.012	1.889***	2.126***	0.087	0.015	1.899***	2.172***	0.101
	(0.11)	(10.77)	(11.04)	(0.98)	(0.13)	(10.78)	(11.35)	(1.13)
AR(1) p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AR(2) p-value	0.11	0.19	0.37	0.15	0.45	0.12	0.42	0.27
SARGAN p-value	0.15	0.58	0.35	0.21	0.16	0.57	0.31	0.26

Source: Obtained by author. *, **, and *** represent .05, .01, and .001 significance level.

Panel A of Table 3 depicts that the lagged leverage variable is statistically significant for all the models. It shows the relevance of using dynamic panel data methodology for analysis purposes. It means that leverage is mean reverting; it may deviate from its target temporarily, but adjusts swiftly to the target value (Hovakimian & Li, 2011). Our main variable of interest is institutional ownership. It is negative and statistically significant for all the measures of leverage. For long-term book value debt and total market value debt, the variable is highly significant, whereas for both the market-value-based leverages, the institutional ownership variable is negative and highly significant. The negative sign implies that institutional ownership has a negative effect on leverage. It means the presence of institutional ownership is associated with a lower level of debt in the capital structure. Institutional investors have a significant impact on the capital structure of firms, because they have the power to exit the firms by selling their shares

or exercising their voting rights on specific issues (Aggarwal et al., 2011).

Panel B of Table 3 reports the linear relationship between leverage and the two types of institutional investors. We observe that the lagged leverage is significant at 1% level of significance, showing the importance of using the dynamic panel data methodology. We notice that the PSEN institutional investors have a positive influence and pressure-insensitive investors have a negative impact, on the leverage. However, we find that the results are insignificant for both the PSEN and PISEN investors, although we find significant results only for market-based leverages. It gives us an indication that the linear form is not capable of capturing the dynamics of the relationship between leverage and distinct institutional ownership. There may be the possibility of a non-linear relationship. Taking a cue from the previous analysis, we performed the non-linear relationship test between leverage and institutional ownership.

Table 4: Non-Linear Effect of Institutional Ownership on Leverage

	Panel A				Panel B			
	LONGD	TOTALD	TMKTL	LMKTL	LONGD	TOTALD	TMKTL	LMKTL
Lagged Leverage	0.640***	0.448***	0.467***	0.643***	0.627***	0.434***	0.442***	0.617***
	(23.45)	(17.72)	(20.99)	(26.32)	(23.09)	(16.99)	(19.71)	(25.49)
INO	−0.257***	−0.323***	−0.704***	−0.100*				
	(−4.28)	(−5.37)	(−7.60)	(−2.28)				
INOS	0.120**	0.461***	0.858***	0.196*				
	(2.87)	(3.41)	(5.42)	(2.12)				
PSEN					0.382***	0.237***	0.304*	0.339***
					(3.69)	(3.45)	(2.27)	(4.17)
PSENS					−1.424***	−0.604***	−0.519*	−1.135***
					(−4.68)	(−4.26)	(−2.01)	(−4.76)
PISEN					−0.148**	−0.152*	−0.789***	−0.172***
					(−2.93)	(−2.41)	(−9.41)	(−4.29)
PISENS					0.234***	0.315***	1.053***	0.142**
					(4.04)	(3.59)	(6.61)	(2.95)
TANG	0.088***	−0.025	−0.016	0.052***	0.089***	−0.026	−0.021	0.052***
	(5.16)	(−0.96)	(−0.58)	(3.87)	(5.27)	(−0.99)	(−0.77)	(3.96)
PROF	−0.099***	−0.809***	−0.872***	−0.088***	−0.095***	−0.808***	−0.875***	−0.086***
	(−5.35)	(−27.90)	(−28.18)	(−6.06)	(−5.21)	(−28.14)	(−28.86)	(−6.02)
SIZE	0.012**	0.033***	0.018**	0.011***	0.012**	0.033***	0.017**	0.012***
	(2.87)	(5.24)	(2.59)	(3.56)	(2.99)	(5.33)	(2.61)	(3.75)
NDTS	−0.465***	−0.141	−0.403	−0.463***	−0.477***	−0.141	−0.383	−0.463***
	(−3.53)	(−0.68)	(−1.82)	(−4.46)	(−3.65)	(−0.68)	(−1.76)	(−4.55)
MTBR	0.000	−0.000***	−0.000**	−0.000*	0.000	−0.000***	−0.000**	−0.000
	(0.24)	(−3.64)	(−2.62)	(−2.34)	(0.28)	(−3.53)	(−2.80)	(−0.28)
TAX	0.019	1.885***	2.088***	0.087	0.020	1.900***	2.149***	0.096
	(0.17)	(10.75)	(11.06)	(0.98)	(0.18)	(10.88)	(11.58)	(1.10)
AR(1) p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AR(2) p-value	0.25	0.43	0.16	0.23	0.47	0.23	0.29	0.35
SARGAN p-value	0.48	0.57	0.51	0.49	0.48	0.34	0.25	0.45

Source: Obtained by author. *, **, and *** represent .05, .01, and .001 significance level.

First, we discuss the estimation output presented in Panel A of Table 4. It shows the results of the non-linear model, with leverage as the dependent variable and total institutional investors as the main explanatory variable, along with other control variables. We observe that the lagged leverage term is highly significant for all the four models at a 1% level of significance. It justifies the use of a dynamic panel data model. We find that institutional investors form a significant quadratic relationship with leverage. We notice that both INO (institutional shareholding) and INOS (square of institutional shareholding) are significant for all the four models, justifying the use of a quadratic relationship. The sign of INO is negative, whereas the sign of INOS is positive. That is, with a low INO the relationship is negative, because they initially reduce the debt level of the firms; however, as the ownership increases, they find it more lucrative to increase the leverage to magnify their gains.

We analyse the behaviour of PSEN and PISEN investors with the help of the output obtained in Panel B of Table 4. We observe that the behaviour of PISEN investors is similar to INO. The PISENS (square of PISEN) is positive and significant for all forms of leverage. However, we witness contrary results for the pressure-sensitive investor; PSEN is positively and PSENS (square of PSEN) is negatively associated with leverage. It means that at a low level of ownership, PSEN investors do not influence the management, thereby mainly using debt as a mechanism to resolve agency problems; however, once the ownership is increased, their say in decision-making increases and they can manage with a low amount of debt in the capital structure (Jara-Bertin et al., 2012). We can observe that the quadratic model is the appropriate model for understanding the relationship between institutional investors and corporate leverage.

Empirical Results based on Firm Characteristics

We check for the robustness of our results in this section. It can be reasonably assumed that firms with different characteristics may respond differently to capital structure decisions due to the presence of institutional ownership. We take into account the firm's size to classify the sample firms into two categories. We consider all the firms with a size less than the median size as small size firms and others as large size firms. Out of a total of 408 firms, there are 205 small size firms; the rest fall into the category of large size firms. Given the results obtained in the previous section, we discuss the results obtained from non-linear models for firm characteristics. Results about the large size firms and small size firms are presented in Tables 5 and 6, respectively.

Table 5: Dynamic Panel Data Results for Large Size Firms

	Panel A				Panel B			
	LONGD	TOTALD	TMKTL	LMKTL	LONGD	TOTALD	TMKTL	LMKTL
Lagged Leverage	0.756***	0.766***	0.421***	0.748***	0.771***	0.731***	0.379***	0.745***
	(12.82)	(8.72)	(10.05)	(13.42)	(13.07)	(8.37)	(9.20)	(13.68)
INO	−0.130**	−0.0736	−0.411***	−0.170**				
	(−2.37)	(−0.69)	(−4.18)	(−2.64)				
INOS	−0.108	0.274***	0.307*	0.326**				
	(−0.82)	(5.45)	(1.97)	(2.90)				
PSEN					0.286*	0.198	0.418**	0.324***
					(2.44)	(1.33)	(3.13)	(3.64)
PSENS					−1.790***	−1.136**	−1.615***	−1.689***
					(−5.32)	(−2.68)	(−4.27)	(−6.65)
PISEN					−0.067	−0.253**	−0.536***	−0.177***
					(−1.00)	(−2.89)	(−6.69)	(−3.40)
PISENS					0.085	0.339***	0.557***	0.198*
					(0.70)	(4.18)	(3.94)	(2.13)
TANG	0.142***	−0.121***	−0.093**	0.075***	0.145***	−0.120***	−0.097**	0.075***
	(5.57)	(−3.59)	(−3.07)	(3.84)	(5.74)	(−3.65)	(−3.29)	(3.95)
PROF	−0.004	−0.072	−0.191**	−0.028	0.021	−0.057	−0.167**	−0.004
	(−0.08)	(−1.09)	(−3.15)	(−0.71)	(0.43)	(−0.88)	(−2.83)	(−0.12)
SIZE	0.022*	0.013	0.038**	0.020**	0.018	0.010	0.035**	0.016*

	Panel A				Panel B			
	LONGD	**TOTALD**	**TMKTL**	**LMKTL**	**LONGD**	**TOTALD**	**TMKTL**	**LMKTL**
	(2.23)	(0.98)	(3.23)	(2.59)	(1.82)	(0.83)	(2.97)	(2.13)
NDTS	−0.670**	−0.134	−0.413	−0.423*	−0.688**	−0.145	−0.437	−0.426*
	(−2.64)	(−0.41)	(−1.37)	(−2.15)	(−2.72)	(−0.45)	(−1.49)	(-2.22)
MTBR	−0.000	−0.000	−0.007***	−0.001**	−0.000	−0.000	−0.007***	−0.001*
	(−0.61)	(−1.15)	(−10.33)	(−2.82)	(−0.41)	(−0.79)	(−9.64)	(−2.38)
TAX	−0.400	−0.680*	−0.772**	−0.350*	−0.481*	−0.694*	−0.722**	−0.398*
	(−1.92)	(−2.47)	(−3.10)	(−2.17)	(−2.32)	(−2.57)	(−2.97)	(−2.51)
AR(1) p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AR(2) p-value	0.12	0.47	0.35	0.12	0.16	0.30	0.17	0.19
SARGAN p-value	0.32	0.33	0.47	0.54	0.26	0.66	0.70	0.53

Source: Obtained by author. *, **, and *** represent .05, .01, and .001 significance level.

We notice from Panel A of both Tables 5 and 6 that the quadratic relationship is valid for understanding the relationship between leverage and institutional ownership. INOS is significant for all the measures of leverage, barring book value long-term debt, irrespective of the size of the firm. The lagged leverage variable is significant, justifying the importance of dynamic panel data methodology. We notice that the signs of institutional investor and its square term conform to the original results obtained earlier for the full data set.

Table 6: Dynamic Panel Data Results for Small Size Firms

	Panel A				Panel B			
	LONGD	**TOTALD**	**TMKTL**	**LMKTL**	**LONGD**	**TOTALD**	**TMKTL**	**LMKTL**
Lagged Leverage	0.599***	0.444***	0.396***	0.580***	0.588***	0.442***	0.390***	0.569***
	(16.26)	(11.89)	(12.73)	(18.33)	(16.01)	(11.73)	(12.41)	(17.99)
INO	0.0488	−0.220***	−0.763***	−0.260*				
	(0.64)	(−4.68)	(−5.89)	(−2.12)				
INOS	−0.155	0.366***	0.938***	0.134*				
	(−1.17)	(4.61)	(4.18)	(−2.25)				
PSEN					0.395	0.064	−0.140	0.164
					(1.07)	(0.19)	(−0.42)	(1.09)
PSENS					−0.873	−0.400	0.249	−0.306
					(−1.66)	(−0.44)	(0.27)	(−0.74)
PISEN					−0.007	−0.190*	−0.761***	−0.122*
					(−0.10)	(−2.42)	(−5.82)	(−2.07)
PISENS					−0.089	0.357***	1.007***	0.045
					(−0.61)	(5.40)	(4.04)	(0.40)
TANG	0.053*	0.051	0.064	0.048*	0.0509*	0.051	0.062	0.046*
	(2.18)	(1.22)	(1.56)	(2.57)	(2.11)	(1.23)	(1.50)	(2.47)
PROF	−0.121***	−1.171***	−1.180***	−0.095***	−0.118***	−1.172***	−1.180***	−0.091***
	(−4.89)	(−26.69)	(−27.60)	(−5.21)	(−4.80)	(−26.71)	(−27.66)	(−5.04)
SIZE	0.018***	0.026**	0.016	0.018***	0.019***	0.025**	0.015	0.018***
	(3.46)	(2.86)	(1.75)	(4.26)	(3.51)	(2.81)	(1.65)	(4.32)
NDTS	−0.662***	−0.040	−0.283	−0.695***	−0.650***	−0.043	−0.275	−0.683***
	(−3.80)	(−0.14)	(−0.95)	(−5.13)	(−3.76)	(−0.14)	(−0.92)	(−5.09)
MTBR	0.000	−0.000**	−0.000	0.000	0.000	−0.000**	−0.000	0.000

	Panel A				Panel B			
	LONGD	**TOTALD**	**TMKTL**	**LMKTL**	**LONGD**	**TOTALD**	**TMKTL**	**LMKTL**
	(0.25)	(−2.94)	(−1.93)	(0.05)	(0.25)	(−2.94)	(−1.93)	(0.04)
TAX	0.070	3.495***	3.648***	0.143	0.076	3.503***	3.646***	0.134
	(0.47)	(13.34)	(14.04)	(1.23)	(0.51)	(13.33)	(14.04)	(1.16)
AR(1) p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AR(2) p-value	0.19	0.45	0.18	0.28	0.36	0.59	0.19	0.53
SARGAN p-value	0.30	0.61	0.35	0.38	0.16	0.12	0.30	0.58

Source: Obtained by author. *, **, and *** represent .05, .01, and .001 significance level.

Panel B of Table 5 reports the results of the estimation model for large size firms. We find that the quadratic relationship is appropriate; signs of the pressure-sensitive and pressure-insensitive investors are also on the same lines as obtained earlier for the full data set and significant for all cases, barring long-term book value debt. It is consistent with the previous results, reflecting the robustness of our results.

Panel B of Table 6 shows the estimation output for small size firms; we notice that it is only the pressure-insensitive investors who have a significant impact on corporate leverage, whereas we do not find any significant influence of pressure-sensitive investors in determining the capital structure of the small size firms. The possible reason is that small size firms are more closely controlled by the management, which can force pressure-sensitive investors to fall in line.

SUMMARY AND CONCLUSIONS

Most studies are confined to learning the linear relationship between institutional investors and leverage. Our study examines the non-linear relationship in Indian firms to understand its applicability in an emerging economy. Our sample includes all the non-financial firms that are a part of S&P BSE-500 index of the Bombay Stock Exchange (BSE). We consider two book-value-based measures of leverage and form two market-value-based leverages along the lines of work of Keefe & Yaghoubi (2016). We find that the linear models are not capable of capturing the dynamics of the relationship between the two. Further, we noticed that at low levels of ownership, the relationship is negative, because they initially reduce the debt level of the firms; however, as the ownership increases, the results show that it is more lucrative to increase leverage to magnify gains, as observed in earlier studies (Stulz, 1988). We observe that the behaviour of pressure-insensitive investors is similar to aggregate institutional investors. However, we found different behaviours for the pressure-sensitive investor, that is, at a low level of ownership, pressure-sensitive investors do not affect the management decision-making, thereby mainly using debt as a mechanism to resolve agency problems; however, once ownership is increased, their say in decision-making increases, and they can manage with a low amount of debt (Jara-Bertin et al., 2012). We also conducted robustness check based on the firms' size. It confirmed our earlier results, showing the relevance of the quadratic relationship between institutional investors and corporate leverage. The behaviour of PSEN and PISEN institutional investors also followed a similar pattern, as observed in our earlier analysis. However, we notice that PSEN institutional investors do not play a significant role in firms of a smaller size, regarding determining the amount of debt. It may be due to the fact that small size firms are largely controlled by the management and they can pursue their own goals, thereby creating agency conflicts.

This analysis has many implications for practitioners and regulators. We found that leverage is non-linearly associated with institutional ownership. A deeper analysis found that the behaviour of the two classes of institutional investors is different from the other and studying total INO as a single group would not shed proper light on their influence on leverage. Investors should understand that simply having more institutional investors in the firms is not going to resolve agency conflicts. It is the presence of pressure-insensitive investors that will help mitigate agency problems. Pressure-sensitive investors may help place a check on management decision, though only at a higher level of ownership; at a low level of ownership, they mainly rely on debt as an instrument to discipline the management. Firm characteristics influence the role of the institutional investor. We find that smaller size firms, and firms with a high profit and high returns are not affected by the presence of pressure-sensitive investors, either with low or high level of ownership. It means that if such firms have a large ownership of institutional investors mainly comprising pressure-sensitive investors, then prospective investors should conduct their research more wisely before investing. The regulators, whose chief aim is to promote the free flow of appropriate information among the general public, should ensure an arm's length relationship between pressure-sensitive investors and the management. Regulators must keep a close watch on the activity of the firms with more pressure-sensitive investors, as they may collude, resulting in a detrimental effect on

other stakeholders in the firm. Though these are exceptional circumstances, in general, institutional investors, particularly pressure-insensitive investors, have the capability to ensure proper managerial decisions by the firm for increasing the wealth of the shareholders.

REFERENCES

Admati, A. R., & Pfleiderer, P. (2009). The "Wall Street Walk" and shareholder activism: Exit as a form of voice. *Review of Financial Studies*, *22*(7), 2645-2685.

Aggarwal, R., Erel, I., Ferreira, M., & Matos, P. (2011). Does governance travel around the world? Evidence from institutional investors. *Journal of Financial Economics*, *100*(1), 154-181.

Aggarwal, R., Hu, M., & Yang, J. (2014). Fraud, market reaction, and the role of institutional investors in Chinese listed firms. *Journal of Portfolio Management*, *41*, 92-109.

Almazan, A., Hartzell, J. C., & Starks, L. T. (2005). Active institutional shareholders and costs of monitoring: Evidence from executive compensation. *Financial Management*, *34*(4), 5-34.

Antoniou, A., Guney, Y., & Paudyal, K. (2008). The determinants of capital structure: Capital market-oriented versus bank-oriented institutions. *Journal of Financial and Quantitative Analysis*, *43*(1), 59-92.

Arellano, M., & Bond, S. (1991). Some tests of specification for panel carlo application to data: Evidence and an employment equations. *The Review of Economic Studies*, *58*(2), 277-297.

Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics*, *68*(1), 29-51.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, *87*(1), 115-143.

Brailsford, T. J., Oliver, B. R., & Pua, S. L. H. (2002). On the relation between ownership structure and capital structure. *Accounting and Finance*, *42*(1), 1-26.

Brickley, J. A., Lease, R. C., & Smith Jr., C. W. (1988). Ownership structure and voting on antitakeover amendments. *Journal of Financial Economics*, *20*, 267-291.

Chaganti, R., & Damanpour, F. (1991). Institutional ownership, capital structure, and firm performance. *Strategic Management Journal*, *12*, 479-491.

Chen, G., Firth, M., & Xu, L. (2009). Does the type of ownership control matter? Evidence from China's listed companies. *Journal of Banking and Finance*, *33*(1), 171-181.

Diamond, D. W. (1985). Optimal release of information by firms. *The Journal of Finance*, *40*(4), 1071-1094.

Donaldson, G. (1984). *Managing corporate wealth: The operation of a comprehensive financial goals system*. Praeger, New York.

Feidakis, A., & Rovolis, A. (2007). Capital structure choice in European Union: Evidence from the construction industry. *Applied Financial Economics*, *17*(12), 989-1002.

Gillan, S. L., & Starks, L. T. (2007). The evolution of shareholder activism in the United States. *Journal of Applied Corporate Finance*, *19*(1), 55-73.

Gillan, S. L., & Starks, L. T. (2003). Corporate governance, corporate ownership, and the role of institutional investors: A global perspective. *Journal of Applied Finance*, *13*(2), 4-22.

Graves, S. B., & Waddock, S. A. (1990). Institutional ownership and control: Implications for long-term corporate strategy. *Academy of Management Executive*, *4*(1), 75-83.

Grossman, S. J., & Hart, O. D. (1980). Takeover bids, the free-rider problem, and the theory of the corporation. *The Bell Journal of Economics*, *11*(1), 42-64.

Grossman, S. J., & Stiglitz, J. E. (1980). On the possibility of informationally efficient markets. In *American Economic Review* (vol. 70, no. 3, pp. 393-408).

Harper Ho, V. (2011). Enlightened shareholder value: Corporate governance beyond the shareholder-stakeholder divide. *SSRN Electronic Journal*.

Herman, E. S. (1981). *Corporate control, corporate power: A twentieth century fund study*. Cambridge University Press, New York.

Hovakimian, A., & Li, G. (2011). In search of conclusive evidence: How to test for adjustment to target capital structure. *Journal of Corporate Finance*, *17*(1), 33-44.

Huang, G., & Song, F. M. (2006). The determinants of capital structure: Evidence from China. *China Economic Review*, *17*(1), 14-36.

Jara-Bertin, M., López-Iturriaga, F. J., & López-de-Foronda, Ó. (2012). Does the influence of institutional investors depend on the institutional framework? An international analysis. *Applied Economics*, *44*(3), 265-278.

Jelinek, K., & Stuerke, P. S. (2009). The nonlinear relation between agency costs and managerial equity ownership: Evidence of decreasing benefits of increasing ownership. *International Journal of Managerial Finance*, *5*(2), 156-178.

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Association*, *76*(2), 323-329.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behaviour, agency costs and ownership. *Strategic Management Journal*, *21*(4), 1215-1224.

Keefe, M. O. C., & Yaghoubi, M. (2016). The influence of cash flow volatility on capital structure and the use of debt of different maturities. *Journal of Corporate Finance*, *38*, 18-36.

Maffett, M. (2012). Financial reporting opacity and informed trading by international institutional investors. *Journal of Accounting and Economics*, *54*(2-3), 201-220.

Michaelas, N., Chittenden, F., & Poutziouris, P. (1999). Financial policy and capital structure choice in U.K. SMEs: Empirical evidence from company panel data. *Small Business Economics*, *12*(2), 113-130.

Michaely, R., & Vincent, C. J. (2012). Do institutional investors influence capital structure decisions? *SSRN Electronic Journal*, (*March*), 1-62.

Mintzberg, H. (1984). *Power in and around organizations*. Prentice-Hall, Englewood Cliffs, NJ.

Morck, R., Shleifer, A., & Vishny, R. W. (1988). Management ownership and market valuation: An empirical analysis. *Journal of Financial Economics*, *20*(C), 293-315.

Muniandy, P., Tanewski, G., & Johl, S. K. (2016). Institutional investors in Australia: Do they play a homogenous monitoring role? *Pacific Basin Finance Journal*, *40*(May 2012), 266-288.

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, *13*(2), 187-221.

Parrino, R., Sias, R. W., & Starks, L. T. (2003). Voting with their feet: Institutional ownership changes around forced CEO turnover. *Journal of Financial Economics*, *68*(1), 3-46.

Payne, T. H., Millar, J. A., & Glezen, G. W. (1996). Fiduciary responsibility and bank-firm relationships: An analysis of shareholder voting by banks. *Journal of Corporate Finance*, *3*(1), 75-87.

Roberts, M. R., & Whited, T. M. (2013). Endogeneity in empirical corporate finance 1. *Handbook of the Economics of Finance*, *2*, 493-572.

Roodman, D. (2009). How to do Xtabond2: An introduction to difference and system GMM in stata. *The Stata Journal: Promoting Communications on Statistics and Stata*, *9*(1), 86-136.

Shleifer, A., & Vishny, R. W. (1986). Large shareholders and corporate policies. *Journal of Political Economy*, *94*(31), 461-488.

Sorensen, R. (1974). The separation of ownership and control and firm performance: An empirical analysis. *Southern Economic Journal*, *41*(1), 145-148.

Stulz, R. M. (1988). Managerial control of voting rights: Financing policies and the market for corporate control. *Journal of Financial Economics*, *20*(C), 25-54.

Sun, J., Ding, L., Guo, J. M., & Li, Y. (2016). Ownership, capital structure and financing decision: Evidence from the UK. *British Accounting Review*, *48*(4), 448-463.

Titman, S., & Wessels, R. (1988). The determinants of capital structure choice. *The Journal of Finance*, *43*(1), 1-19.

Wahal, S. (1996). Pension fund activism and firm performance. *The Journal of Financial and Quantitative Analysis*, *31*(1), 1-23.

Webb, R., Beck, M., & McKinnon, R. (2003). Problems and limitations of institutional investor participation in corporate governance. *Corporate Governance: An International Review*, *11*(1), 65-73.

Welch, I. (2011). Two common problems in capital structure research: The financial-debt-to-asset ratio and issuing activity versus leverage changes. *International Review of Finance*, *11*(1), 1-17.

Yao, J., & Ouyang, H. (2007). Dark-side evidence on bank-firm relationship in Japan. *Japan and the World Economy*, *19*(2), 198-213.