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Disentangling the Performance and Entrenchment Effect of Family Shareholding: A Study of Indian Corporate Governance[±]

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Using an econometric framework, we examine the nature of relation between Tobin's Q and family shareholding in India. While there is no obvious causality laid down by theoretical literature, empirical evidences show a wide range of findings. In the present work, by controlling for a host of factors, we document a non-linear relation between family share holding and firm value. In the literature, the issue of endogeneity problem is highlighted in the context of ownership-performance relation. We address this concern via the instrumental variable regression method. Even though the curvilinear aspect of the relation between firm value and insider share remain intact in all of the specifications, our model statistics do not trace any endogeneity problem in the data.

Introduction

Ownership is a critical factor that influences firm performance. However, the influence is moderated by a host of factors like ownership type and ownership concentration. Consider an extreme case where shareholding is fragmented and individual investors own $1/N^{\text{th}}$ of the company. Contrast this with a sole proprietorship firm owned by Mr. Alex. While Mr. Alex bears the costs and enjoys the benefits accrued in the course of firm's operation, in the former type of firm the outcome whether good or bad is shared by many in proportion to their share-holding amount. The monitoring activities in a largely held firm therefore bears 'public-goods' characteristics. Unless *altruism* is the overruling law of the society, the 'Homo economicus' would maximize individual welfare function at the cost of some activity that would fetch larger societal welfare.

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In case of a corporation, the cost and benefit of an individual investor is linked to his/her proportional share ownership. Unless it is substantial, every investor would take the 'free-rider' route. Moreover, if the investor enjoys disproportionate power vis-à-vis his/her shareholding amount, then siphoning of resources to other entities where he/she has higher stake cannot be ruled out. Emerging economies are marred by umpteen market failures and regulatory inefficiencies. In such cases, concentrated ownership may prove to be beneficial for investors and society at large (La porta et al., 1999). In this study, we explore the validity of the statement where concentrated family shareholding is the dominant form of firm governance.

Notwithstanding the significance of this issue, there are limited evidences of the relation between ownership and performance in India. Sarkar and Sarkar (1999) find a U-shaped relation between director's shareholding and firm value. In a follow-up study (2000) they largely document a positive relation between higher director shareholding and firm value. Khanna and Palepu (1999) do not find any significant impact of Director's (i.e., Managers) shareholding on firm value. Kali and Sarkar (2005) find that interlocking directorate, debt commitment and concentrated promoter share are the most important factors for the superior performance of group firms. Selarka (2005) finds a U-shaped relationship between insider/promoter's shareholding and market to book value ratio. Most of these studies have ignored the temporal dynamics of the relation and based on small sample size. Moreover, since many of them have focused on large firms, the heterogeneous characteristic of sample size is lost which is very vital for governance studies.

In this study, we develop a large panel data set using 1833 firms for years 2001-2004. Besides overcoming issues related to sample size and type, we have controlled for any temporal or cross-sectional shocks. Tobin's Q and other market based measures are used as performance parameter. The shareholding of 'founding family' or 'promoter' is the key explanatory variable as we propose to examine the nature of relation between family shareholding and firm-value. Indian family shareholding is disguised in the name of promoters in the company reports. 'Promoter' is one of the ill defined terms in the Indian company law. Sections like 62, 69 and 478 of The Companies Act, 1956 use the word promoter just to impose liability without much elaboration of the term. However, Securities and Exchange Board of India (SEBI) in its 1995 Malegam Committee Report and in the Substantial Acquisition of Shares and Takeovers regulations, 1997 has provided a working definition of promoter. Broadly, "Promoter" is perceived as a person who brings about the incorporation and organization of a corporation and retains the overall control power of the company. The immediate relative of the promoter, among others, form the promoter group.

In this paper, promoter's share is taken as the share of insiders or the combined share of family. For example in case of Reliance Limited – which is the largest firm in terms of market capitalization in India, share of promoters would mean share of Ambani families – a reasonable approximation of family holding in Indian context. The estimated relation shows that family shareholding has significant impact on firm value. However, the relation is not linear in nature which means there is no direct proportional relation between family shareholding and firm value. Firm value first increases, then decreases and subsequently increases with further rise in family shareholding. Further we have tried to estimate the exact break point of this relationship. While the break points are changed with every alternate specification in case of polynomial equation, the grid search approach in a spline estimation technique have fetched some unique break points. We find family holding and Tobin's Q to

be positively related when shareholding amount is less than 20 percent. Between 20 to 49 percent the relation is found to be negative and it turns to be positive beyond 49 percent.

We first describe (Section-I) the econometric issues involved in the estimation of the relationship between firm value and family/insider shareholding. Section II then delineates the theoretical argument involving insider shareholding and firm value. Data and empirical specifications are described in section III. Regression results are discussed in sections IV and V. Section VI concludes the paper.

I. Some Econometric Issues

It is the most intricate task to develop a model that would satisfy each statistical criterion while providing accurate theoretical predictions. Often the choice to employ a model depends on the availability of timely information in the real world which is scarce. Precisely that is one of the key reasons why econometrician sometimes violates the prescriptions of econometric theory. However, the best one can do is to avoid large specification errors. In ownership and performance studies, there are several econometric problems like a) endogeneity/reverse causality b) missing variables c) sample selection bias d) variable measurement errors. In addition, the functional form debate i.e., shape of the relationship of ownership-performance, is not yet been resolved.

Morck, Shleifer and Vishny's (henceforth MSV, 1988) work is the first of its kind in which they use a piecewise linear estimation technique to make evident the incentive and entrenchment effect in a managerial ownership-performance study. Their model can be generalized as:

$Y_i = \alpha_i + \beta_1 x_{i1} + \dots + \beta_k x_{ik} + \theta_1 z_{i1} + \dots + \theta_p z_{ip} + \varepsilon_i$, where z_i is an ownership variable and in z_{i1} to z_{ip} , 1 to p shows the number of knots or spline nodes. The spline variables are constructed in the following manner:

$$\begin{aligned} 1^{st} \text{ spline } z_{i1} &= z_i, \text{ if } z_i < P_1 \\ &= P_1, \text{ otherwise} \\ 2^{nd} \text{ spline } z_{ij} &= 0, \text{ if } z_i \leq P_{j-1} \\ &= z_i - P_{j-1}, \text{ if } P_{j-1} \leq z_i < P_j, j=2, \dots, p-1 \\ &= P_j - P_{j-1}, \text{ if } P_j \leq z_i \\ 3^{rd} \text{ spline } z_{ip} &= 0, \text{ if } z_i \leq P_{p-1} \\ &= z_i - P_{p-1}, \text{ otherwise} \end{aligned}$$

The piecewise linear relation is assumed to have $p-1$ break points. Here, the number of breakpoints has to be pre-determined. To decide the breakpoints often people have relied on the institutional structure of respective countries. The advantage of the above method is that regression line is continuous at the different spline node that is unlikely in case of slope dummy methods. The slope dummy method does not require the various segments to meet at the joint points.

As pointed out earlier there are numerous studies which have used quadratic or polynomial regression model to study the ownership-performance. The Polynomial regression model can be specified as:

$$Y_i = \alpha_i + \beta_1 x_{i1} + \dots + \beta_k x_{ik} + \theta_1 z_i + \theta_2 z_i^2 + \theta_3 z_i^3 + \varepsilon_i$$

One of the advantages of such specification is that the turning points are determined empirically thus limiting the arbitrariness. However, there are certain disadvantages like - the turning points are sensitive to the inclusion/exclusion of other control variables, turning points may be inconsequential in nature thereby not helping in policy studies/formulation. It may not fit the data well if the nonlinear relationship is not smooth. Finally, it restricts any kind of comparison with previous studies by providing new break points with each set of control variables.

Cho (1998), Himmelberg, Hubbard and Palia (1999) Demsetz and Villalonga (2001) and many others have used simultaneous equation model to study the ownership-performance relation. Whenever the relationship is two-way application of OLS will give biased estimator. A simple simultaneous equation model could be written as:

$$Y_{i1} = \alpha_1 + \partial_1 y_{i2} + \beta_{11} x_{i1} + \dots + \beta_{1k} x_{ik} + u_{i1}$$

$$Y_{i2} = \alpha_2 + \partial_2 y_{i1} + \beta_{21} x_{i1} + \dots + \beta_{2k} x_{ik} + u_{i2}$$

If one estimates the first equation ignoring the fact that Y_{i2} is endogenous, then the estimator will be biased and inconsistent i.e., they do not approach the true values of the parameter as sample size increases. Reverse causality or endogeneity is an important concern in corporate governance studies as several studies documented that performance and ownership are endogenous variables. Despite a strong theoretical linkage between concentrated ownership and firm performance, there is a potential causality that runs from performance to ownership for better performing firms. If this argument holds then OLS regression would suffer from simultaneous-equation bias. Similarly, if there are some unobserved factors, which influence ownership and performance that are left out then the estimated coefficient of managerial ownership will only reflect a spurious correlation, not a causal relationship (Himmelberg et al, 1999). Formally, the argument may be stated in the following way:

$$z = \beta x + \varepsilon, \quad x = \gamma z + \eta \text{ where } E(\varepsilon) = E(\eta) = 0 \text{ and } Cov(\varepsilon, \eta) = \sigma_{\varepsilon\eta}$$

Where z denotes firm performance and x ownership concentration. If we estimate the first equation by OLS, we obtain

$$\hat{\beta} = \beta + \frac{cov(x, \varepsilon)}{var(x)}$$

When we simplify $cov(x, \varepsilon)$ by replacing the value of x , it turns out to be -

$$cov(x, \varepsilon) = cov(\gamma z + \eta, \varepsilon) = cov[\gamma(\beta x + \varepsilon) + \eta, \varepsilon] = \gamma\sigma_\varepsilon^2 + \beta\gamma cov(x, \varepsilon) + \sigma_{\varepsilon\eta}$$

$$\text{cov}(x, \varepsilon) - \beta\gamma\text{cov}(x, \varepsilon) = \gamma\sigma_{\varepsilon}^2 + \sigma_{\varepsilon\eta}, \text{cov}(x, \varepsilon)(1 - \beta\gamma) = \gamma\sigma_{\varepsilon}^2 + \sigma_{\varepsilon\eta} \text{ and}$$
$$\text{cov}(x, \varepsilon) = \frac{\gamma\sigma_{\varepsilon}^2 + \sigma_{\varepsilon\eta}}{(1 - \beta\gamma)}$$

If $\gamma \neq 0$ or $\sigma_{\varepsilon\eta} \neq 0$, the estimated coefficients $\hat{\beta}$ will be biased and inconsistent. The first is true in case of structural reverse causality, the second if common unobserved factors are present. Cho (1998) has tried to address the former type of problem whereas Himmelberg et al.(1999) have addressed the later type of problem. The case for using fixed effect approach lies with the later type of problem. However, fixed effect approach is severely criticized as it does not explain variation between firms. Moreover, there may be unobserved factors which vary over time as a result fixed effect estimators will be biased and inconsistent. In many cases, variation between firms is important to know as it will show which firm specific arrangements improve performance.

The missing variable phenomenon is also important in corporate governance studies as each study is directed to achieve certain limited objectives. There are several governance mechanisms like ownership structure, capital structure, board Structure, management compensation, product market competition and market for corporate control. It is difficult to incorporate all aspects of governance in a single equation; paucity of adequate information further makes it a formidable task. Therefore, empirical studies are prone to have biased coefficient estimation. Apart from that the other defect arises on account of sample selection. Often researchers consider large and listed firms for corporate governance studies. However, these firms are not randomly selected rather selection is influenced by few endogenous variables such as firm performance indicators. Very often large and better performing firms prefer to go public. As long as the sample is censored on the basis of left-hand dependent variable, the estimated coefficient will be biased. This is a major problem suffered by most of the studies.

II. Ownership-Performance: What the theory says

Theoretical prediction on ownership and performance relation is not uniquely identified. The causality flows in both the direction i.e., from ownership to performance and vice-versa. However, none of the theoretical reasonings are insignificant in nature. We elaborate a few of them in the following paragraphs.

The convergence of interest or incentive alignment argument states that firm performance is an increasing function of insider share ownership (Jensen and Meckling, 1976). The separation of ownership and control creates an agency conflict. The agency cost will be limited if the owner-manager holds substantial amount of share in the firm. The logical concomitant of this hypothesis is that there is a 'steady positive relationship' between management or insider ownership and corporate value. With increased stake, managers or insiders pay a larger share of the cost of deviation from value maximization and are therefore less likely to squander corporate wealth. Hence, agency costs and management ownership would be negatively related.

The reward argument predicts a positive relationship between insider ownership and firm performance. This suggests that firms reward their managers with equity ownership for their strong past performance (Kole, 1996). This statement has implication for causality and timings of ownership and performance variables. For example, now the relationship is of

nature: $Ownership_t = f(Performance_{t-1})$ whereas the incentive alignment argument predicts that $Performance_t = f(Ownership_t)$.

Cho (1998) has stated that 'other things being equal, managers may prefer equity compensation when they expect their firm to perform well and consequently the value of the firm to increase. As a result, higher levels of insider ownership are expected at firms with high corporate values'. Cho's prediction is fundamentally different from Kole's argument so far as timing is concerned because Kole emphasizes the relationship between past performance and present ownership whereas Cho predicts the relationship between expected performance and current ownership. Therefore, we can express the relationship as $Ownership_t = f(Performance_t^{t+1})$ where $Performance_t^{t+1}$ is corporate performance at time t+1 as expected at time t. On the other hand, Kole's argument implies that $Ownership_t = f(Performance_{t-1})$.

The second line of argument predicts a negative relationship between insider shareholding and firm value. When insiders equity stake in the firm is not substantial and shareholders are too dispersed to take action against non-value maximization behavior, insiders may deploy corporate assets to obtain personal benefits, such as shirking and perquisite consumption. Also as Demsetz (1983) and Fama and Jensen (1983) point out, insiders holding a substantial portion of a firm's equity may have enough voting power to ensure that their position inside the company is protected. As a result, they may become to a great extent insulated from external disciplining forces such as the takeover threat or the managerial labor market. Morck, Shleifer and Vishny (MSV, 1988) have named this as entrenchment effect. However the question arises if the insider is the majority owner, then as per incentive alignment thesis he/she should endeavor to maximize profit. But, isn't it too much generalization of managerial/insider behavior? The manager may become increasingly less motivated by money as his wealth increases. Things such as 'power', 'prestige', 'empire building' may be equally or possibly more important for an extremely wealthy person.

There is another strand of argument which holds the relation to be cyclical or undulating. Stulz (1988) has developed a formal model where he has presented an inverted U-shaped relation between management ownership (through voting rights) and firm performance. It is stated that value of the firm is positively related to voting rights when voting rights is small and vice-versa. Firm performance tends to rise at each increment in managerial share at the beginning. However, it falls and reaches its minimum when the manager/insider holds more than fifty percent share in a firm. To note Stulz's analysis revolves around the takeover premium argument. The basic argument is that insiders with higher levels of ownership are positioned to oppose takeover threat from the market. Therefore the acquirer has to pay higher takeover premiums to increase the likelihood of the success of the takeovers. But, with higher levels of managerial ownership the possibility of successful takeover diminishes and therefore firm performance starts to decline after a sufficiently high level of ownership. Firm performance reaches its minimum when insider shareholding is around fifty percent in the firm because with majority ownership the chances of successful takeover become dim.

In a sharp contrast to all of the above reasoning, Demsetz has argued ownership structure is an endogenous outcome of several competitive processes thereby denies any linkage between managerial ownership and firm performance. Demsetz (1983), Demsetz and Lehn (1985), Demsetz and Villalonga (2001) and Kole and Lehn (1997) have argued for such

kind of relationship. Their basic argument is that ownership structure with insufficient performance will fail to survive in the long run. Demsetz (1983) has put a strong criticism against Berle and Means (1932) thesis that an inverse correlation exist between diffuseness of shareholdings and firm performance. Demsetz and Villalonga (2001) argued that the ownership structure of a firm is an endogenous outcome of decisions that reflect the influence of shareholders and of stock market trading. The ownership structure that emerges, whether concentrated or diffused, is influenced by profit maximizing interest of the shareholders, so that there is no systematic relationship between variation in ownership and performance.

While there is no convergence in theoretical argument, the empirical evidences support each strand of argument. One of the important dimensions which seem to receive scanty attention is the institutional structure of the country. The country's suprastructure defines the broad governance mode of every micro unit of the country. Ownership as an important incentive mechanism operates within the boundary set by the law and regulations of the country. While incentive is the driver for any economic activity, its strength is critically linked to broad provisioning and enforcement of law. Therefore, while viewing any country-specific findings, one should juxtapose it with the economic and legal development in the respective countries.

III. Data and Empirical Specifications

The initial sample consists of 1,833 listed firms obtained from *Prowess* database maintained by Centre for Monitoring Indian Economy (CMIE). Most of the firms are listed in Bombay Stock Exchange (BSE) and National Stock Exchange (NSE) – the two largest stock exchange of India. For each firm we have four years of observation i.e., 2000-01 to 2003-04. Out of a large panel we have eliminated firms for which a) sales b) shareholding pattern and c) selected stock indicators like share price and market capitalization are missing. The sample is a mix of large and small firms. Previous well-known studies like MSV (1988), Agrawal and Knoeber (1996) and Cho (1998), have collected sample from Fortune 500 list. One criticism against all these studies is that since the relation between a governance mechanism and performance may depend upon firm size, a perfect sample should be heterogeneous in terms of size. We have taken care of this problem by including both large and small firms in the sample.

The dependent variable in the regression model is Tobin's Q which is defined as the ratio of the market value of a firm plus the market value of its debt—to the replacement value of the net fixed assets of the firm. Since market value exhibit the discounted present value of its expected future income stream, it is undoubtedly a forward measure of firm performance. Q ratio taking into account the future prospects of the firm provides a measure of management's ability to generate certain income stream from an asset base (Short and Keasey, 1999). The higher is the Tobin's Q, the more is the market value of the firm.

We have used two methods – a) a cubic (polynomial) equation method b) Spline method. The primary specification is:

$$\text{Tobin's } Q_{it} = \alpha + \beta(\text{ownership})_{it} + \gamma X_{it} + \theta_t + \delta_i + \varepsilon_{it}.$$

The ownership_{it} variable measures the fraction of the equity of firm i , lying between zero and one, which is owned by insiders in period t . The control variables X_{it} are firm specific factors. In the model, industry specific fixed effects are δ_i , time effects θ_t and a random unobserved component ε_{it} . To introduce non-linearity in the model, we have used the

polynomial function of insider ownership such as $(ownership)_{it}^2, (ownership)_{it}^3$. Each explanatory variable is described in *Appendix 1*.

As mentioned earlier such formulation has certain disadvantages because of which we have introduced a piecewise linear regression model. It is called piecewise linear as it is pre-supposed that ownership has one linear effect on Q-ratio within a certain range of its values, but a different linear effect, at a different range. This model allows for changes in slope, with the restriction that the line being estimated is continuous – that is it consists of two or more straight line segments. In a cubic or quadratic model, the slope changes continuously with x variable but in piecewise linear specification, the slope is same or constant in a particular segment. The model with spline specification which is adopted here is as follows:

Tobin's $Q_{it} = \alpha + \beta_1(INS.SP1)_{it} + \beta_2(INS.SP2) + \beta_3(INS.SP_3) + \gamma X_{it} + \theta_i + \delta_i + \varepsilon_{it}$ where each INS.SP represents a spline node. We have generated three spline variables of insider ownership containing two knots at 0.20 and 0.49. More formally, let $INS_i, i=1, \dots, n$, be the variables to be created $k_i, i=1, \dots, n-1$ be the corresponding knots, and INS (insider share) be the original variable. Then,

$$INS_1 = \min(INS, k_1) \text{ and } INS_i = \max\{\min(INS, k_i), k_{i-1}\} - k_{i-1} \text{ where } i=2, \dots, n$$

The marginal spline specification is defined as $INS_1 = INS$ and $INS_i = \max(0, INS - k_{i-1})$ where $i=2, \dots, n$. Marginal specification is preferred as the generated variables when used in estimation, its coefficient represent the change in the slope from the preceding interval. For example, INS.SP2 in the marginal specification shows the change in slope from after insider ownership 0.20 to before insider ownership 0.49. Therefore, it tests for the differences in slopes. In non-marginal spline specification, INS.SP2 would have measured the slopes for the interval i.e., 0.20 to 0.49. Another advantage of marginal spline specification is that it makes possible to test whether the change in slope is significant, i.e., if the effect of INS.SP2 is not significant then the effect of insider ownership does not change after the break point. Hence in the final specification we include three marginal spline variables.

The knots at [0-20], [0.20-0.49] and above are finalized after extensive search at different threshold level. Also, the decisions are influenced by the break-points which are obtained from the polynomial estimation. Morck et al. (1988) have categorically stated that the knots are arbitrary in nature. Given the criticism, we have tried to link the knots to Indian property right's regime which is discussed later in the paper.

IV. Empirical Findings

Table I to IV report the estimate of the determinants of firm value as proxied by Tobin's Q. The different models are designed to address many econometric issues such as specification bias, omitted variable bias, spatio-temporal effects, outlier problem, robustness of the result and endogeneity problem. Model 1 reports results from a baseline specification using pooled data for all firm-years. Model 2 to 4 is the augmented pooled data estimates while in Model 5 & 6 we have taken 4-year average of each variable. In the parenthesis, below each coefficient, we report the heteroskedasticity consistent *t-statistics*.

The baseline specification confirms the curvilinear hypothesis that the relationship between performance of firms and insider ownership is cubic in form. The coefficient of the

variables INS and INS3 are positive while the quadratic term is negative. This result provides evidence for the general functional form of the relation between Tobin's Q and insider ownership - that management move from alignment, to entrenchment, to alignment as their ownership stake in the firm increases. Below each model, we provide p-value of F-statistics for the joint hypothesis that all the three of the insider ownership coefficients are jointly zero (i.e., joint exclusion test). For model-1, the P-value is 0.00 that rules out the null hypothesis.

In figure 1, we plot the predicted Tobin's Q and Insider share. The graph shows that, corporate value increases with insider ownership but begins to decline at higher levels of ownership. Finally, corporate value increases at a very high level of insider ownership. This finding is in conformity with convergence of interest and entrenchment effects at increasing levels of insider ownership. Higher amount of family stake in the firm persuades the members to do better monitoring activities that results in higher market value. When we have calculated the turning points for this baseline specification, the turning points are found at 0.29 (maxima) and 0.56 (minima) point of insider ownership.

This finding suggests that insiders in India entrench themselves at a very high level of ownership. In general we see in advanced countries, managers entrench at very low levels of share ownership (MSV, 1988). This difference in findings could be attributed to institutional differences between emerging economies and advanced countries. Several studies documented that Ownership in US is less concentrated (Denis and McConnell, 2003; Roe, 2005; La Porta et al., 1999). Highly diffused ownership structure enables the manager or insider to entrench at low level of share-holding as non-insider shareholdings are diffused (MSV, 1988). Second, as MSV (1988), Agrawal and Knoeber (1996) and Cho (1998), have collected sample from Fortune 500 list i.e., large firms, it is not surprising to see managers to entrench at low level of ownership because major block holdings will be absence in such firms. However in India ownership is highly concentrated. The concomitant governance structure allows insiders to entrench only at a higher level of ownership.

Model-2 is augmented by introducing many control variables and it is also controlled for temporal shocks. The sign and significance of ownership variables remain unaltered. Further the result shows a convex non-linear impact of firm size (i.e., sales) on firm value. Firm value (Q-ratio) first decreases and then increases in log of sales (lsales) which is consistent with the curvilinear findings of Himmelberg et al.(1999). Whether economies of scale or organizational efficiency (X-efficiency) is the reason for positive association of value and size for large firms require a more scientific investigation. In our earlier study (Pant and Pattanayak, 2005), we find the absence of scale economies in Indian industry. Therefore, internal capital market advantages and organizational efficiency of large firms could be the reason for higher Q-ratio.

Leverage or debt intensity is positive, as the point estimate is 0.63 with high statistical significance. To test for non-linearity, the model-2 includes a squared leverage term which is found to be positive and statistically significant. A high commitment of fixed debt payment helps in alleviating the excess cash flow problems. This is also consistent with the signaling argument (Ross, 1977) and free cash flow theory (Jensen, 1986). For US firms, while MSV (1988) and Demsetz & Villalonga (2001) show a negative influence of debt on firm value, McConnell and Servaes (1990) find a positive impact

Next, the coefficient of R&D intensity is positive and statistically significant. R&D expenditure is a soft spending and insiders have informational advantage vis-à-vis outsiders. It may involve managerial private benefits. The positive estimate suggests that higher spending

in R&D leads to higher Q-ratio. The point estimate of advertising or promotional expenditure is 0.06, which is statistically significant at less than 1 percent level. Advertising expenditure captures the effect of intangible assets along with R&D expense. Higher expenditure in advertising helps firm in building reputation and acts as entry deterrence for the new entrants in the industry.

It is observed that lesser is the capital intensity (K/S) of firms, higher is the value (Q-ratio). Himmelberg et al. (1999) find an inverse U-shape relationship between capital intensity and firm value where as Habib et al. (2003) show a U-shape relation between firm efficiency score and capital intensity. When we include in model-2, the squared term of capital intensity, not only both the coefficient became insignificant but also we observe the turning point in the U-shape curve at 2737.28 that is much beyond the capital intensity ratio in sample firms (the maximum value in our sample is 1866). Hence, we submit capital intensity has a linear negative effect on firm value in India. Theoretically, a greater investment in tangible fixed assets is easy to monitor, thus, alleviates the fear of managerial moral hazard. Similarly, firms with higher amount of intangible capital may be subject to greater agency problems as capital providers cannot observe, monitor and assess spending on intangibles easily. However, firms operating with higher proportions of intangible assets may adopt a strict governance structure to signal investors that they want to prevent the future misuse of resources (Klapper and Love, 2002).

Stock market liquidity is a major concern in emerging economies. The scrips that are traded frequently shall command higher price in the market. The coefficient of liquidity confirms that companies whose stock turnover is high tend to have higher market value. The final variable in model-2 is BSE 500, a categorical variable equal to 1 if the firm is Bombay Stock Exchange 500 (BSE-500) firms. It is akin to Fortune-500 firms globally. In the sample, there are 353 BSE-500 firms (70.6 percent of BSE-500). In addition, once a firm's name appears in BSE-500, investors' confidence level on that firm increases that translates into higher stock price. Whenever such kinds of firms come with additional issues, it generally gets oversubscribed. BSE-500 firms are much larger in comparison to non-BSE 500 firms. Thus, to test the quality and size effects we include BSE-500 categorical variable in the model. As expected, the dummy variable is turned out to be positive and highly significant. On an average, the market value of BSE-500 firms is 41 percent more in comparison to non-BSE 500 firms.

In Model-3, we include another categorical variable i.e., Foreign presence (FORPRES). If the promoter shareholding includes share by foreign promoter/collaborator, it is coded as one, otherwise zero. Foreign promoter/collaborator viewed as strategic partner for domestic corporations when specifically, they share superior technological expertise. The technological and organizational advantages of foreign firms and their ability to operate internationally bring reputational advantages vis-à-vis domestically owned firms. In the sample there are 345 firms with foreign promoter/collaborator shareholding. The categorical variable shows that firms with foreign promoter share tend to have higher market value.

To test the effect of devolution of property rights to foreign promoters/collaborators, we have generated two categorical variable i.e., FORS: 26-51 percent and FORS>51 percent where the reference category is less than 26 percent of foreign promoter shareholding. Both the dummy variables have positive sign with high statistical significance. The size of the estimate is large when foreign promoter shareholding is more than 51 percent. This provides evidence that foreign promoter shareholding is beneficial for other investors.

Following Demsetz and Lehn (1985), Demsetz and Villalonga (2001) and Welch (2003), in model 5 and 6, four years (i.e., 2001-2004) average of each variable are taken. In model-5, the sign of INS & INS3 is positive while the sign of INS2 is negative. The turning points are observed at 0.29 (maxima) and 0.53 (minima). It is observed that the coefficient of INS3 is at least twice of coefficient of INS. This suggests high powered incentives by way of increased share ownership raises effort that influences firm value positively.

To avoid possible spurious correlation between ownership and Q-ratio through industry effects we have used 2-digit industry dummy based on National industrial classification (1998) which is akin to Standard Industrial Classification (SIC). We have not reported the intercept as each industry gets its own intercept. There is an ongoing debate in governance studies – whether to control for firm level fixed effects or at the industry level. Using firm level fixed effects is problematic as it removes all cross-section variation that is important in the present study. Firm specific dummy variables eliminates all between firm variations from the data. It only exploits the within group variation in the data as the mean demeaning procedure eliminates between variation. Since the cross-sectional variation is important in governance studies, we prefer industry dummy rather than firm level dummy variables (Hermalin and Weisbach, 1991; Zhou, 2001). Zhou (2001) argues that Himmelberg et al. (1999) could not find any link between ownership incentives and firm performance as fixed effects of firm remove all cross-section variation.

Model-7 in Table-II is the replication of model-1 of Table-1 that does not include any control variables. As per hypothesis, the sign of INS and INS³ is positive and sign of INS² is negative. It confirms the previous findings that insiders move from alignment, to entrenchment to alignment as their ownership stake increases in the firm. All the ownership variables found to be jointly significant. Here, the turning points are found at 0.30 (maxima) and 0.52 (minima). Model-8, 9 and 10 is the replication of model-2, 3 & 4 with industry fixed effects. In case of Model-10, the value of maxima is observed at 0.32 of insider ownership and minima at 0.52.

Following Morck, Shleifer and Vishny (MSV, 1988) we adopt a piecewise-linear model to exactly identify the non-monotonicity in the relation between insider stock ownership and firm performance. This model allows for the effect of holdings to change at different threshold points known as spline nodes. In the present work, we choose the knots at [0-0.20], [0.20-0.49] and above 0.49. As MSV (1988) state, such type of chosen nodes has some arbitrary elements. However, to limit the discretion and to derive policy implications, we have attempted to link the spline nodes with Indian property rights regime as per Companies Act, 1956 (See, *Appendix-2*). First two models in Table-3 are presented for a comparison purpose with the subsequent two models of this table. Sarkar and Sarkar (2000) find in a cross-sectional study that firm value decreases up to 25 percent of managerial shareholding and increases thereafter. To test that, in model-11 we have created two knots at [0-0.25] and above. Unlike Sarkar et al., we find the coefficient of both insider variables to be positive and insignificant.

Indian property rights regime is defined in such a way that when shareholding level is less than 26 percent, one cannot block special resolutions. As shareholdings go beyond 26 percent, one can stop the passing of a special resolution. A special resolution requires the support of 3/4th majority of shareholders present and entitled to voting as per section 189 of Indian Companies Act, 1956. When the shareholding level exceeds 50 percent, one can pass ordinary resolutions, which govern most of the activities of the firm. Thus varying degrees of

control power is associated with each level of ownership stake, thus one can expect its effect to be exhibited in firm performance. Accordingly we have generated three spline nodes at [0-0.26], [0.26-0.51] and above in model-12. As one can see in the model, the sign of each ownership variable is as per expectation i.e., INS.SP1 and INS.SP3 is positive and INS.SP2 is negative. However, none of the ownership variables is significant at the conventional level of significance. Only INS.SP3 shows to be significant at 10 percent level.

In model-13 & 14, the spline nodes are fixed at [0-0.20], [0.20-0.49] and above. We have selected the cutoff point after extensive search at several points, including the turning points that are emerged in the cubic estimation. In the cubic model, we find the values of maxima to vary from 0.28 to 0.32 and the values of minima to vary from 0.45 to 0.54. But, the spline specification best fits in the aforementioned range. To state here 0.49 is only 0.02 point less than 0.51 where one gets simple majority. Therefore, once insider has 49 percent or more shareholding in the firm, it is enough for them to collude with some small stakeholders to block special resolutions as and when the situation demands.

The baseline specification model-13 does not include any control variables and like earlier tables we report the heteroskedasticity consistent t-statistics below each estimated coefficients. As per hypothesis of the study, we find the firm value to increase when insider stake is less than 20 percent and beyond 49 percent but it declines in the range of 20 to 49 percent. In model-14, all of the explanatory variables are included. The sign and significance of each ownership coefficient is consistent with the previous findings. For each 1 percent increase in ownership between 0 and 20 percent, firm value increases by an average 0.005 and for each 1 percent increase in ownership from 20 percent to 49 percent, firm value declines by 0.007 points. As we have taken marginal spline specification, the coefficient shows the change in the slope from the preceding intervals. Instead of change in slope, if one wants to get the actual slope of INS.SP2, one has to add coefficient of INS.SP1 and INS.SP2. Similarly, to get the slope of INS.SP3, one has to add the coefficient of INS.SP1, INS.SP2 and INS.SP3. After getting the actual slope, we divide it by 100 to give percentage explanation since each ownership variable is in decimal.

V. Endogeneity Problem

There are two kinds of endogeneity problem discussed in the governance literature. First, the problem of reverse causality i.e., ownership and performance influences each other (Cho, 1998). Second, the issue of unobserved heterogeneity i.e., ownership may be endogenous because of individual heterogeneity affecting both firm value and its ownership structure (Himmelberg et al., 1999). Cho (1998) argues that managers would like to be compensated through equity when they expect the performance of firms to increase. In other words, performance of firm influences the ownership stake of managers. In addition, incentive alignment argument predicts the performance of firms to increase with increment in managerial holdings. In the presence of this mutual interdependence, OLS will give biased and inconsistent coefficients. Similarly, if there are certain unobserved factors which influences both ownership and performance, and omitted from value equation, the resulting estimates will be biased. This will happen as the ownership variables in the value equation will be correlated with the error term of the model i.e., $cov(x_i, u_i) \neq 0$.

In India, as per employee stock option plans (ESOP, section 17 of the Income Tax Act, 1961; SEBI Regulations, Indian Companies Act, 1956 sec.79 A), an employee is given the option to acquire shares of the company at a pre-defined discount price after a certain

period. It is open to all permanent employees and to the directors of the company. However, an employee who is a promoter or belongs to the promoter group shall not be eligible to participate in the scheme. Also, a director who either by himself or through his relative or through any body corporate, directly or indirectly holds more than 10 percent of the outstanding equity shares of the company shall not be eligible to participate in the scheme. In addition, under employee stock purchase plan (ESPP) company offers shares to employees as part of a public issue or otherwise. In this plan, large shareholders and promoters are not allowed to take part. In this study, we have taken promoters' shareholding as insider or family holding. Therefore, definitionally they cannot participate in any of such schemes. This partially rules out the first concern of endogeneity that is interdependence of performance and stock reward. Other than that, Stiglitz (1994) has given a political-economy argument of exogenous relationship of ownership-performance in an emerging economy. He articulated the exogenous relationship on the basis of illiquid capital market in less developed economies. Since in emerging economy the capital market is less than perfectly liquid, it is difficult for investors to trade and change ownership structure in response to changing condition.

The next problem is the issue of unobserved heterogeneity. To solve this problem, Hermalin and Weisbach (1991) use lagged ownership variables as instruments for managerial ownership. Himmelberg et al. (1999) use $lsales$, $lsales^2$ and σ as the instruments. However, Himmelberg et al.'s (1999) IV-variables are subject to criticism as they use these same variables as the predictors of Q-ratio in their previous models.

In Table-IV, we present the IV-model estimates of Tobin's Q on insider ownership and other control variables. In Model-15, we take lagged ownership variables as instrumental variables (Hermalin and Weisbach, 1991; Gugler and Weigand, 2003; Muller and Spitz, 2002). Like previous models, the coefficient of INS and INS^3 is positive and INS^2 is negative. Each ownership variable is statistically significant at conventional level of significance. In the last row of the table, we present two tests of endogeneity of regressors. The null hypothesis of the test is that an ordinary least squares (OLS) estimator of the same equation would yield consistent estimates; that is any endogeneity among the regressors would not have deleterious effects on OLS estimates (Baum, Schaffer & Stillman, 2003). As the P-value suggests, one could not reject the null hypothesis here. Thus, it rejects the assumption of endogeneity of regressors that is insider ownership variables are not endogenous variables. The equation is exactly identified because there are three endogenous variables and three instrumental variables.

In Model 16, we introduce two more instrumental variables i.e., β (market risk) and its $S.E_\beta$ (firm risk). The β coefficient is obtained through a regression of weekly returns of firm on weekly return of sensex (BSE sensitive index) for each year. The standard error obtained from the regression is used to estimate firm risk (Demsetz and Villalonga, 2001; Welch, 2003). β is a commonly used measure to assess the volatility of returns relative to a benchmark index. A stock with a β higher than one has higher risk than the average company in the market; while a β below one is associated with lower risk. As managers are risk averse, a negative relation is expected between firm risk and insider ownership (Himmelberg et al., 1999). On the other hand, greater is the instability in the firm's environment, higher is the opportunity for managerial discretion. Therefore, Demsetz et al., (2001) predicts a positive relationship between risk and ownership.

In model-16, all the ownership variables possess the expected sign and significance. Though it holds the basic hypothesis of convergence of interest and entrenchment, the model is rejected on the basis of Wu-Hausman F test given in the last row. The P-value shows that one can not reject the null at conventional level of significance which imply the regressors are not endogenous. Model-17 & 18 is estimated by error component two stage least square model introduced by Baltagi (1995, ch-7). As random effects estimator is a weighted average of the between and within estimator, likewise error component two stage least square estimator (ec2sls) is a weighted average of two stage least square estimation of a between estimator and two stage least square estimation of a within estimator. Each insider ownership variable in model-17 & 18 is statistically significant and bears the expected sign. Model-17 uses the lagged ownership variables as instruments while model-18 includes two more instrumental variables i.e., β and $S.E_{\beta}$.

VI. Conclusion

The objective of this paper is to examine the influence of insider shareholding on firm value. It is well known that in a typical Indian firm average stake of insiders is more than fifty percent. That clearly negates the separation of cash flow rights and control rights and the ensuing agency problem. However, that poses a new problem which is prevalent in Asian economies known as 'large investor activism'. This paper is an attempt to disentangle the performance and entrenchment effect of dominant shareholder in Indian firms.

Our examination supports the non-linear relation between insider shareholding and firm value. The interest alignment effect works at very low and extreme high level of insider shareholding, while entrenchment effect is operative in medium range of insider shareholding. We argue that when family shareholding is not substantial, they are unable to entrench themselves. However, when their stake increases and in the range of 20 to 49 percent, the force of market mechanism becomes weak and allow the insiders to exercise their discretionary power. Their incentive to consume at office or divert resources to the entity where they have exclusive ownership increases. But, what happens when insiders become the major shareholder in the firm? We find that as and when insiders' stake exceeds 49 percent, there is a realignment of interest with the firm. On account of majority stake in the firm, they stand to bear the maximum loss for each dollar forgone. As per the monitoring hypothesis, with greater ownership, insiders keep an eye on other constituents of the firm and the firm gets rid of the free rider problem associated with dispersed ownership. Therefore, our conjecture is that unlike other Asian countries, concentrated ownership in Indian firms has not posed a systemic major challenge so far.

This study also confirms another hypothesis that is presence of foreign promoter in a firm and their amount of shareholding has a positive impact on firm value. This may be due to reputational effect of foreign promoter's shareholding in a firm. Investors may perceive foreign promoters shareholding as an indicator of firms' quality. Unlike previous studies, this study finds that foreign promoter shareholding has a positive impact on firm value at each threshold limit of shareholding. But, the effect becomes more pronounced when foreign promoter shareholding exceeds 51 per cent in the firm. These findings provide support to the ongoing reform program in India and calls for a complete removal of sectoral foreign direct investment cap.

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Figure 1
Predicted Tobin's Q and Insider Share

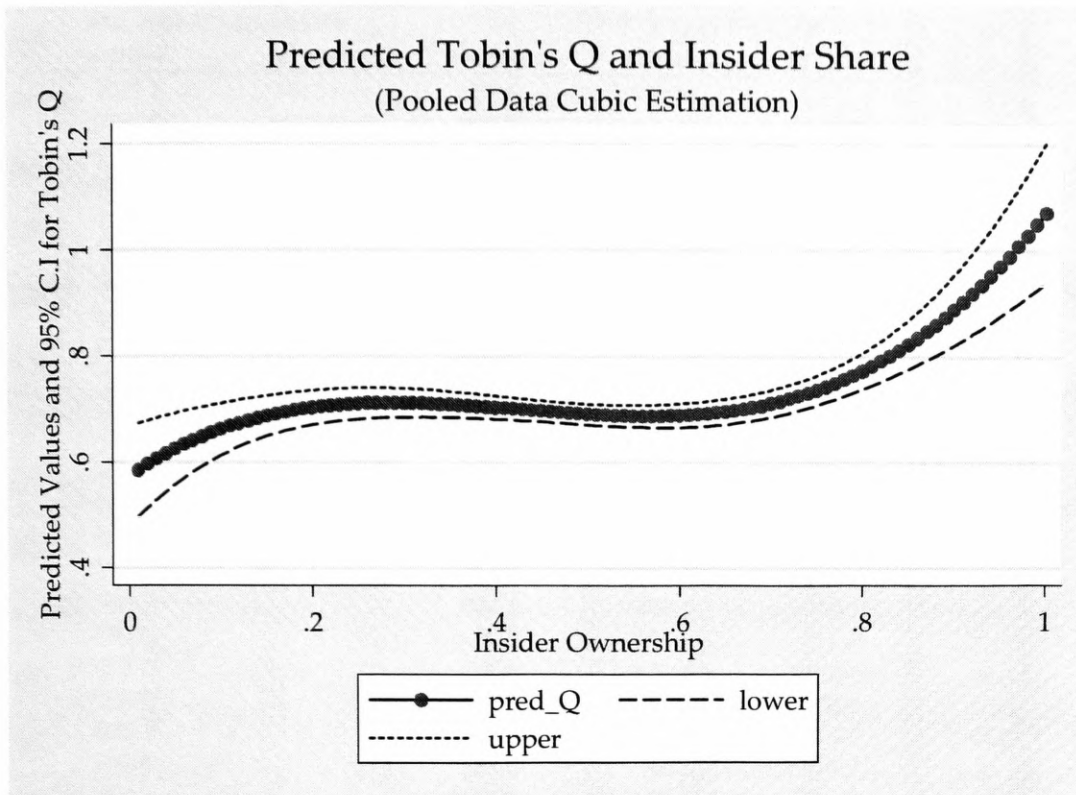


Table I
Determinants of Firm Value: Pooled Estimates

| VARIABLE | DEPENDENT VARIABLE: TOBIN'S Q | | | | | |
|--------------------|-------------------------------|---------------------|---------------------|---------------------|----------------------|----------------------|
| | POOLED DATA | | | | AVERAGE OF 2001-2004 | |
| | MOD-1 | MOD-2 | MOD-3 | MOD-4 | MOD-5 | MOD-6 |
| INS | 1.1574 (3.60)* | 0.7751 (2.53)* | 0.7227 (2.36)* | 0.9326 (3.07)* | 1.2309 (1.87)** | 1.0206 (1.74)** |
| INSSQ | -3.0371 (-3.81)* | -1.9550 (-2.56)* | -1.9466 (-2.55)* | -2.4861 (-3.30)* | -3.2338 (-2.06)* | -2.5602 (-1.80)** |
| INSCU | 2.3769 (4.03)* | 1.7023 (2.99)* | 1.6932 (2.98)* | 1.9950 (3.55)* | 2.5926 (2.28)* | 2.0218 (1.92)* |
| LN(S) | | -0.0604 (-4.81)* | -0.0635 (-5.03)* | -0.0631 (-5.04)* | | -0.0842 (-3.26)* |
| LN(S) ² | | 0.0071 (3.42)* | 0.0074 (3.59)* | 0.0073 (3.60)* | | 0.0101 (2.41)* |
| Y/S | | 0.0005 (1.55)§ | 0.0005 (1.70)** | 0.0007 (2.05)* | | 0.0018 (1.63)** |
| LEV | - | 0.6270 (10.77)* | 0.6402 (11.22)* | 0.6828 (12.22)* | | 0.8536 (10.57)* |
| LEVSQ | | 0.0988 (2.84)* | 0.0913 (2.73)* | 0.0863 (2.67)* | | 0.0801 (2.27)* |
| R&D/K | | 4.6277 (5.15)* | 4.5609 (5.08)* | 4.5621 (5.15)* | | 5.6383 (3.07)* |
| ADV/K | - | 0.0623 (2.30)* | 0.0618 (2.34)* | 0.0566 (2.33)* | | 0.0702 (1.65)* |
| I/K | | 0.0381 (1.76)** | 0.0417 (1.84)** | 0.0443 (1.88)** | | 0.0365 (0.63) |
| K/S | | -0.0003 (-1.99)* | -0.0004 (-2.38)* | -0.0004 (-2.38)* | | -0.0008 (-1.14) |
| LN(AGE) | | -0.0275 (-2.10)* | -0.0290 (-2.21)* | -0.0348 (-2.66)* | | 0.0023 (0.10) |
| LIQUIDITY | | 15.5405 (3.79)* | 15.9149 (3.87)* | 16.3626 (3.97)* | | 17.2697 (2.19)* |
| FORPRES | | | 0.1403 (6.64)* | | | |
| FORS:26-51% | | | | 0.2013 (5.30)* | | 0.2748 (3.93)* |
| FORS:>51% | | | | 0.4084 (7.15)* | | 0.4287 (3.89)* |
| BSE 500 | | 0.4130 (13.24)* | 0.3903 (12.32)* | 0.3666 (11.47)* | | 0.3306 (5.86)* |
| R-square | 0.0046 | 0.2109 | 0.2170 | 0.2297 | 0.0518 | 0.3291 |
| F Stat: Prob > F | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Prob>F:(insider)# | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.07 |
| Year dummy: | N0 | Yes | Yes | Yes | Ind. Dummy | Ind. Dummy |
| Obs. | 7329 | 7305 | 7305 | 7305 | 1830 | 1826 |

Notes:

- Heteroskedasticity consistent *t*-statistics are in Parentheses. Standard Errors are calculated using White's heteroskedasticity consistent variance-covariance matrix.
- * indicates significance at 5 percent level, ** indicates significance at 10 percent level, § indicates significance at 15 percent level.
- # for models P-value of Joint exclusion test of insider ownership is given; for which the null hypothesis is all the insider-ownership variables are jointly Zero.

Table II
Determinants of Firm Value: Fixed Effects Regression Estimates

| VARIABLE | DEPENDENT VARIABLE: TOBIN'S Q | | | |
|--------------------|-------------------------------|---------------------|---------------------|---------------------|
| | Industry Fixed Effects | | | |
| | MOD-7 | MOD-8 | MOD-9 | MOD-10 |
| INS | 1.0216 (3.11)* | 0.7533 (2.42)* | 0.7049 (2.26)* | 0.9452 (3.05)* |
| INSSQ | -2.6574 (-3.35)* | -1.7712 (-2.34)* | -1.7868 (-2.36)* | -2.3905 (-3.19)* |
| INSCU | 2.1500 (3.70)* | 1.5422 (2.77)* | 1.5536 (2.79)* | 1.8943 (3.44)* |
| LN(S) | | -0.0679 (-5.23)* | -0.0694 (-5.35)* | -0.0683 (-5.32)* |
| LN(S) ² | - | 0.0086 (4.05)* | 0.0087 (4.13)* | 0.0086 (4.13)* |
| Y/S | - | 0.0005 (1.62)** | 0.0005 (1.69)** | 0.0007 (2.07)* |
| LEV | | 0.7117 (12.57)* | 0.7206 (12.94)* | 0.7668 (14.06)* |
| LEVSQ | | 0.0817 (2.56)* | 0.0754 (2.45)* | 0.0694 (2.33)* |
| R&D/K | - | 4.1301 (4.63)* | 4.1119 (4.60)* | 4.1453 (4.68)* |
| ADV/K | | 0.0608 (2.30)* | 0.0601 (2.33)* | 0.0545 (2.32)* |
| I/K | | 0.0213 (1.23) | 0.0250 (1.38) | 0.0266 (1.43)§ |
| K/S | | -0.0004 (-2.52)* | -0.0004 (-2.78)* | -0.0005 (-2.77)* |
| LN(AGE) | | 0.0037 (0.27) | 0.0026 (0.19) | -0.0006 (-0.04) |
| LIQUIDITY | | 11.3492 (2.66)* | 11.8262 (2.77)* | 12.1547 (2.85)* |
| FORPRES | | | 0.1397 (6.41)* | |
| FORS:26-51% | | | | 0.1943 (5.09)* |
| FORS>51% | | | | 0.4170 (7.26)* |
| BSE 500 | | 0.3991 (12.89)* | 0.3780 (12.07)* | 0.3550 (11.26)* |
| Adj. R-square | 0.0336 | 0.2288 | 0.2344 | 0.2470 |
| F Stat: Prob > F | 0.00 | 0.00 | 0.00 | 0.00 |
| Prob>F:(insider)# | 0.00 | 0.00 | 0.00 | 0.00 |
| Year dummy: | No | Yes | Yes | Yes |
| Obs. | 7329 | 7305 | 7305 | 7305 |

Notes:

- *Heteroskedasticity consistent t-statistics are in Parentheses. Standard Errors are calculated using White's heteroskedasticity consistent variance-covariance matrix.*
- ** indicates significance at 5 percent level, ** indicates significance at 10 percent level, § indicates significance at 15 percent level.*
- *# for models P-value of joint exclusion test of insider ownership is given; for which the null hypothesis is all the insider-ownership variables are jointly Zero.*

Table III
Determinants of Firm Value: Fixed Effects Regression with Spline Variables

| VARIABLE | DEPENDENT VARIABLE: TOBIN'S Q | | | |
|--------------------|-------------------------------|---------------------|---------------------|---------------------|
| | Industry Fixed Effects | | | |
| | MOD-11 [®] | MOD-12 [§] | MOD-13 | MOD-14 |
| INS.SP1 | 0.0606 (0.34) | 0.1618 (0.91) | 0.5892 (2.31)* | 0.5460 (2.37)* |
| INS.SP2 | 0.1185 (0.59) | -0.1404 (-0.61) | -0.6775 (-2.04)* | -0.6140 (-2.11)* |
| INS.SP3 | | 0.2738 (1.63)§ | 0.4386 (2.38)* | 0.3689 (2.21)* |
| LN(S) | -0.0715 (-5.56)* | -0.0705 (-5.45)* | - | -0.0697 (-5.44)* |
| LN(S) ² | 0.0088 (4.23)* | 0.0087 (4.16)* | | 0.0086 (4.15)* |
| Y/S | 0.0007 (2.12)* | 0.0007 (2.13)* | | 0.0007 (2.11)* |
| LEV | 0.7821 (14.49)* | 0.7780 (14.40)* | | 0.7764 (14.38)* |
| LEVSQ | 0.0663 (2.25)* | 0.0674 (2.28)* | | 0.0678 (2.29)* |
| R&D/K | 4.1363 (4.68)* | 4.1316 (4.67)* | | 4.1211 (4.66)* |
| ADV/K | 0.0552 (2.35)* | 0.0554 (2.35)* | | 0.0553 (2.34)* |
| I/K | 0.0262 (1.41)* | 0.0261 (1.40) | | 0.0258 (1.39) |
| K/S | -0.0005 (-2.82)* | -0.0005 (-2.79)* | | -0.0005 (-2.79)* |
| LN(AGE) | 0.0015 (0.11) | 0.0010 (0.07) | | 0.0018 (0.13) |
| LIQUIDITY | 12.3628 (2.91)* | 12.2702 (2.88)* | | 12.2083 (2.86)* |
| FORPRES | | | | |
| FORS:26-51% | 0.1954 (5.09)* | 0.1964 (5.13)* | | 0.1973 (5.16)* |
| FORS>51% | 0.4129 (7.21)* | 0.4109 (7.11)* | | 0.4111 (7.10)* |
| BSE 500 | 0.3553 (11.25)* | 0.3565 (11.26)* | | 0.3567 (11.26)* |
| Adj. R-square | 0.2453 | 0.2455 | 0.0389 | 0.2458 |
| F Stat: Prob > F | 0.00 | 0.00 | 0.00 | 0.00 |
| Prob>F:(insider)# | 0.00 | 0.00 | 0.00 | 0.00 |
| Year dummy: | Yes | Yes | Yes | Yes |
| Obs. | 7305 | 7305 | 7329 | 7305 |

Notes:

- *Heteroskedasticity consistent t-statistics are in Parentheses. Standard Errors are calculated using White's heteroskedasticity consistent variance-covariance matrix.*
- ** indicates significance at 5 percent level, ** indicates significance at 10 percent level, § indicates significance at 15 percent level.*
- *# for models P-value of Joint exclusion test of insider ownership is given; for which the null hypothesis is all the insider-ownership variables are jointly Zero.*
- *@ Model-11 is the replication of Sarkar and Sarkar's (2005) i.e., [0-0.25] & above.*
- *§ Model-12 is adopted following India's Corporate Law or Legal regime where certain control rights devolve at [0-0.26], [0.26-0.51] and above.*

Table IV
Determinants of Firm Value: Instrumental Variable Estimation

| VARIABLE | DEPENDENT VARIABLE: TOBIN'S Q | | | |
|---|-------------------------------|--------------------------------------|-------------------------|--------------------------------------|
| | IV-2SLS Regression | | EC2SLS (Baltagi, 1995) | |
| | MOD-15 | MOD-16 | MOD-17 | MOD-18 |
| INS | 0.8544 (1.87)* | 0.8539 (1.87)* | 1.0455 (2.05)* | 1.0041 (1.83)* |
| INSSQ | -2.2376 (-2.17)* | -2.2443 (-2.18)* | -2.9301 (-2.51)* | -2.9025 (-2.31)* |
| INSCU | 1.8340 (2.61)* | 1.8445 (2.62)* | 2.3610 (2.94)* | 2.3759 (2.75)* |
| LN(S) | -0.0742 (-8.88)* | -0.0744 (-8.89)* | -0.0545 (-6.52)* | -0.0506 (-5.84)* |
| LN(S) ² | 0.0083 (6.61)* | 0.0083 (6.61)* | 0.0061 (4.50)* | 0.0059 (4.18)* |
| Y/S | 0.0008 (1.57)§ | 0.0008 (1.57)§ | 0.0005 (1.21) | 0.0004 (1.14) |
| LEV | 0.8131 (17.71)* | 0.8134 (17.70)* | 0.6599 (13.60)* | 0.6327 (12.61)* |
| LEVSQ | 0.0663 (4.01)* | 0.0663 (4.00)* | 0.0740 (4.22)* | 0.0709 (3.95)* |
| R&D/K | 4.4174 (11.60)* | 4.4141 (11.59)* | 3.4602 (9.11)* | 3.0412 (7.99)* |
| ADV/K | 0.0481 (2.98)* | 0.0482 (2.98)* | 0.0362 (2.13)* | 0.0327 (1.89)* |
| I/K | 0.0268 (1.24) | 0.0267 (1.24) | 0.0266 (1.55)§ | 0.0239 (1.47)§ |
| K/S | -0.0005 (-2.90)* | -0.0005 (-2.91)* | -0.0003 (-1.81)** | -0.0003 (-1.63)** |
| LN(AGE) | 0.0106 (0.75) | 0.0110 (0.77) | -0.0272 (-1.64)** | -0.0299 (-1.68)** |
| LIQUIDITY | 14.4518 (8.21)* | 14.4243 (8.19)* | 12.5301 (7.76)* | 11.1789 (7.03)* |
| FORPRES | | | | |
| FORS:26-51% | 0.1908 (5.15)* | 0.1905 (5.14)* | 0.1418 (3.50)* | 0.1199 (2.86)* |
| FORS>51% | 0.3861 (10.19)* | 0.3857 (10.17)* | 0.3447 (8.03)* | 0.3282 (7.29)* |
| BSE 500 | 0.3743 (13.20)* | 0.3745 (13.20)* | 0.4051 (12.23)* | 0.4086 (11.55)* |
| Adj. R-square | 0.2689 | 0.2690 | 0.2526 (overall) | 0.2499 (overall) |
| F Stat: Prob > F | 0.00 | 0.00 | Prob > chi2:0.00 | Prob > chi2:0.00 |
| Year dummy: | Yes | Yes | Yes | Yes |
| Obs. | 5476 | 5471 | 5476 | 5471 |
| Instrumented | Ins, Inssq, Inscu | Ins, Inssq, Inscu | Ins, Inssq, Inscu | Ins, Inssq, Inscu |
| Instruments | L.ins, L.inssq, L.inscu | L.ins, L.inssq, L.inscu, Beta, Se | L.ins, L.inssq, L.inscu | L.ins, L.inssq, L.inscu, Beta, Se |
| Tests of Endogeneity: | a)0.2628 | a)0.21327 | | |
| a)Wu-Hausman F test: Prob>F: | | | | |
| b)Durbin-Wu-Hausman chi-sq test: Prob>chi-sq: | b) 0.2578 | b) 0.20861 | | |

Notes:

- *t*-statistics are in Parentheses in model 15 & 16 and z-statistics are in parenthesis in model 17 & 18.
- * indicates significance at 5 percent level, ** indicates significance at 10 percent level, § indicates significance at 15 percent level.

Appendix 1
Description of Variables

| <i>Variables</i> | <i>Abbreviation</i> | <i>Definition</i> |
|---|---------------------------------|--|
| <i>Performance Measures</i> | | |
| <i>Tobin's Q</i> | <i>Tobin's Q or Q-Ratio</i> | (Market Value of Equity + Preference Capital+ Total Borrowing)/Book Value of Assets |
| <i>Insider' Ownership Share</i> | <i>INS</i> | Share of founding family/Insider. In the estimation, it is used in a 0 to 1 Scale |
| <i>Square of Insider Share</i> | <i>INSSQ</i> | Square of Insider Share i.e., (INS) ² |
| <i>Cube of Insider Share</i> | <i>INSCU</i> | Power three of Insider Share i.e., (INS) ³ |
| <i>First Spline of Insider Share</i> | <i>INS.SP1</i> | Unless otherwise Mentioned, it is up to 0.20 |
| <i>Second Spline of Insider Share</i> | <i>INS.SP2</i> | Unless otherwise Mentioned, it is up to 0.49 |
| <i>Third Spline of Insider Share</i> | <i>INS.SP3</i> | Unless otherwise Mentioned, above 0.49 |
| <i>Foreign Presence</i> | <i>FORPRES</i> | A categorical Variable, that is, equal to 1 if there is foreign Promoter share within Promoter/Insider Share, 0 otherwise. |
| <i>Foreign Share<26%</i> | <i>FORS<26%</i> | A categorical Variable, that is, equal to 1 if foreign Promoter share within Promoter/Insider Share is less than 0.26, 0 otherwise. |
| <i>Foreign Share between 26% to 51%</i> | <i>FORS:26-51%</i> | A categorical Variable, that is, equal to 1 if foreign Promoter share within Promoter/Insider Share is more than or equal to 0.26 and less than 0.51, 0 otherwise. |
| <i>Foreign Share>51%</i> | <i>FORS:>51%</i> | A categorical Variable, that is, equal to 1 if foreign Promoter share within Promoter/Insider Share is more than or equal to 0.51, 0 otherwise. |
| <i>Other Variables of Interest</i> | | |
| <i>Sales, Sales Square</i> | <i>LN(S), LN(S)²</i> | I) Natural Logarithm of Sales. II) Natural Logarithm of Sales Square |

| | | |
|--|-------------------|---|
| <i>Operating Income</i> | <i>Y/S</i> | Cash Profit/Sales.(Cash Profit: This is the profit derived by adding the non cash charges such as depreciation and amortization to the profit after tax.) |
| <i>Leverage, Leverage Square</i> | <i>LEV, LEVSQ</i> | Unless otherwise stated, It is Long term Borrowings/Total Assets (To avoid simultaneity and endogeneity, we have taken one period lag of Leverage) |
| <i>Research & Development</i> | <i>R&D/K</i> | Aggregate Research and Development Expenditure/Gross Fixed Assets |
| <i>Selling</i> | <i>ADV/K</i> | (Advertising Exp. +Marketing Exp. +Distribution Exp.)/Gross Fixed Assets |
| <i>Capital Expenditure or Investment</i> | <i>I/K</i> | Expenditure in Acquiring New Fixed Assets/Gross Fixed Assets |
| <i>Capital Intensity</i> | <i>K/S</i> | Gross Fixed Assets/ Sales |
| <i>Age</i> | <i>LN(AGE)</i> | Natural Logarithm of Age.(Age=2004 – Year of Incorporation) |
| <i>Liquidity</i> | <i>Liquidity</i> | 365 days Average Trade quantity of Stocks/Total Shares outstanding |
| <i>BSE 500</i> | <i>BSE 500</i> | A categorical Variable, that is, equal to 1 if the Firm belongs to BSE-500 list, 0 otherwise. |
| <i>Beta (β)</i> | <i>Beta</i> | Estimated Beta Coefficient |
| <i>SE ($S.E_{\beta}$)</i> | <i>Se</i> | Standard Error of Beta |

Appendix 2 Shareholding levels and authority

| SHAREHOLDING | AUTHORITY |
|--------------|--|
| < 10 % | Can prevent acts which are <i>ultra vires</i> the co. or illegal. Can approach Central Govt. to sue management for oppression of minority shareholders or mismanagement of the co. |
| > 10 % | Can sue management for oppression of minority shareholders & mismanagement of the co. |
| > 25 % | Can block special resolutions -the passing of which requires prior notice to be given to members, and votes cast in favor be at least 3 times the votes cast against. |
| > 50 % | <p>Can pass an ordinary resolution — which govern most matters and <i>inter alia</i> covers:</p> <ul style="list-style-type: none"> ➤ adopting the annual accounts ➤ matters relating to the capital structure of the company ➤ issues relating to the appointment of auditors and their remuneration ➤ issues relating to the appointment of directors including the managing director, their remuneration and permission for exercise of certain powers ➤ matters associated with the voluntary winding up of a company |
| > 75 % | <p>Can pass a special resolution, some of the decisions requiring which are:</p> <ul style="list-style-type: none"> ➤ Change in the memorandum and articles of association of the co. ➤ Approval for the commencement of a new business ➤ Alteration of the rights of holders of special classes of shares ➤ Specific issues in the winding up of a co. |
| 100% | Total control of the company |

Source: Rao and Biswal (2003)