Ownership Structure and Corporate Firm Performance

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Abstract

Corporate Governance deals with the issue, how suppliers of finance to corporations assure themselves of getting a return on their investment. Several Studies have examined the relationship between managerial ownership and firm performance. Using different samples most of the studies provide general support for the argument that increase in managerial ownership increases firm performance. However, these results have been questioned recently.

This work examines empirically the effects of ownership structure on the firm performance for a large sample of Indian Corporate Firms, from an 'agency perspective'. We examine the literature on this topic by examining the effect of interactions between corporate, foreign, financial, institutional, and managerial ownership. We provide empirical evidence, which suggests that firm size and age in non-linearly related to the firm performance. Using panel data framework, we show that a large fraction of cross-sectional variation, in performance, found in several studies, is explained by unobserved firm heterogeneity, rather than the share holders holding. We do not find any evidence that the differences in Ownership structure, affect firm performance; after controlling for observed firm characteristics and firm fixed effects.

JEL Classification: G32; G34.

Keywords: corporate governance, share holding pattern and firm performance.

1 Introduction

Corporate Governance is the system of control mechanisms, through which *"the supplier of finance to corporations assure themselves of getting a return on their investment,"* (Shleifer and Vishny 1997). The classical problem is the separation of ownership and control, i.e. the agency cost resulting from a divergence of interest between the owners and the managers of the firm,(Jensen and Meckling 1976).

The separation of ownership and control has been a long-standing concern in corporate finance. The conflict between managers and owners has been studied extensively

by researchers seeking to understand the nature of the firm. In 1932, Berle and Means (Berle and Means 1932), claimed that the increasing professionalization of management would lead to firms being run for the managers benefit rather than for owners. *"...the position of ownership has changed from that of an active to that of a passive agent. In place of actual physical properties over which the owner could exercise direction and for which he was responsible, the owner now holds a piece of paper representing a set of rights and expectations with respect to an enterprise. But over the enterprise and over the physical property- the instruments of production- in which he had invest, the owner has little control ..." (pg. 64).*

The principal-agent framework is used by Jensen and Meckling (1976), to explain the conflict of interests between managers and share-holders. The agency problem, developed by Coase (1937), Fama and Jensen (1983), Jensen and Meckling (1976) is an essential part of the contractual view of the firm. A rich empirical literature has investigated the efficacy of alternative mechanisms. A rather small literature has attempted to test directly, Berle and Means hypothesis: *managers fail to maximize firm value where they are not themselves significant share-holders.*

The empirical evidence on this point is mixed. Using US data from early 1930s, Stigler and Fridland (1983) found no evidence in favor of Berle and Means hypothesis. Similarly, using recent data Demsetz and Lenn (1985), found no relation between firm performance, and ownership concentration. while Ahuja and Majumdar (1998), Chibber and Majumdar (1998: 1999), Khanna and Palepu (1999: 2000), Majumdar (1998a: b), McConnell and Servaes (1990), Patibandla (2002), Mork, Shleifer and Vishny (1988) and Sarkar and Sarkar (2000)found a significant relation between firm value and ownership concentration.

These findings have recently been questioned by Agrawal and Knober (1996), Himmelberg et. al (1999) and Habib and Ljungquist (2000), they find no evidence for the relationship between firm value and managerial stock-holdings, and concluded that managerial stock-holding are optimally chosen over the long run.

Our work continues with the lines of enquiry, in that it explores the link between firm value and share-holding pattern in a panel of 530 publicly traded Indian Cor-

porate Firms over the years from 1991 to 1999. Its contribution is three-fold. First, we employ an econometric framework (Panel Data) that specifically controls for firm specific unobserved heterogeneity and aggregate macro-economic shocks. Second, it uses exact share-holdings by different groups of owner, controlling for change in firm value due to small change in share-holding pattern (not exactly changing the dominance of a group), as in most of the cases share-holding pattern do not change dramatically. Finally, our analysis shows that no group of owners confirm to Berle and Means hypothesis, as it is unobserved heterogeneity which gets reflected in owners effect if not controlled. Some of the issues addressed in this paper have also been analyzed with Indian data in some recent studies by Ahuja and Majumdar (1998), Chibber and Majumdar (1998: 1999), Khanna and Palepu (1999: 2000), Majumdar (1998a: b), Patibandla (2002)and Sarkar and Sarkar (1999: 2000).

While Chibber and Majumdar, analyzes the relation between foreign ownership and company performance, using the accounting measures (ROA and ROS), they do not focus on the larger issue of the role of other major share-holders. (Khanna and Palepu 1999: 2000)examines the firm performance of group vs. stand alone firms. Sarkar and Sarkar (1999: 2000) examine the firm performance with the relation to effective monitoring by owners of companies using a spline specification. However, none of the studies have tried to look into the question with a wider prospective in view of corporate governance, controlling for unobserved firm heterogeneity.

In our analysis, we do not find any evidence for effect of share-holding pattern, once we control for the unobserved firm heterogeneity effect. Where as, some firm specific controls, do reflect significant effect on firm performance. For example, age and size has a positive effect on firm performance with decreasing rate, advertising intensity, export intensity, marketing intensity and import intensity have positive and significant effect on firm performance. Leverage has a negative effect on firm performance. No evidence is found for R&D intensity. However, in our analysis we do find evidence for the effect of share-holding pattern on firm performance if we do not control for the firm specific unobserved heterogeneity. In this case, FORE, CORP, and DIR have positive effect and FII has negative effect on the firm's performance.

Rest of the study is organized as follows: We discuss the existing research on Corporate Governance briefly in Section 2. In Section 3. we discuss the theory and implications proposed by earlier studies in the Indian context, followed by a simple theory of Corporate Ownership Structure and the proposed hypothesis. Data, Institutional Details and variable definitions are presented in Section 4. We discuss the results in Section 5 and conclude in Section 6 with a summary, we further look into potential avenues for further research.

2 Research on Corporate Governance

From a firm specific point of view, ownership is supposed to be one of the major factors influencing the firms profitability enjoyed by the economic agents involved in, . In particular, ownership structure is an incentive device for reducing the agency costs, which can be used to protect property rights, which can not be fully contracted out(Barbosa and Louri 2002).

The theoretical literature on corporate governance proposes six main different mechanisms to control for agency costs.

- Ownership Structure(Jensen and Meckling 1976)(Shleifer and Vishny 1986)
- Capital Structure(Jensen 1986)
- Board Structure
- Managerial Remuneration(Jensen and Mourphy 1990)
- Product Market Competition(Hart 1983)
- Takeover Market(Shleifer and Vishny 1988, Fama and Jensen 1983, Jensen and Warner 1988). [1]

While theoretical analysis of corporate governance deliver counteracting mechanisms, empirical literature sheds light on the relative weight of these counteracting mechanisms, suggesting firm value is an outcome of control conflicts. As Large shareholdings are common in the world, except the US and the UK La Porta at. al (1999).

[1]For a detailed survey of the studies, (see Megginson and Netter 2001, Shleifer and Vishny 1997).

Giving large share-holders incentive to collect information and to monitor management, reducing agency costs (Shleifer and Vishny 1986). [2]

2.1 The Changing Role of Corporate Governance Principals

2.1.1 Families, Corporations and other Block-holders

Concentrated Ownership plays a predominant role in the way firms are governed. Controlling owners are the center of gravity of these systems; high in stability and long-term commitment, but low in flexibility and the capacity to attract outside investment.

2.1.2 Management

The Corporate Governance discussion started along the lines of the Berle and Means (1932) paradigm of large corporations with their share ownership dispersed among small share-holders, and effectively run by their management. Management in turn is seen to wield enormous power because of the high monitoring costs and pervasive free rider problems encountered by the share-holders/principals. Effective control by managers allows them to pursue their own opportunistic goals instead of maximizing the present value of the firm to its share-holders. It is well known that the managerial behavior is affected by the management in the current period, however, there could be an effect of managerial behavior on firm performance in future periods also (see Short et. al 2002;for more detailed analysis).

2.1.3 Financial Institutions

Market developments are obliging financial institutions to adapt their governance-related activities. In this, they try to pursue *"arms-length"* relationship with companies in which they invest, and to defend their interests by selling shares when

[2]For a survey of empirical studies on the impact of ownership structure on corporate performance, (see Short 1994).

performance failed to live up to their expectations.

2.1.4 The Government

Widespread government ownership in the economy results in blurring the lives between the legitimate public interest in the way certain goods and services are supplied to the population of such goods.

The theoretical literature on ownership considers two types of problems associated with state (government) ownership: the *political* problem. That political interference distorts the objectives and constraints faced by managers (Shleifer and Vishny 1994) and the *managerial* problem. That poor monitoring leads to low-powered incentives among managers.(La Porta at. al 1999).

3 Theory and Empirical Implications

If complete contracts could be written and enforced, ownership structure should not be a matter (Hart 1983, Coase 1960). In general, public sector firms are argued to be less efficient than private sector firms (in relatively competitive markets) due to low-powered managerial incentives. There could be "political" reasons, as government pursues multiple objectives, some of which, unlike profit maximization, are hard to be contracted upon. Ownership in such cases makes a difference, when unforseen contingencies arise, which are not contracted.

The long string of agency relationship that characterize today's large firms, and the impossibility to write complete contracts between principals and agents on the exact tasks of the latter. As : *'governance structures can be seen as a mechanism for making decisions that have not been specified by contract.'*

Firms find themselves following conflicting incentives; neither public interest nor the commercial objectives are met.

3.1 Recent empirical studies on Public vs Private ownership in India

- Chibber and Majumdar (1998), using industry level survey data (ASI), compare performance of SOEs,MEs, and private Indian firms for 1973-89. SOEs and MEs account for 37% of employment and 66% of capital investment in 1989. They document that efficiency scores averaging 0.975 for private firms are significantly higher than averages of 0.912 for MEs and 0.638 for SOEs. A concern with Chibber's study is of aggregated data. In addition, he could provide little insight into the reasons for the efficiency differences between the sectors. They suggest that there is the opportunity cost for the state to invest in mixed enterprises from which it can not draw positive yields.

- Ahuja and Majumdar (1998), Majumdar (1998a: b), discuss the relationship between the levels of debt in the capital structure and firm performance. While existing theory posits a positive relationship, data reveals negative relationship. A supply of loan capital is government- owned, they support privatization.
  They conclude that a higher level of debt is associated with higher level of performance. Bad loans are possible in case of state owned financial institutions. The greater the quantum of debt in the capital structure, the greater is the profligacy or the lack of effort on the part of the managers, unlike the situation where privately owned debt suppliers can exercise a check on discretionary managerial behavior and corporate performance is negatively impacted.
  Where, the state-owned financial institutions primarily supply debt capital, a negative relationship will be noted between the level of debt and performance. In this work, they have used cross-sectional data. Here the variable is defined as percentage of profitability to sales, i.e. return on net worth.
  As there is structural change in financial performance of the Indian firms. Then the question arises that whether unexpected change in the levels of debt supplied by the state owned institutions which has a one time effect on the performance can be evaluated via the mechanism of event study.

- Chibber and Majumdar (1998: 1999), test the influence of foreign ownership on performance of firms operating in India. Performance is measured by the return on sales and return on assets. They use Cross-sectional data in the analysis.

  Rather than capturing ownership, variation through looking at categories such as domestic versus state ownership or joint ventures versus wholly owned subsidiaries, they look only at ownership variations that have a legal bias in Indian Companies Act of 1956.

  Foreign ownership is found to have a positive and significant influence on various diminution of firm performance, but it only does so when it crosses a certain threshold, and one that is defined by the property rights regime.

- Sarkar and Sarkar (1999: 2000), using firm level balance sheet data for 1995-96 provide evidence on the role of large shareholders in monitoring company value. They find that block-holdings by Directors increases company value after a certain level of holdings, however they do not find any evidence of active governance from Institutional Investors. They also highlight that foreign equity ownership has a beneficial effect on company value By adopting a spline methodology they document that for each type of large shareholder, the incentives for monitoring, changes significantly when ownership stakes rise beyond a particular threshold.

  They document that foreign ownership has a beneficial effect on company value. i.e. identity of large shareholders matter in corporate governance. It is a cross-sectional analysis of listed manufacturing firms for 1995-96 and the model is specified as an spline function.

  The specification test did not detect any significant presence of heteroscedasticity in the regression equations.

  Results suggest that the incremental effect of the foreign corporate holdings on company value is higher than that of FII, though a strict comparison should look at the relative effects of these two groups in comparable ranges of ownership. Foreign holding do increase company value even at low level of holdings.

As the level of debt holding increases, development financial institutions seem to extent a positive and significant impact on company value, suggesting that these institutions step up their controlling and monitoring activities with higher levels of debt. While a detailed theoretical and empirical analysis is needed to understand the underlying dynamics of result, time stability of regression results is open to questions.

- Khanna and Palepu (1999: 2000), using business groups level data from 1993 find that firm performance initially decline with group diversification and subsequently increase once group diversification exceeds a certain level.

- Gupta (2001), using firm level data of government owned firms from 1993-98, document that even the sale of minority stakes has a positive impact on firm performance and productivity. She finds that privatization and competition have a complementary impact on firm performance.

- Patibandla (2002),using firm level data from 1989 to 1999 from CMIE, show that foreign ownership in positively related with the firm performance. In their analysis they do not take into account the major factures influencing the firm's financial performance, and their model specification is not fully justified.

3.2 Theory of Corporate Governance and Firm Performance

Jensen and Meckling (1976), integrating elements from the theory of agency, the theory of property rights and the theory of finance develop a theory of the ownership structure of the firm. They suggest, there is an optimal ratio of insider to outsider ownership.

Suppose, an investor i, considering to invest in a firm's equity, has J alternative

choices regarding the ownership structure. The profitability of each alternative, say π_{ij}, can be derived as a function of its costs, benefits and potential risks. An investor will choose to invest in the firm, with the ownership structure j if and only if,

$$\pi_{ij} \quad > \quad \pi_{ik}, \quad \forall \;\; k \in J, \;\; k \neq j \tag{1}$$

When the expected economic gains from investment in firm j, is higher than the organizational and coordination costs, investor i will choose to invest in firm j. Otherwise, available alternative will be chosen. That is, the process of weighing costs and benefits of various ownership structures will shape the investors preferences. In our conceptual framework, inspired mainly by Barbosa and Louri (2002), the optimal ownership structure is assumed to be chosen optimally from a process of weighing costs and benefits of various ownership structures. That is to say that a firms' performance does not depend on the ownership structure and in long run, investors choose an optimal mix of insider vs outsider ownership, provided there is no restriction on the share holders holding, which was the case in India few years back.

Share holdings differ with regard to the percentage of equity owned by investors, since an investor may choose to own the equity of the firm based on a variety of economic or strategic reasons. Whereas firms performance, in terms of higher market share holders and profits, may depend on the ownership structure. Jensen and Meckling (1976), Shleifer and Vishny (1986), proposes that large investors are able to protect their investment better than large number of small investors, because of their incentive and ability in controlling the agency costs.

3.2.1 Hypothesis

The hypothesis postulated is that, in contrast to Chibber and Majumdar (1998: 1999), Majumdar (1998a: b), Sarkar and Sarkar (1999: 2000), share holding pattern does not leads to a relationship between performance and ownership structure, as the optimal ownership structure is chosen over time.

H1: Firm performance is unrelated to the percentage of shares held by

investors.

Firm performance may depend on managers knowledge about the market, consumers and its reputation in the market. Which is in the relation to learning by doing arguments, suggesting firms age may be one of the determinants of the performance. But with increasing age firms may be reluctant to employ the changes in technology or managerial structure leading to lower performance which is treated as *'rigidity effect'*. It may yield a negative relation between performance and age.

H2: Firm performance is positively related to its age.

Large firms may have positive benefits, as they may have better penetration in the market (input as well as output), compared to the smaller firms. They may exercise economies of scale. Large size enables greater diversification and specialization, on the other hand it makes the managers task more difficult due to increased coordination requirements. From the perspective of governance, the better managers should be appointed to the larger firms, therefore larger firm's performance should be better (Ahuja and Majumdar 1998, Das 1995).

H3: Firm performance is positively related to size.

If, as is hypothesized here, a positive relationship exists between size, age and firm performance and no relationship exists between firm performance and ownership structure, the presence of large share holders holders would be expected to moderate the hypothesized positive relationship between age and size with firm performance.

4 Data and Institutional Details

4.1 Data sources and Sample selection

For our study of ownership structure (share-holding pattern) and its effect on firm performance, in emerging markets, we focus our attention on Indian Corporate Sector. We choose this as an experimental setting Indian Corporate Sector offers the following advantages over other emerging market economies.

- The Indian Corporate Sector has several hundred firms, lending itself to large

sample statistical analysis.

- It is large by emerging market standards and the contribution of the industrial and manufacturing sectors value added is close to that in several advanced economies.
- Unlike several other emerging markets, firms in India, typically maintain their share-holding pattern over the period of study (Patibandla 2002), making it possible to identify the ownership affiliation of each sample firm with clarity.
- It is by and large a hybrid of the *"outsider systems"* of countries like USA,UK and the *"insider systems"* of countries like Continental Europe and Japan (Sarkar and Sarkar 2000).
- The legal framework for regulation of all corporate activities including governance and administration of companies, disclosures, share-holders rights, has been in place since the enactment of the Companies Act in 1956 and has been fairly stable. The listing agreement of stock exchanges have also been prescribing on-going conditions and continuous obligations for companies. [3]
- At no time has India faced the kind of financial crisis, which has affected the economies of East Asia in terms of exchange rates, large current account deficits, fiscal imprudence, disproportionate external financial exposure, imbalance between short term and long term liabilities, and lax financial supervision.
- India has had a well established regulatory framework for more than four decades, which forms the foundation of the corporate governance system in India.
- Although the Indian Corporate Sector is a mix of government and private firms (which are again a mix of independent firms and those owned by business group families, and multi nationals), it has not suffered from the cronyism that has dominated some of the Asian Economies, nor does the Indian Corporate Sector possess the characteristics of the Korean *chaebols*(OECD 2001).

[3]For more discussion on this see pg. 249, (OECD 2001).

- Accounting systems in India are prepared according to well established accounting standards that are similar to those followed in most of the advanced economies (Khanna and Palepu 2000).

This increases our confidence in the reliability of the data. The firm level data for our study here is primarily obtained from the corporate database (PROWESS) maintained by CMIE, the Center for Monitoring the Indian Economy. The data set used in the analysis consists of all manufacturing firms listed on Bombay Stock Exchange (BSE), with the required data. Public Sector firms are not included in the analysis as their performance is influenced by a large number of social obligations, which may be complex to account for. Firms within financial services segments are removed form consideration, because applying our valuation method to them, is problematic, as earnings before interest and taxes are not meaningful for financial companies. We confine our analysis to BSE listed firms only because all the listed firms are required to follow the norms set by Securities and Exchange Board of India(SEBI) for announcing the financial accounts. The BSE also has the second largest number of domestic quoted companies on any stock exchange in the world after NYSE, and more quoted companies than either London or Tokyo.

We analyze data from 1991 to 1999, as this is the period for which we have the most coverage in the database. Also, during the 1990's India went for liberalization, allowing diversified share-holding pattern of Corporate firms. There are 530 firms in our final sample, for which we have required data of at least 3 consecutive years.

We restrict ourselves to firms which have no missing data (on sales, age, ownership pattern, profits and assets) for at least 3 consecutive years. [4] (We can not avoid this conditioning because we can not use firms with missing data for fewer than 3 years of data for our analysis). There are 530 firms spread over 3-10 years, resulting in an unbalanced panel of 2,251 firm years. Thus, we avoid exacerbating the scope for sampling bias by not requiring a balanced panel.

For this unbalanced panel of 2,251 observations, we collect the following additional data for each firm observation: advertising, distribution, depreciation expenditures,

[4] We delete observations, where values reported are missing, zero or negative for capital stock, sales and age.

imports, exports etc.

Despite the problem of attrition and missing data , our sample provides several distinct advantages over the samples used in earlier studies.

In contrast to studies that focus on sample of large firms, our sample includes a much larger number of small firms and is more representative of the typical firm in Indian Corporate Sector.

We have a panel of firms rather than a cross-section, which allows us to control for firm level fixed (random) effects. Although data from the same source, CMIE, has been used in other contexts, this is the first to include share-holding pattern in a panel framework.

Though our sample may suffer from selection bias and attrition, we deliberately construct our sample, as a panel to control for the sample selection which arrises due to the lack of the data (for share-holding pattern) and attrition.

4.2 Variables

The key variables of the interest are measures of firm performance (profitability), the return on assets(ROA), managerial share-holding pattern (DIR), financial institutions share-holding pattern (FI), foreign investors share-holding pattern (FOR) and Corporate share-holding pattern (CORP). Furthermore, in order to examine the underlying hypothesis, it is necessary to control for other possible determinants of firm performance not captured by the ownership variables. The control variables used in the study have been selected with reference to those employed in empirical studies (see Himmelberg et. al 1999, Habib and Ljungquist 2000). We further add a large number of explanatory variables to proxy for managerial discretion as well as to control for firm specific heterogeneity (observed), namely, age, size, export intensity, import intensity, advertising, R&D, depreciation, distribution expenditure etc?. Year dummies are included to control for contemporaneous macroeconomic shocks.

We use accounting measure of performance instead of stock market valuation of firm performance as used by several studies. Because our data set consists of observations from 1991-1999, while the share price data is available only 1996 onwards. As well

as, since the share market is still in its infancy, therefore we can't expect the share prices of the firms to correctly reflect the actual firm performance. While accounting measures do lack in taking accounting of the future prospects of firm performance, they do take into account the current status of the firm performance. As the current firm performance is actually what the owners of the firm get from it. Whereas share market measures of firm performance runs into sever problem, when used in emerging market context. As most of the firms, go for debt financing in these economies than share market. Therefore, share market measures do not reflect the actual profits made by the investors on their investments.
These variables are described below and a summary list is provided in the Appendix.

4.2.1 Variable Definitions

The key variables of the interest are measures of performance, share-holding pattern and age of the firm. Furthermore, in order to examine our hypothesis detailed in section 3, it is necessary to control for other possible determinants of performance not captured by the ownership variables. The control variables used in this study have been selected with reference to those employed in previous empirical studies ,(see Himmelberg et. al 1999;in particular), Therefore, in addition to ownership , it is hypothesized that the firm performance is affected by firm size, scope for discretionary spending, age, capital and assets. These variables are described below and also in the Appendix.
Size. firm size has an ambiguous effect a priori on the firm performance. On one hand, larger firms can be less efficient than smaller ones, because of the loss of control by top managers over strategic and operational activities within the firm (Himmelberg et. al 1999, Williamson 1967, Sarkar and Sarkar 2000). In addition, large firms are likely to exploit economies of scale, employ more skilled managers and the formalization of procedures may lead to better performance. It also measures a firm's market power or the level of concentration in the industries in which the firm operates. Such characteristics make the implementation of operations more effective, allowing large firms to generate greater returns on assets and sales as well as to capture more value

as a proportion of the value of the production, leading to a higher firm performance. We use the log of sales, lsale, and its square lsale2, to measure firm size.

Age. Firm age has an ambiguous effect a priori on firm performance. As older firms give experience-based economies of scale based on learning, they can enjoy superior performance compared to new comers and can avoid the liabilities of newness. However, classic economic writing by Alfred Marshall[5] suggests that older firms are prone to inertia, and rigidities in adaptability, which may lead to lower performance. However, literature in learning by doing suggests age-performance relation to be an "S-shaped". We measure age, as the number of years since inception to the date of observation.

Capital Intensity. Firms with higher concentration on "hard" capital in their inputs will have better performance. The firms operating with higher capital-to-sales ratio, impose entry barrier and thus enjoy better control over the market, than it would have been otherwise. We use the firms capital-to-sales ratio,k_int, as measure of the relative importance of hard capital in the firm's technology.

R&D Intensity, Advertising Intensity, Distribution Intensity, Marketing Intensity. Such expenditures of a firm may yield positive returns in future, improving firm performance.It is measured as ratio of total expenditure to sales. These variables are used to control for the operational aspects, based on empirical performance studies and literature reviewed in Cui and Mak (2002), Caves (1996). We initially include dummy variables when R&D (rdum) and Advertising (adum) expenditures are missing to control for the possibility that reporting firms are different from non-reporting firms, but due to less variation and insignificant contribution in terms of explanatory power of the model, we do not use them in our final regression.

Investment Rate. A proxy for the link between opportunity for discretionary projects and high growth, as well as firms willingness to invest in new projects. Which are risky as well as provide high returns, we measure investment rate as the ratio of capital expenditure to capital stock.

Export Intensity. Exposure to foreign trade exerts pressure on firms to attain supe-

[5]Alfred Marshall, Principles of Economies, 8th ed.1920

rior performance, lower cost and better quality. firms with higher export intensity face competitive pressure from firms in international markets. Export pressures thus raise competitive intensity and reduces inefficiencies in firms (Chibber and Majumdar 1998). We use exports to sales ratio as a measure of export intensity.

Import Intensity. Firms with higher level of imported capital in their capital structure may outperform firms with lower share-holding pattern of imported capital goods. Firms with high intensity of imported capital goods are less inefficient, and their capital utilization is higher. Suggesting that level of imports of capital undertaken by a firm is likely to affect performance. We measure import of capital goods to sales. Summary of our variables is listed in Appendix.

5 The Empirical Model

Himmelberg et. al (1999) have argued that regression of firm performance on ownership variables is potentially misspecified because of the presence of the firm heterogeneity. Specifically, if some of the unobserved determinants of firm performance are also determinants of ownership, then ownership might spuriously appear to be a determinant of firm performance. Hence, combining the firm specific observable variables associated with share-holding pattern yields the following reduced form expression for the firm performance:

$$\mathsf{ROA_{it}} = \mathsf{f}(\mathsf{FORE_{it}}, \mathsf{FII_{it}}, \mathsf{CORP_{it}}, \mathsf{DIR_{it}}, \mathsf{lsale_{it}}, \mathsf{age_{it}}, \mathsf{leverage_{it}}, \mathsf{export\_int_{it}}, \tag{2}$$

$$\mathsf{import\_int_{it}}, \mathsf{rd\_int_{it}}, \mathsf{adv\_int_{it}}, \mathsf{dis\_int_{it}}, \mathsf{cap\_int_{it}}, \mathsf{mkt\_int_{it}}) + \mathsf{u_i} + \epsilon_{\mathsf{it}}$$

where i and t represent the firm and periods, respectively,u_i is the firm-specific effect, and ϵ_{it} is a white-noise error term.

$$\mathsf{y_{it}} = \alpha + \beta(\mathsf{ownership})_{\mathsf{it}} + \gamma \mathsf{X_{it}} + \theta(\mathsf{year})_{\mathsf{t}} + \epsilon_{\mathsf{it}} \tag{3}$$

Where $(ownership)_{it}$ variables measures the fraction of the equity of firm i, lying between 0 and 100, that is owned by different group of owners in period t. The X_{it} variables are firm-specific factors. This specification allows for a firm-specific fixed effect α_i, which reflects fixed effects differences across firms that are constant but unobserved over time, time effects which are common to firms but vary over time given by year dummies (year), and a random unobserved component ϵ_{it}.
The main advantage of a fixed effect estimation model is that it would control for the selection biases.(see Gupta 2001;pg. 18)

5.1 Empirical Evidence from India

The empirical evidence is based on the firm level panel data for 8 Indian Manufacturing Industries over the period of 1990 to 1999. Percentage share-holding of different investors (FORE, FII, CORP, and DIR) are correlated, because, these shares, along with the shares of other top 50 shareholders and others not included so far (which are not considered here) adds upto '100' and if one of them increases then at least one of the others have to decrease. In order to avoid multi- collinearity, we use only four main share-holders, i.e. FORE, FII, CORP, and DIR. We also use 1-digit 2-digit and 3-digit level industry dummies, based on industrial classification ASI-NIC'1998 by NSSO.
Summary statistics relating to the variables used in the analysis are shown in Table 1 and a detailed data structure is presented in Table 2 & 3. Inspection of Table 1 reveals that the mean DIR ownership level of the whole sample is 14.34% with a standard deviation of 18%. The mean percentage share holders holding of FORE, in the whole sample is 14.08% with a standard deviation of 17.66%. CORP's mean ownership level of the whole sample is 24.73% with a standard deviation of 18.78% and FII's mean share holding is 14.08% with a standard deviation of 16.08%. Distribution of sample firms across different industries is reported in Table 2, and Table 3 provides yearly availability of the data in firm years, and the number of firms available if balanced vs. unbalanced data set is constructed out of the whole sample.

The results of our empirical analysis are reported in Table.5. [6], regresses ROA on a simple collection of firm-specific variables, a collection of industry dummies along with time dummies. The firm-specific variables include *age, lsale, lsale2, adv_int, mkt_int, exp_int, imp_int, excise_int, and rdum* and FORE, FII, CORP, and DIR. The regression, significant at 5% level, is carried out on 2,251 observations, for which the required data is available.

ROA is a non-linear function of size (which depends on the industry). [7] The ownership variables show a positive effect of FORE, CORP and DIR and negative effect of FIIs. This regression specification suggests that firms with higher concentration of share-holdings by FII, under perform. Using different measures of size (such as sales or assets or logarithm of assets) does not change any of these results qualitatively Results are reported in Table. 6 & 7 (Dropping one industry at a time) Some more robustness tests are reported in Table. 8 & 9. We also use the specification suggested by Patibandla (2002) results are reported in Table.10. We also use other performance measures but our results remains the same, see Table.11. [8].

Age has a strong positive impact on firm performance. This may be because of various reasons. First, although firms in mature as well as infant industries keep learning about their own efficiencies over time and find their niches in the product market as they age, the returns of such learning may be diminishing in a mature industry and increasing in an infant industry. Second, in an infant industry, learning about the existence of the new product, by consumer may increase over the age of the producing firm, leading to a positive impact on its performance. Third, with age a firm's reputation might be enhanced. The managerial return from such reputation building may be high in an infant industry, leading to a positive impact on firm performance (Das 1995).

In Table.5 column 4 & 7, we repeat the specification of Table.5 column 2 & 5, using

[6]We also perform several analysis to reinforce the choice of functional form. For example, we use MBVR,PQ Ratio as another proxy for firm performance, as suggested by(Sarkar and Sarkar 2000). In due course our sample size reduces, as the share price data is available only from 1996 onwards. Results are available from the authors.

[7]The coefficient estimates for the industry dummies are not reported.

[8]Inclusion of more controls or use of different spline specification for ownership variables, do not change any of our results qualitatively. Which is also consistent with the results of (Sarkar and Sarkar 2000)

the same sample of firms. In this specification we use firm dummies rather than industry dummies to capture the unobserved firm heterogeneity. Here we do not find any evidence for the effect of share-holding on firm performance, by different class of share-holders. This result is in contrast to the results obtained in Table.5, with 1-digit and 2-digit industry dummies. The other difference is, firm size effects ROA positively with increasing rate and age effects ROA negatively with decreasing rate and the effects here are significant at 5% level of significance.

These point estimates suggests that firm performance is not affected by different class of share-holders and actually it is the unobserved firm-specific heterogeneity, which gets reflected in ownership variables, when we do not control for it. This result is similar to the results of Himmelberg et. al (1999) and suggests that the share-holdings are optimally chosen. These results are in contrast to those obtained by several authors in the Indian context, for example, Chibber and Majumdar (1998: 1999), Gupta (2001), Khanna and Palepu (1999: 2000), Patibandla (2002), Sarkar and Sarkar (2000). Using data of Indian firms they have found a significant positive relation between firm performance and concentrated share-holdings by some class of owners.

A negative relationship of leverage with firm performance is found, which is in contrast to the Western economies. It may be because in India, suppliers of debt are mainly government-owned financial institutions.

We also show that industry effects are insufficient to remove the unobserved heterogeneity compared to firm fixed effects.

As a robustness check, we repeat our analysis using ROS and Y_S as an alternative measure for the firm performance. Results are reported in Table.6 & 7, respectively. We also perform and conclude that our results are not driven by outliers or accounting biases.[9]

We also estimate the model with instrumental variables, using 2-lag values as instruments. We do not find any endogenity in the model, which was found in Himmelberg et. al (1999). Results of the Instrumental variable model is reported in Table 9. We also conduct some other robustness checks. In particular we reestimate the model

[9]Reestimating the results in Table.5, using MBVR, PQ Ratio and ROE, show that there is no change in either the sign or the significance for the point estimates of the ownership variables.

excluding one industry at a time form the sample. We do not find any evidence that these results are being driven by any particular sectors. Each of these leaves our main conclusions qualitatively unchanged. Our final results based on fixed effects panel regression are reported in Table 8.

6 Conclusion

This study has examined empirically the relationship between the ownership structure and firm performance. Four aspects of ownership have been considered : equity ownership by DIR, equity ownership by FORE, equity ownership by FII and equity ownership by CORP. The results presented, in this study suggests that, for Indian Corporate Firms, performance and ownership is unrelated in the long run.

We find that a large fraction of cross-sectional variation in share-holding pattern is explained by unobserved firm heterogeneity. Suggesting, the unobserved heterogeneity has important implications for econometric models, to estimate the effect of share-holding pattern on firm performance. The results, do not provide any evidence of the effects of ownership structure on the performance.

We conclude that the share-holding pattern does not influence the firm performance significantly, and the agency problem is solved by the optimal ownership pattern in the long run.

The results of similar studies on Indian data have produced contradictory results. It is possible that the contradictory results can be accounted for by differences in time periods studied and in research design. Given the lack of previous work examining the effects of ownership structure on performance of Indian Corporate Firms, with panel data, it is difficult to make comparison between this and other studies. Some comparison can be made with Himmelberg et. al (1999) US study, which, is consistent with the present study, found performance and ownership to be unrelated, hence suggesting ownership is optimally chosen over the long run.

However, given the contradictory results produced by the current study and the prior Indian Research, it is clear that there are many questions relating to the rela-

tionship between share holding pattern and performance of the firm, which remains unsolved. There remains the task of finding out the mechanisms for the determination of share-holding pattern. One other useful extention of this analysis would be to include additional policy variables measuring changes in the market conditions such as trade policy changes, to see whether ownership structure changes dramatical or not, if so to what extent and why? Do companies in emerging markets actually raise substantial equity finance? Who are the buyers of this equity? If they are dispersed minority shareholder, why are they buying equity despite the apparent absence of minority protections?

Appendix

Summary List of Variables

1. **ROA (return on assets).** We measure ROA as the ratio of return to total assets. Where return is defined as the difference between operating revenues and expenditure before tax and interest payments. R&D expenditures are included in operating expenditure in the year incurred, event though the R&D results may produce technical breakthroughs, that will benefit the firm for years to come. We treat, therefore, R&D as investment rather than as current expenditure. Total assets includes value of fixed assets, investments and current assets. `ROA = Return/Total Assets = net_profit + tax + interest + depreciation/ total_assets.`

2. **ROS (return on sales)**. We measure ROS as the ratio of return to gross sales, where return is defined as the difference between operating revenues and expenditure before tax and interest payments. R&D expenditures are included in operating expenditure in the year incurred, event hough the R&D results may produce technical breakthroughs that will benefit the firm for years to come. We treat, therefore, R&D as investment rather than as current expenditure. `ROS = Return/Total Sales = net_profit + tax + interest + depreciation/ total_sales.`

3. **Age** is defined as the number of years since its inception. `Age = observation_year - incorporation_year.` [10]

4. **Foreigners' Share Holding (FORE)** is equity shares held by foreigners as percentage of total equity shares. These includes foreign collaborators, foreign financial institutions, foreign nationals and non resident Indians.

5. **Governments' Share Holding (GOV)** is equity shares held by government companies as percentage of total equity shares. These includes insurance com-

[10] Where incorporation year pertains to the most recent incarnation year of the firm. In the case of firms that were reorganized, the year of incorporation may not reflect the true age of a firm (age calculated as above may give negative ages also). Therefore, we restrict our analysis to those firm-years whose age is non-negative, as calculated.

panies, mutual funds, financial institutions, banks, central and state government firms, state financial Corporations and other government bodies.

6. **Corporates' Share Holding (CORP)** is equity shares held by Corporate bodies as percentage of total equity shares. These includes Corporate bodies excluding those already covered.

7. **Directors' Share Holding (DIR)** is equity shares held by directors of the firm as defined in section 6 of the Companies Act, 1956. Which includes the share held by the family members of the director.

8. **Gross Sales (sales)** denotes the revenue generated by an enterprise during a given accounting period. It excludes other income and income from non-recurring transactions, income of extra-ordinary nature and prior period income. Sales are always taken gross of indirect taxes such as excise duties.

9. **Sales of Manufacturing Goods (sales_mfg)** is the sales generated through sale of its ownership manufactured goods.

   ```
   Total Income = sales + other_income + change_in_stocks
   Net Sales = sales - indirect_taxes
   Operating Income = sales.
   ```

10. **Total Raw Material Expenses (tot_raw_mat_expense)** is the total cost of raw materials and stores consumed during the accounting period.

11. **Total For-ex Earnings(total_exports)** is the total revenue earned from exports of goods and services. Income earned in foreign currency by ways of interest, dividend,royalties, and consultancy fees are also included here.

12. **Total For-ex Spending (total_imports)** includes not only import of raw materials etc. But also import of capital good as, foreign exchange spending like interest, royalty, traveling expenses, etc.

13. **Import of Raw Material (import_raw_mat)** is the cost of imported raw material, stores and spares.

14. **Imported Capital Goods (import_capital_goods)** is the value of imported capital goods, plant and machinery etc.

15. **R&D Expenditure on Capital Account (r_and_d_capital)** is the capital expense incurred by the firm in research and development.
    R&D Expenditure on Current Account (r_and_d_current) are the revenue expenses incurred by the firm in research and development.

16. **Equity Capital (equity_capital)** is the total outstanding paid up equity capital of the firm as at the end of the accounting period. Shares issued but not paid-up or pending allotments does not form part of equity capital. This includes bonus equity shares issued, if any, by the firm in the past.

17. **Total Borrowing (tot_borrowing)** includes all form of debt, interest bearing or other wise.

18. **Land & Building (land_n_building)** is the value of land and building at cost.

19. **Plant & Machinery (plant_n_machinery)** is the value of plant and machinery used in the production of goods and services at cost.

20. **Investments (investments)** is the investments in shares, debentures of firms, PSU Bonds, Mutual fund schemes of UTI and other mutual funds etc. This includes both quoted as well as unquoted investments.

21. **Inventories (inventories)** includes closing stocks of raw materials, stores and spares, finished goods and semi-finished goods.

22. **Total Assets (total_assets)** is the total assets of firm, including fixed assets, investments and current assets.

23. **Long Term Borrowing (long_term_borrowing)**:
    `long_term_borrowing = tot_borrowings + short_term_bank_borr - commercial_paper`

24. **Net Fixed Assets (nfa)** is total fixed asset net of accumulated depreciation.

25. **RDUM (rdum) and ADUM (adum)** are dummy variables for reporting of the expenditure on account of R&D and Advertising respectively in the year.

Table 1: Descriptive Statistics of Sample

Variable	Mean	Std. Dev.	Min	Max
roa	0.13299	0.09694	-0.5872	0.6650
ros	0.12662	0.81702	-23.8437	12.5
roi	60.6534	260.383	-1938	5746
y_s	1.09866	0.11853	1	2.9865
fore	12.9101	17.6572	0	80.29
foreh2	478.312	1017.32	0	6446.484
fore1	5.15950	4.35248	0	10
fore2	7.08886	12.8143	0	40
fore3	0.66182	3.15845	0	30.29
fii	14.0770	16.0766	0	99.79
fiih2	456.508	1014.14	0	9958.044
fii1	6.10952	4.25685	0	10
fii2	7.38790	11.0866	0	40
fii3	0.57966	4.19236	0	49.79
corp	24.7355	18.7784	0	79.17
corph2	964.318	1196.15	0	6267.889
corp1	8.28596	3.08450	0	10
corp2	15.3313	14.6774	0	40
corp3	1.11821	4.00974	0	29.17
dir	14.3360	18.0024	0	97.32
dirh2	529.464	1049.41	0	9471.183
dir1	5.37554	4.49770	0	10
dir2	8.23892	12.7083	0	40
dir3	0.72153	3.68656	0	47.32
age	25.0502	20.7303	0	135
lsale	4.06047	1.80032	-4.6051	11.0332
lsale2	19.7271	15.1161	.0003	121.7314
leverage	1.39770	15.4552	-107.6875	670.5
k_int	1.76083	12.1333	0	327
adv_int	0.00699	0.02849	0	1
exp_int	0.12766	0.23094	0	1.4198
imp_int	0.21068	2.40357	0	109.5
mkt_int	0.01637	0.02782	0	0.4635
dis_int	0.02057	0.03974	0	1
exc_int	0.07314	0.07486	0	0.6233
rd_int	0.00277	0.01137	0	0.3350

Details about the data structure, are provided in Table.2&3 .

Table 2: Industry wise Data Structure of the sample

INDUSTRY	# of obs.
(1)MINING AND QUARRYING	538
(2)MANUFACTURE OF MINAREL AND OTHER PRODUCTS	114
(3)MANUFACTURE OF ELECTRICAL MACHINERY AND APPARATUS NEC	272
(4)ELECTRICITY,GAS AND WATER	39
(5)CONSTRUCTION	15
(6)WHOLESALE AND RETAIL TRADE AND RESTAURANTS AND HOTELS	12
(7)TRANSPORT, STORAGE AND COMMUNICATION	22
(8)DIVERSIFIED	141

Table 3: Number of observations (year wise and balanced panel wise)

Year of obs.	Number of obs.	Number of Years	Number of Obs.	
			Balanced	Unbalanced
1990	12			
1991	17			
1992	61			
1993	14	3	684	2251
1994	164	4	536	1567
1995	299	5	335	1031
1996	516	6	240	696
1997	525	7	287	456
1998	58	8	88	169
1999	45	9	81	81

Table 4: Formula for variables construction

roa	(net_profit+tax+interest+depreciation)/total_assets
ros	(net_profit+tax+interest+depreciation)/sales
roe	(net_profit+tax+interest+depreciation)/equity
roi	(net_profit+tax+interest+depreciation)/investments
y_s	operating_income/net_sales
fore	foreign holdings
foreh	fore*fore
dir	directors and their relatives holdings
dirh	dir*dir
corp	corporate bodies holdings
corph	corp*corp
fii	government and financial instituions
fiih	fii*fii
age	years since the date of incorporation
mfg_sales	sales_mfg/sales
lsale	ln(sales)
lsale2	ln(sales)*ln(sales)
leverage	tot_borrowings /(equity_capital + tot_borrowings)
R&D	(r_and_d_capital +r_and_d_current)
k	land_n_building + plant_n_machinery
k_int	k/sales
adv_int	advertising expenditure/sales
exp_int	total_exports/sales
imp_int	total_imports/sales
mkt_int	marketing expences/sales
dis_int	distribution expences/sales
exc_int	excise tax/sales
rd_int	R&D/sales

Table 5: Regressions for ROA

Time Dummy	Yes	Yes	Yes	Yes	No
Group Dummy	1-digit	2-digit	3-digit	Firm Level	Firm Level
age	-0.000	-0.000	-0.000	-0.021	-0.023
	(0.7014)	(0.3447)	(0.3507)	(0.0000)**	(0.0000)**
lsale	0.035	0.036	0.039	0.056	0.056
	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**
lsale2	-0.002	-0.002	-0.003	0.005	0.005
	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**
exp_int	0.007	0.011	0.006	0.043	0.044
	(0.4409)	(0.1927)	(0.4741)	(0.1111)	(0.1064)
imp_int	0.001	0.001	0.001	0.001	0.001
	(0.2640)	(0.3402)	(0.1536)	(0.3227)	(0.3179)
dis_int	-0.002	-0.043	-0.076	-0.513	-0.521
	(0.9730)	(0.5277)	(0.2522)	(0.0022)**	(0.0019)**
exc_int	0.020	-0.016	-0.016	-0.203	-0.205
	(0.4743)	(0.6441)	(0.6517)	(0.0039)**	(0.0036)**
rd_int	0.032	-0.077	-0.010	0.108	0.110
	(0.8237)	(0.5265)	(0.9349)	(0.3332)	(0.3171)
adv_int	0.141	0.208	0.214	0.157	0.162
	(0.2341)	(0.0988)+	(0.0858)+	(0.3551)	(0.3382)
mkt_int	-0.055	-0.109	-0.084	-0.163	-0.172
	(0.4583)	(0.1547)	(0.2248)	(0.1177)	(0.1036)
k_int	-0.000	-0.000	-0.000	0.001	0.001
	(0.3332)	(0.2555)	(0.7967)	(0.0002)**	(0.0002)**
leverage	-0.000	-0.000	-0.000	0.000	0.000
	(0.4254)	(0.5400)	(0.6200)	(0.7895)	(0.7581)
fore	0.000	0.000	0.000	0.000	0.000
	(0.0058)**	(0.0319)*	(0.0277)*	(0.6493)	(0.5431)
fii	-0.000	-0.001	-0.000	0.000	0.000
	(0.0157)*	(0.0041)**	(0.0087)**	(0.3154)	(0.2775)
corp	0.000	0.000	0.000	0.000	0.000
	(0.1255)	(0.1716)	(0.1514)	(0.9811)	(0.8921)
dir	0.000	0.000	0.000	0.000	0.000
	(0.1861)	(0.5299)	(0.2978)	(0.1458)	(0.1455)
Observations	2251	2251	2251	2251	2251
No.of groups	530	530	530	530	530
R-squared (within)	0.2936	0.2936	0.2936	0.2936	0.2920

Robust p values in parentheses
+ significant at 10%; * significant at 5%; ** significant at 1%

Table 6: Regressions for ROA dropping one Industry at a time

Industry	Ind-1	Ind-2	Ind-3	Ind-4
age	-0.020	-0.024	-0.022	-0.021
	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**
lsale	0.062	0.065	0.050	0.056
	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**
lsale2	0.004	0.004	0.005	0.005
	(0.0042)**	(0.0079)**	(0.0000)**	(0.0001)**
exp_int	0.030	0.061	0.051	0.046
	(0.4741)	(0.0298)*	(0.0685)+	(0.0925)+
imp_int	0.001	-0.003	0.001	0.001
	(0.2637)	(0.3239)	(0.4089)	(0.3238)
dis_int	-1.051	-0.433	-0.454	-0.520
	(0.0000)**	(0.0337)*	(0.0076)**	(0.0019)**
exc_int	-0.238	-0.085	-0.245	-0.202
	(0.0040)**	(0.3824)	(0.0021)**	(0.0043)**
rd_int	0.112	-0.138	0.254	0.113
	(0.4280)	(0.4197)	(0.0030)**	(0.3077)
adv_int	0.255	0.048	0.130	0.170
	(0.3423)	(0.8394)	(0.4627)	(0.3184)
mkt_int	-0.118	-0.590	-0.152	-0.162
	(0.2539)	(0.0300)*	(0.1439)	(0.1211)
k_int	0.001	0.002	0.001	0.001
	(0.0008)**	(0.0001)**	(0.0003)**	(0.0002)**
leverage	0.000	0.000	0.000	0.000
	(0.9085)	(0.8043)	(0.7362)	(0.8379)
fore	0.000	0.000	0.000	0.000
	(0.6685)	(0.7912)	(0.7994)	(0.8014)
fii	0.000	0.001	0.000	0.000
	(0.5901)	(0.0295)*	(0.9964)	(0.2819)
corp	-0.000	-0.000	0.000	-0.000
	(0.9884)	(0.2817)	(0.6501)	(0.8432)
dir	0.000	0.000	0.000	0.000
	(0.1767)	(0.3678)	(0.1656)	(0.1875)
Observations	1713	1147	1979	2212
No.of groups	401	275	464	523
R-squared (within)	0.3035	0.3099	0.2980	0.2890

Robust p values in parentheses
+ significant at 10%; * significant at 5%; ** significant at 1%

Table 7: Regressions for ROA dropping one Industry at a time...Table 6 contd.

Industry	Ind-5	Ind-6	Ind-7	Ind-8
age	-0.021	-0.021	-0.021	-0.022
	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**
lsale	0.056	0.054	0.055	0.055
	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**
lsale2	0.005	0.005	0.005	0.005
	(0.0001)**	(0.0000)**	(0.0000)**	(0.0000)**
exp_int	0.050	0.040	0.044	0.044
	(0.0715)+	(0.1551)	(0.1122)	(0.1454)
imp_int	0.001	0.001	0.001	0.001
	(0.2979)	(0.3080)	(0.3541)	(0.3227)
dis_int	-0.487	-0.394	-0.512	-0.557
	(0.0039)**	(0.0084)**	(0.0024)**	(0.0037)**
exc_int	-0.204	-0.195	-0.203	-0.204
	(0.0040)**	(0.0045)**	(0.0040)**	(0.0047)**
rd_int	0.103	0.105	0.106	0.124
	(0.3650)	(0.3551)	(0.3477)	(0.2610)
adv_int	0.145	0.008	0.155	0.211
	(0.3938)	(0.9495)	(0.3630)	(0.2707)
mkt_int	-0.159	-0.174	-0.169	-0.177
	(0.1290)	(0.0993)+	(0.1063)	(0.0950)+
k_int	0.001	0.001	0.001	0.001
	(0.0002)**	(0.0002)**	(0.0002)**	(0.0003)**
leverage	0.000	0.000	0.000	0.000
	(0.7692)	(0.7477)	(0.7906)	(0.7928)
fore	0.000	0.000	0.000	0.000
	(0.7182)	(0.1466)	(0.6915)	(0.8479)
fii	0.000	0.000	0.000	0.000
	(0.3223)	(0.2967)	(0.2457)	(0.3234)
corp	-0.000	0.000	0.000	0.000
	(0.9245)	(0.7545)	(0.8543)	(0.8559)
dir	0.000	0.000	0.000	0.000
	(0.1795)	(0.2491)	(0.1176)	(0.0803)+
Observations	2236	2131	2229	2110
No.of groups	503	523	494	530
R-squared (within)	0.2946	0.2956	0.2938	0.2953

Robust p values in parentheses
+ significant at 10%; * significant at 5%; ** significant at 1%

Table 8: Regressions for ROA with time and firm dummies dropping some years.

Dropping	first 2 years	last 2 years	net worth< 0	mfg_sales < 80%	first 2 years &net worth< 0
age	-0.023	-0.018	-0.021	-0.022	-0.024
	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**
lsale	0.056	0.062	0.054	0.050	0.050
	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**
lsale2	0.005	0.003	0.005	0.006	0.006
	(0.0001)**	(0.0111)*	(0.0000)**	(0.0000)**	(0.0000)**
exp_int	0.044	0.026	0.045	0.037	0.037
	(0.1090)	(0.4298)	(0.1081)	(0.2777)	(0.2792)
imp_int	0.001	0.001	0.001	0.001	0.000
	(0.3284)	(0.4164)	(0.3903)	(0.5616)	(0.5796)
dis_int	-0.493	-0.670	-0.528	-0.476	-0.451
	(0.0032)**	(0.0016)**	(0.0019)**	(0.0084)**	(0.0114)*
exc_int	-0.197	-0.263	-0.176	-0.197	-0.190
	(0.0060)**	(0.0022)**	(0.0131)*	(0.0064)**	(0.0097)**
rd_int	0.102	-0.032	0.098	0.100	0.094
	(0.3683)	(0.9055)	(0.3680)	(0.3839)	(0.4187)
adv_int	0.131	0.247	0.160	0.061	0.027
	(0.4421)	(0.2773)	(0.3563)	(0.7177)	(0.8731)
mkt_int	-0.184	-0.154	-0.107	-0.230	-0.254
	(0.0762)+	(0.2477)	(0.4162)	(0.0700)+	(0.0469)*
k_int	0.001	0.002	0.001	0.001	0.001
	(0.0000)**	(0.0000)**	(0.0003)**	(0.0010)**	(0.0003)**
leverage	0.000	0.000	0.000	0.000	0.000
	(0.7819)	(0.5087)	(0.4746)	(0.7670)	(0.7570)
fore	0.000	-0.000	0.000	0.000	0.000
	(0.6241)	(0.7105)	(0.3657)	(0.4162)	(0.3932)
fii	0.000	0.000	0.000	0.001	0.001
	(0.2966)	(0.3933)	(0.2163)	(0.1271)	(0.1083)
corp	0.000	0.000	0.000	0.000	0.000
	(0.8756)	(0.3437)	(0.8614)	(0.5774)	(0.4764)
dir	0.000	0.000	0.000	0.000	0.000
	(0.1717)	(0.4288)	(0.2089)	(0.1628)	(0.1939)
Observations	2222	1698	2160	1907	1881
No.of groups	530	530	510	444	444
R-squared (within)	0.2847	0.2099	0.3071	0.2930	0.2828

Robust p values in parentheses
+ significant at 10%; * significant at 5%; ** significant at 1%

Table 9: Regression with Spline specification, time and firm dummies

	ROA	p value
age	-0.022	(0.0000)**
lsale	0.056	(0.0000)**
lsale2	0.005	(0.0000)**
exp_int	0.044	(0.1047)
imp_int	0.001	(0.3157)
dis_int	-0.507	(0.0019)**
exc_int	-0.202	(0.0044)**
rd_int	0.109	(0.3395)
adv_int	0.150	(0.3689)
mkt_int	-0.162	(0.1154)
k_int	0.001	(0.0002)**
leverage	0.000	(0.8184)
fore: (.,10)	-0.001	(0.4266)
fore: (10,50)	0.000	(0.5098)
fore: (50,.)	0.001	(0.1049)
fii: (.,10)	0.001	(0.4124)
fii: (10,50)	0.000	(0.4788)
fii: (50,.)	-0.001	(0.6224)
corp: (.,10)	-0.000	(0.7479)
corp: (10,50)	0.000	(0.4796)
corp: (50,.)	-0.001	(0.3393)
dir: (.,10)	0.001	(0.6470)
dir: (10,50)	0.000	(0.2197)
dir: (50,.)	-0.001	(0.8014)
Observations	2251	
No. of groups	530	
R-squared(within)	0.2963	

Robust p values in parentheses
+ significant at 10%; * significant at 5%; ** significant at 1%

Table 10: Regressions with ownership group, time and firm dummies

	ALL	FORE	FII	CORP	DIR
age	-0.022	-0.021	-0.021	-0.021	-0.021
	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**
lsale	0.056	0.056	0.056	0.056	0.056
	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**
lsale2	0.005	0.005	0.005	0.005	0.005
	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**
exp_int	0.044	0.043	0.045	0.043	0.042
	(0.1025)	(0.1173)	(0.0985)+	(0.1116)	(0.1211)
imp_int	0.001	0.001	0.001	0.001	0.001
	(0.3332)	(0.3185)	(0.3227)	(0.3304)	(0.3153)
dis_int	-0.515	-0.499	-0.512	-0.500	-0.505
	(0.0018)**	(0.0027)**	(0.0021)**	(0.0027)**	(0.0021)**
exc_int	-0.203	-0.202	-0.202	-0.204	-0.203
	(0.0042)**	(0.0043)**	(0.0042)**	(0.0038)**	(0.0039)**
rd_int	0.106	0.100	0.110	0.114	0.111
	(0.3559)	(0.4055)	(0.3184)	(0.2987)	(0.3266)
adv_int	0.157	0.149	0.157	0.151	0.153
	(0.3487)	(0.3774)	(0.3538)	(0.3711)	(0.3625)
mkt_int	-0.156	-0.158	-0.156	-0.159	-0.164
	(0.1358)	(0.1310)	(0.1385)	(0.1303)	(0.1164)
k_int	0.001	0.001	0.001	0.001	0.001
	(0.0002)**	(0.0002)**	(0.0002)**	(0.0002)**	(0.0002)**
leverage	0.000	0.000	0.000	0.000	0.000
	(0.7717)	(0.7620)	(0.7665)	(0.7483)	(0.8006)
fore	-0.001	-0.001			
	(0.2542)	(0.2230)			
foreh2	0.000	0.000			
	(0.0493)*	(0.0670)+			
fii	0.001		0.001		
	(0.2247)		(0.2628)		
fiih2	-0.000		-0.000		
	(0.3377)		(0.3587)		
corp	0.000			0.000	
	(0.4861)			(0.6438)	
corph2	-0.000			-0.000	
	(0.4646)			(0.4435)	
dir	0.000				0.000
	(0.5320)				(0.5167)
dirh2	-0.000				-0.000
	(0.9119)				(0.8632)
R-squared (within)	0.2955	0.2931	0.2932	0.2928	0.2930

Robust p values in parentheses (530 gropus and 2251 observations).
+ significant at 10%; * significant at 5%; ** significant at 1%

Table 11: Regressions for other performance measures with time and firm dummies

Variables	ROS	Y_S	ROI	ROE
age	-0.083	0.001	-27.769	2.156
	(0.0074)**	(0.0038)**	(0.0080)**	(0.5271)
lsale	0.120	-0.013	128.425	2.421
	(0.6928)	(0.0285)*	(0.1223)	(0.3079)
lsale2	0.023	0.001	-0.893	0.570
	(0.4687)	(0.0981)+	(0.9368)	(0.3457)
exp_int	1.484	-0.009	-18.974	2.540
	(0.1501)	(0.3794)	(0.7599)	(0.8275)
imp_int	0.102	-0.001	14.057	-0.004
	(0.0023)**	(0.1334)	(0.0792)+	(0.9817)
dis_int	-6.151	-0.049	-7.927	41.379
	(0.1032)	(0.3948)	(0.9848)	(0.7584)
exc_int	-0.926	1.297	-453.352	-136.540
	(0.3150)	(0.0000)**	(0.1771)	(0.0222)*
rd_int	0.088	-0.006	229.568	71.006
	(0.8945)	(0.7273)	(0.3269)	(0.4292)
adv_int	-6.040	0.053	156.867	12.347
	(0.0356)*	(0.4978)	(0.7982)	(0.9147)
mkt_int	-0.735	0.007	-86.177	-57.148
	(0.2045)	(0.7359)	(0.7567)	(0.3633)
k_int	-0.016	-0.000	3.545	-0.066
	(0.0819)+	(0.1014)	(0.1600)	(0.4431)
leverage	-0.000	-0.000	3.360	0.025
	(0.5494)	(0.4205)	(0.1569)	(0.6451)
fore	0.001	0.000	-0.283	0.729
	(0.5410)	(0.3069)	(0.7943)	(0.0051)**
fii	-0.000	-0.000	1.550	0.135
	(0.8925)	(0.9289)	(0.2510)	(0.7079)
corp	-0.002	0.000	-1.452	0.202
	(0.2956)	(0.2851)	(0.2215)	(0.2374)
dir	0.001	0.000	0.500	0.228
	(0.4266)	(0.2550)	(0.5571)	(0.4841)
Observations	2251	2251	1694	2108
No. of groups	530	530	423	515
R-squared(within)	0.4116	0.7664	0.0506	0.0121

Robust p values in parentheses
+ significant at 10%; * significant at 5%; ** significant at 1%

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