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Abstract

Empirical studies of the role of large shareholders as monitors of firm management have focused on the relation between ownership structure and firm performance and have identified managerial turnover in periods of poor performance as a monitoring mechanism. Our central contribution is to identify empirically, using a sample of Japanese firms, another mechanism through which monitoring by firm stake holders occurs. We find that concentrated shareholding is associated with lower expenditure by management on several activities with scope for generating managerial private benefits. We also find that while shareholders are important for this form of monitoring, the evidence on such monitoring by creditors is less robust. Finally, we argue that monitoring of this type is more common in traditional producer-oriented industries (e.g. chemicals, metal products), and is less effective in hi-tech consumer good industries (e.g. electronics).

JEL Classifications: G21, G30.

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1. Introduction

Empirical studies of the role of large shareholders as monitors of firm management have focused on the relation between ownership structure and firm performance or managerial turnover. Evidence is now beginning to build up, and the overall picture is that large shareholders are important for corporate governance. Our central contribution here is to identify empirically a particular mechanism through which monitoring by large shareholders occurs. Using a sample of Japanese manufacturing firms, we find that concentrated shareholding is associated with lower expenditure by management on several activities with scope for generating managerial private benefits. To the best of our knowledge, evidence on this mechanism of monitoring by shareholders has not been presented before.

A related empirical literature stresses the role of banks as monitors of firms, especially in periods of financial distress. Strong bank-firm ties, measured, for example, by stable debt holding by the same bank, are associated with bank intervention during periods of poor performance. We find only partial evidence that strong bank-firm ties are associated with lower expenditure by management on activities with scope for generating managerial private benefits, suggesting that ownership is more important than debt for the type of monitoring we investigate. Thus, our study identifies, within a unified framework and with a single data set, the relative importance of shareholder monitoring versus monitoring by banks.

Because the vast majority of firms in our sample exhibit positive profits, we conclude that monitoring through reduction of activities that are prone to managerial moral hazard takes place even when firm performance is normal, mainly by large shareholders. This finding does not contradict the literature that documents monitoring by banks during periods of poor performance. Our analysis is also not at odds with the use of performance based compensation schemes that are observed in practice. There are situations when implementing such schemes is problematic, for example due to noisy performance measures or window dressing. We believe that the kind of direct monitoring through reduction of activities with scope for managerial moral hazard complements managerial incentive schemes.

In the next section we briefly discuss some related studies and present the basic logic of our approach. A more formal presentation of the model is relegated to the Appendix. In section 3 we present our main data set, drawn from the Japanese chemical industry, and discuss our empirical methodology. The results are presented and discussed in section 4. In Section 5 we examine two additional samples of Japanese firms in the metal products and electronics industries. Section 6 concludes.

2. Large Shareholders, Banks, and Corporate Governance – Existing Evidence

In this section we briefly survey some of trends in the literature on large shareholders, banks, and corporate governance. For a more comprehensive survey, see

Shleifer and Vishny (1997).

The modern literature on large shareholders and their role in corporate governance dates back to Demsetz and Lehn (1985) who argue that the formation of block holders is an endogenous response to the need to monitor management. Shleifer and Vishny (1986) investigate a variety of means by which large shareholders take action against poorly performing managers, and Morck, Shleifer, and Vishny (1989) show that (large) shareholders can impose efficient behavior on managers, both through external takeover threats as well as through internal disciplinary actions taken by the board of directors. More recent studies on the role of large shareholders in corporate governance have focused on the positive correlation between the concentration of ownership and the probability of board turnover or restructuring of poorly performing firms (see, for example, Franks, Mayer, and Renneboog, 1995 as well as a series of studies by Kang and Shivdasani, 1995, 1996, 1997).

Much of the empirical evidence on the role of banks in corporate governance is drawn from Japan, and relates mostly to poorly performing companies. Sheard (1989) describes forms of intervention by Japanese (main) banks, and Kaplan and Minton (1994) as well as Morck and Nakamura (1998) find that poorly performing firms are more likely to have a bank executive named to their board of directors than well performing companies. Kang and Shivdasani (1995, 1997) find that both executive turnover as well as the initiation of a restructuring plan are more likely for poorly performing Japanese companies that have a main bank.

Since banks in Japan (and Germany) often hold equity stakes of borrowing firms, a clear identification of the motivation for bank intervention (debt or equity stakes) is not easy. Cable (1985), using a sample of West German companies, argues that both bank debt and ownership concentration matter for corporate governance, but Edwards and Fischer (1994, p. 227) find little evidence for bank monitoring in Germany and argue that Cable's results should be interpreted as evidence of monitoring by large shareholders, not banks. Kang and Shivdasani (1995, 1996, 1997) also attempt to separate out the effects of debt and equity ties on restructuring and board turnover of poorly performing Japanese firms, and argue that both main bank ties as well as ownership concentration are important in this respect.

We are only aware of three studies, all based on evidence from Japan, where an explicit attempt is made to relate measures of (bank) monitoring with aspects of firm behavior other than managerial turnover. Prowse (1990) argues that Japanese banks buy shares of debtors with high R&D expenses and liquid assets in order to prevent "asset substitution" policies. Flath (1993) predicts that Japanese banks should hold more equity in firms that are harder to monitor, for example, fast growing companies with high variance in performance and high R&D and advertising outlays, but does not find a statistically significant positive relation between R&D or advertising expenses and banks' equity stakes. Finally, Morck and Nakamura (1998) investigate if firms reduce "entertainment expenses" following the appointment of a bank executive to their board of directors, but do not reach conclusive results.

As the next section illustrates, we depart from the existing literature in three ways. First, rather than focus on firms in financial distress that are subject to severe measures taken by their owners and creditors, we examine firms whose performance is "normal,"

searching for non-drastic monitoring mechanisms. Second, we view the allocation of firm resources to various activities as endogenous, and identify particular activities that are curbed by managerial monitoring. Finally, our approach enables us to design simple tests for the relative importance of large shareholders and bank.

3. A New Approach to Monitoring by Stake Holders: Restricting Activities with Scope for Managerial Moral Hazard¹

Consider a firm whose management can undertake three activities: a “productive activity,” say cost-effective advertising that affects positively firm performance (future profits, market share etc.); a “substitute activity,” such as direct mail marketing, that also affects positively firm performance but is less profitable than the “productive activity;” and a “non-productive activity,” say wasteful advertising that generates mainly private benefits to management (visibility, “empire building”) and contributes nothing to firm performance. Management enjoys firm performance as well as private benefits, and, if it operates unconstrained by monitoring, it will choose a positive level of the “productive activity” (cost-effective advertising), a positive level of the “non-productive” private benefits activity (wasteful advertising), but zero of the less efficient “substitute activity.”

A monitor, say a stake holder of the firm who seeks to maximize performance, will want to reduce the level of the “non-productive” private benefits activity, and have management engage only in the “productive activity” (cost-effective advertising). The central assumption that drives our story is that the total amount of advertising can be observed by the monitor, but that he cannot distinguish between the cost-effective and the private benefits forms of advertising. This reflects a difficulty of judging, or at least of arguing in a verifiable manner, whether a particular advertising campaign is wasteful or not. We also assume that the monitor has no good signal from which he can infer the amount of “productive activity” - None of the observable measures of firm performance can accurately convey whether management has operated efficiently.

The monitor (the stake holder) can, however, exert control by imposing a restriction on the maximal amount that management can spend on (all forms of) advertising. As we show formally in the Appendix, under plausible conditions, management will respond to this constraint by reducing both the “productive” and the “non-productive” forms of advertising, and will engage instead in a positive level of the “substitute activity” (direct mail marketing in our example). Although this form of monitoring involves some degree of “spilling the baby with the bath water,” it results in improved firm performance relative to the case of no monitoring at all. The degree to which monitoring of this form will take place in practice should depend on the availability of other mechanisms of corporate control, as well as on the probability that a marginal dollar of advertising expenses constitutes “waste.” We return to this point in Section 5 of the empirical analysis when comparing firm behavior in different industries.

¹ A simple model is presented in the Appendix.

In our empirical analysis we use advertising expenditures as a proxy for activities with potential for managerial moral hazard, in the sense explained above. A similar logic holds for R&D expenditures, some of which contribute to long run performance, while others are wasteful and mainly aimed at enhancing the visibility and prestige of management.² Two additional (and obvious) proxies for such activities that we use in our study are entertainment expenses, and general sales and administrative expenses which often include travel expenses and managerial pensions. If these expenditures reflect both productive activities as well as managerial perquisite consumption, we would expect monitoring shareholders to impose a cap on them, inducing managers to shift into substitute activities. Finally, we use free cash (liquid assets) as another measure of activities with scope for managerial moral hazard, since free cash facilitates inessential spending. If monitors limit the amount of free cash, both “productive” and “non-productive” spending will become more difficult, and management will respond by engaging in less productive substitute activities, for example, maintaining more inventories of inputs than would have otherwise been held.

Finally, in this simple formulation, as in most of the literature on managerial moral hazard, monitoring is a public good whose benefits are distributed among all stake holders of the firm, but whose costs cannot be easily divided. As usual, this problem is mitigated as ownership becomes more concentrated and more stable over time. The model, therefore, predicts that concentrated (or stable) shareholding should be associated with less spending on activities with scope for managerial private benefits such as advertising, entertainment expenses, and R&D.

4. Empirical Design

In order to investigate whether large share and debt holders restrict managers’ activities when there is scope for private benefits, we conduct a series of statistical tests designed to examine if levels of spending on such activities differ significantly between firms according to ownership concentration, the fraction of equity held by stable shareholders, and the fraction of debt held by “close” financial institutions.

3.1 The Sample, Variables, and Test Specification

Our main sample includes approximately 180 listed Japanese manufacturing firms in the chemical industry. We focus on a single (2-digit) industry in order to avoid as much as possible major inter-industry effects on the behavior of firms in the sample. Of course, within the two digit classification of the chemical industry there are still potentially important differences which we address later by dividing the sample into sub-industries. We also examine the validity of our results in other industries by investigating two additional samples of firms, one in the metal products industry and the other in electronics (Section 5). We restrict attention to listed companies because of data availability. Finally,

² A “substitute activity” to in-house R&D could be the purchase of technology from outside sources.

data are collected for 1990 as well as 1982 to account for the possibility that liberalization of capital markets during the 1980s may have affected corporate governance in Japan (Weinstein and Yafeh, 1998).

Using data from the *Japan Development Bank* (similar to COMPUSTAT for US firms), we construct five measures of activities with scope for managerial moral hazard, denoted *MH1* through *MH5*:

- (1) *MH1*: cash and marketable securities deflated by sales. Cash and marketable securities enable managers to pursue their own objectives without close supervision by shareholders or creditors.³
- 2) *MH2*: R&D expenditures deflated by sales. Research and development projects may involve managerial private benefits of control (due to discretion or prestige, for example) and at the same time tend to be hard to monitor by non-specialist outsiders.⁴
- (3) *MH3*: advertising and promotions expenditures deflated by sales. Like R&D, advertising is likely to involve private benefits to managers (e.g. visibility), in addition to a direct effect on firm sales and profits.⁵
- (4) *MH4*: entertainment expenses deflated by sales.⁶
- (5) *MH5*: general sales and administrative expenses deflated by sales. This measure includes some hard to monitor items such as travel expenses, corporate pensions, and administrative expenses.

For brevity, we will refer to activities *MH1* through *MH5* as “*MH* activities.” As a measure of ownership concentration we construct the variable *TOPTEN*, defined as the cumulative percent of all shares held by the ten largest shareholders (also drawn from the *Japan Development Bank*).

Although our main focus is the relation between the *MH* activities and ownership concentration, for a subset of firms that is affiliated with a bank-centered corporate group (*keiretsu*) we can obtain additional measures of monitoring from the Dodwell Marketing Consultants’ *Industrial Groupings in Japan* reports.⁷ We use the Dodwell data to construct proxies for stable equity stakes (within the corporate group) and for firm dependence on debt financing from “close” financial institutions:

- (1) *GSH*: the percent of firm shares held by group members. *GSH* is a measure of the fraction of shares held by stable, long term shareholders with the incentive and ability to

³ See Jensen (1986) and Prowse (1990). Notice that *MH1* is actually a stock, not an activity, and also that in Japan cash and marketable securities may reflect, in part, “compensating balances” deposited with banks.

⁴ R&D is used as proxy for private benefits in Prowse (1990) and Flath (1993).

⁵ Used also in Flath (1993).

⁶ Used also in Morck and Nakamura (1998). While some entertainment expenses may be important for productive networking, much has been written in the press about outrageous corporate entertainment expenses, and indeed, some companies have attempted to ban these expenses all together (The Financial Times, April 24, 1988, cited in Morck and Nakamura, 1998).

⁷ Dodwell classifies a firm as group-affiliated (about half of the firms in our sample) according to the extent and stability of credit, equity, personnel, and other ties it maintains with a main bank and with a bank-centered group of firms. Information on the extent of loans and shareholding by the entire corporate group is also provided.

influence firm behavior (Hoshi, Kashyap, and Scharfstein, 1993).

(2) *GBD*: borrowing from members of the firm's corporate group as a percent of the firm's total debt. This is a measure of the firm's non-arm's length loans which are closely monitored by the group's main bank (Hoshi, Kashyap, and Scharfstein, 1990).⁸

For conciseness, we will refer to the variables *TOPTEN*, *GSH*, and *GBD* as "corporate governance variables." We test the hypothesis that firms with high levels of these variables spend, on average, less on *MH* activities by estimating regressions, for each of the variables *MHI* through *MH*, that take the following general form:

$$MH_i = \alpha + \beta GOV_i + \delta SIZE_i + \varepsilon_i$$

where GOV_i is one (or more) of the corporate governance variables (e.g. ownership concentration), $SIZE_i$ is the natural logarithm of firm assets, and ε_i are error terms. We examine additional specifications where other firm characteristics (firm age and leverage) are included as regressors.

3.2 Econometric Issues

This empirical strategy raises several econometric concerns that we now discuss.

3.2.1 Truncated left hand side variable

The firms in our sample often report zero for certain *MH* variables in certain years, which creates a clustering of the left hand side variable at zero. To deal with this issue we use Tobit regressions as our main specification, thus correcting for potential biases due to a truncated left hand side variable. We also examine another (non-Tobit) specification where the five equations, for *MHI* through *MH5*, are treated as a system of seemingly unrelated regressions (SUR). This specification yields qualitatively similar results suggesting that in our sample potential biases due to a truncated left hand side variable do not constitute a serious problem.

3.2.2 Exogeneity of firm ownership and debt

The specification we use is based on the assumption that spending on activities such as advertising or entertainment can be adjusted easily, while debt and ownership structure are fixed in the short run and, to a large extent, historically determined. Indeed, in our sample there is virtually no change in *TOPTEN* between 1982 and 1990, and the correlation between its 1982 and 1990 values is very high. Furthermore, group shareholding, *GSH*, remains nearly constant between 1982 and 1990, at an average level of approximately 26 percent. Finally, the average change in *GSH* between 1982 and 1990 is a statistically

⁸ Hoshi et. al. use Toyo Keizai's *Keiretsu no Kenkyu* as their source of data on group loans. The difference between this source and the Dodwell report is discussed in detail in Weinstein and Yafeh (1995).

insignificant decline of barely half a percent, and the correlation between *GSH* in 1982 and in 1990 is close to 0.94. As for the entire sample of firms that are affiliated to a corporate group, there is an average reduction of 5 percentage points in the fraction of loans from financial institutions within the group, *GBD*, from an average of 28 percent in 1982 to 23 percent in 1990. (For the firms for which we have data for both years the decline is smaller.) We conclude that the assumption of exogenous equity (and to a lesser extent, debt) stakes is reasonable. Furthermore, the assumption that ownership structure is exogenous is especially reasonable for ownership ties within a bank-centered corporate group. Hoshi (1994) and Yafeh (1995) have shown that many of these equity relations were formed during and immediately after World War II.

Although we think it is plausible to treat ownership concentration as exogenous in the short run, in our empirical analysis we examine a specification where 1982 ownership and debt data are used as instruments for their 1990 counterparts. This specification, designed to address the Demsetz and Lehn (1985) concern that ownership structure is endogenous, does not change any of our major conclusions.

3.2.3 Additional Firm Characteristics that May Affect Spending on *MH* Activities

We examine if differences between sectors within the chemical industry affect our results by adding sector specific dummy variables and by repeating some of the experiments for sub-samples of firms belonging to individual (3-digit) sectors. Our main results remain unchanged when sector specific dummy variables are added, within the sub-sample of firms in the organic chemicals sector, or when pharmaceutical firms are excluded from the sample. We also examine regressions with additional control variables, firm age and leverage, and find that their inclusion in the equations does not affect our conclusions. Finally, we do not attempt to control for managerial incentive schemes that may affect managers' behavior because in our sample period managerial stock options and other incentive packages were quite rare in Japan (The Wall Street Journal, April 9, 1998).

3.3 Sample Statistics

Table I displays sample statistics for 1982 and 1990. Panel A indicates no major differences between the two years, except, perhaps, an increase in firm assets from 1982 to 1990, reflecting the prosperity of the 1980s in Japan. The sub-sample of group-affiliated firms for which data on *GSH* and *GBD* are available consists of slightly over half the firms in the sample in both years. Panel B indicates that group-affiliated firms in this sample are larger and less profitable than unaffiliated firms, and also spend less on most *MH* activities. Because of these differences, and because unaffiliated firms may occasionally implement different mechanisms of corporate governance (Kang and Shivdasani 1998), in the empirical analysis that follows we estimate the regressions for the entire sample as well as for the sub-samples of group-affiliated and unaffiliated firms separately, finding similar results for both sub-samples.

4. Empirical Results

We begin with an examination of the relation between ownership concentration and spending on *MH* activities in the entire sample (Section 4.1), and proceed to examine the sub-sample of group-affiliated firms (Section 4.2). A discussion of several alternative specifications is provided in Section 4.3.

4.1 Monitoring and Shareholder Concentration

Table II displays Tobit regression results of *MH* activities on cumulative shareholding by the largest ten shareholders, *TOPTEN*, for the entire sample of firms for 1990 and 1982, controlling for firm size. Firms with a more concentrated ownership structure spend less on activities with scope for managerial moral hazard. This is clearly evident for both years for spending on R&D, advertising, and general sales and administrative expenses (*MH2*, *MH3*, and *MH5*), and in 1982 for these *MH* activities as well as for entertainment expenses (*MH4*). The effect is of large magnitude: for example, in 1990 a 10 percent increase in shareholding by the top ten shareholders is associated with a reduction of about 20 percent of total R&D outlays (when evaluated at the sample mean). Moreover, four of the five negative coefficients are also highly significant. Finally, the negative relation between ownership concentration and spending on *MH* activities exists in both the sub-sample of group-affiliated firms, as well as in the sub-sample of unaffiliated firms (discussed below). We therefore conclude that the results are consistent with the view that large shareholders play a role in disciplining managers, and are not driven entirely by phenomena related to the Japanese corporate groups. The results also shed light on an important mechanism through which monitoring takes place, namely, the reduction of activities with scope for managerial moral hazard.

4.2 Monitoring within Corporate Groups: Large Shareholders or Banks?

We turn to the analysis of the sub-sample of group-affiliated firms. Because group-affiliated firms typically have large, stable shareholders and close ties with banks, we use this sub-sample to investigate whether the reduction in spending on *MH* activities is mainly associated with shareholding by large shareholders in general, with stable shareholding within the corporate group, or with bank debt.

Large Shareholders (*TOPTEN*)

Panel A of Table III indicates that for the sample of group-affiliated firms the coefficients on *TOPTEN* for both 1982 and 1990 are negative, with the exception of the coefficient on cash and liquid assets, *MH1*, which may reflect firm deposits with their main banks. Thus, our basic finding, namely that large shareholders reduce spending on *MH* activities, also holds within the sub-sample of group affiliated firms.

Stable Shareholding within Corporate Groups (*GSH*)

The results in Panel B indicate that, within the corporate groups, expenditures on activities *MH1* through *MH5* are lower for firms with higher group shareholding, that is, with a larger fraction of equity held by stable shareholders. With the exception of cash and liquid assets, the coefficients in both the 1990 and the 1982 regressions are negative, albeit only two are statistically significant at conventional levels. This is consistent with the argument that stable shareholders monitor management by imposing a cap on spending on activities that may involve private benefits. Of course, *TOPTEN* and *GSH* are correlated (the correlation between the two variables in 1990 is about 0.72), but the fact that the coefficients on *GSH* are an order of magnitude larger than those on *TOPTEN* for the same sample (Panel A) suggests that the *stability* of shareholding matters in addition to the concentration of ownership per se.

(Main Bank Monitored) Debt within Corporate Groups (*GBD*)

The results in Panel C are similar to those for group shareholding in the 1990 (Panel B). By contrast, in 1982 firms with high *GBD* do not spend less on *MH* activities. Perhaps it is the case that restrictions on commercial debt and equity issues prior to 1983 rendered all firms highly dependent on their banks even if their actual debt was low. Another possibility is that the incentives of banks to monitor their clients increased following the deregulation of financial markets during the 1980s, or after the collapse of the “bubble economy” in summer 1990. The interpretation we favor, however, is that this result indicates that monitoring within the corporate groups is driven more by share than by debt holding. We provide additional support for this argument below.

Large Shareholders or Banks? Regressions with both *TOPTEN* and *GBD*

To further address this issue, Panel D displays regressions where both ownership concentration and group debt are included. In 1982 group debt does not affect spending on *MH* activities. In the results for 1990, however, both *TOPTEN* and *GBD* are negative and significant. As discussed above, we interpret this as evidence that shareholding matters more than debt holding for the type of monitoring we describe.

Overall, our findings suggest that in addition to the well documented dramatic interventions of shareholders and creditors in firm management during periods of crisis, there is another process of monitoring which is manifest in patterns of lower spending on *MH* activities by monitored firms. This is consistent with the interpretation that large shareholders monitor firms not only in periods of financial distress, i.e. even when they do not take drastic measures to replace firm management. Berglof and Perotti (1994) argue that, within the bank-centered corporate groups, monitoring in good times is motivated by equity ties whereas lenders represented by the firm’s main bank take drastic measures when client firms are in distress. Our findings are consistent with this view and, moreover, suggest that large shareholders are important for monitoring in good times both within and outside the corporate groups.

4.3 Robustness Tests

4.3.1. Controlling for Additional Firm Characteristics – Age and Leverage

In Table IV, Panel A, we include company age as an additional regressor, finding that it has no significant influence on the *MH* activities or on the coefficients of *TOPTEN*. In Panel B we control for firm leverage (the ratio of debt to total assets). This specification, is, of course, valid only if one is willing to assume that leverage is a firm characteristic that can be treated as exogenous in the short run.⁹ We find that leverage is negatively correlated with spending on the *MH* activities, which can be interpreted either as evidence of liquidity constraints or as a Jensen-like disciplinary influence of debt. Nevertheless, the coefficients on ownership concentration remain negative and significant even when leverage is controlled for. This is true also when both leverage and age are included in the regression (Panel C).

4.3.2 Instrumental Variables

Although we have argued in Section 3 that the assumption of exogenous ownership structure is suitable for our sample of Japanese firms (because ownership is stable, especially within the corporate groups), we address the possibility that ownership itself is affected by R&D or advertising. In Table V we repeat our basic 1990 regressions using 1982 data for ownership concentration, *TOPTEN*, as instruments for their 1990 values. The results indicate that the negative correlation between ownership concentration and spending on *MH* activities remains unchanged, and a similar result is obtained for stable group shareholding, *GSH* (not shown). We interpret this finding as supporting evidence for our hypothesis that monitoring by shareholders involves a reduction in spending on activities with scope for managerial private benefits. Using 1982 group debt, *GBD*, as instrument for 1990 group debt produces insignificant results (not shown). This, again, suggests that the evidence on debt-motivated monitoring is less robust, or, alternatively, that 1982 group debt is a poor instrument for its 1990 value.

4.3.3 Intra-group Spillovers

For the sub-sample of group-affiliated firms, reduction in spending on *MH* activities may be due to monitoring by stable shareholders, as we have argued, or due to positive intra-group spillover effects, enabling firms to economize on R&D or advertising, benefiting from R&D or sales promotion performed by other group members. If correlated with stable shareholding within the group, such spillovers may result in a negative correlation between group shareholding and spending on (some of the) *MH* activities. We do not believe this is likely to be an important factor behind our results. First, the negative correlation between ownership concentration, *TOPTEN*, and spending on *MH* activities is evident within the sub-sample of *unaffiliated* firms (Table VI), a feature which cannot be explained by intra-group spillovers. Second, we decompose group shareholding, *GSH*, into

⁹ Alternatively, it is reasonable to think that expenditures and means of finance are jointly determined, in which case leverage is endogenous.

equity held by financial institutions within the group (the main bank, the trust bank, and insurance companies), and shareholding by non-financial companies within the group, and find that the negative correlation between spending on *MH* activities and *GSH* is not driven by equity stakes held by manufacturing firms only. Because spillovers in advertising, and especially in R&D activities are likely to be due mainly to activities of other manufacturing firms, we conclude that spillovers are not likely to be driving the correlations we observe in the data.

4.3.4 Controlling for Differences between Sectors within the Chemical Industry

We investigate the possibility that differences between firms operating in different sectors of the (2-digit) chemical industry may be important. This issue is addressed in three ways. First, we re-estimate the basic ownership concentration (*TOPTEN*) regression equation for 1990 when three-digit sector dummies are included (Table VII, Panel A), and find that, qualitatively, our results are not affected, although the large number of estimated parameters entails lower statistical significance. A similar result is obtained when estimating the group shareholding equation (*GSH*), where the coefficients remain negative and statistically significant (not reported). Second, we re-estimate the *TOPTEN* equation for the sub-sample of firms belonging to the organic chemical industry, the largest (3-digit) sector in our sample, and find that the results hold for this sub-sample as well, albeit at a lower level of significance (not shown). Finally, we exclude firms specializing in pharmaceuticals from the sample because these firms are quite different from the rest of the sample (Panel B). For example, R&D expenditures among pharmaceutical firms in 1990 are on average over four times the average for other chemical firms. Similarly, advertising expenses among pharmaceutical firms are much higher than among non-pharmaceutical firms. The results remain unchanged once pharmaceutical firms are excluded from the sample. We also find that *within* the pharmaceutical companies, there is no negative correlation between ownership concentration and spending on R&D or advertising, and interpret this as evidence that monitoring by reducing advertising or R&D is probably less efficient in hi-tech, consumer oriented sectors where the risk of “spilling” productive R&D together with wasteful R&D is relatively high. We will report similar findings when we examine the electronics industry in Section 5.

4.3.5 Under-reporting of *MH* Activities

Suzuki (1993) argues that under-reporting of R&D expenditures is frequent in financial statements of Japanese firms, and this is usually due to the fact that research expenses at the plant level are not always included in the firm's aggregate R&D outlays, but rather in other parts of the financial statements. Other *MH* activities, especially entertainment expenses, are often under-reported as well. Even though such under-reporting is probably present in our data, we find no reason for these reporting practices to be correlated with the firm's ownership or debt structure, and therefore do not believe that they are likely to bias our results.

4.3.6 Allowing for Cross-Equation Correlations

Rather than estimating each equation separately, it is possible to estimate a system of five seemingly unrelated regressions (SUR) in which the error terms may be correlated across equations. The advantage of this procedure is that it allows for a simple (Wald) test of the *joint* significance of the coefficients. The drawback, however, is that this estimation technique does not take into account the fact that all *MH* activities are non-negative. Nevertheless, our basic results (Table VIII), remain unchanged when the ownership concentration regressions as well as the group shareholding and group debt regressions are estimated using SUR.

5. Ownership Concentration and *MH* Activities in Other Industries

In order to find out how widespread is the use of monitoring of the type we have described, we examine two additional samples of listed Japanese firms in 1990.

The first sample, which consists of 61 listed firms in the metal products industry, is described in the left hand side column of Panel A, Table IX. Although firms in this sample are, on average, much smaller than firms in the chemical industry, we believe the metal products industry resembles the chemical industry in that it is relatively homogenous with products that are typically used as inputs for other production processes rather than as consumer products. The metal products industry, like the chemical industry, is not one of the most technologically advanced. In this sample too we find a negative correlation between ownership concentration and spending on most *MH* activities (Panel B), although it is not as statistically significant as the correlation found in the chemical industry, perhaps due to the smaller size of the sample. Notice that advertising expenditures among firms in the metal products industry are particularly low (with a low variance across firms), a feature which may explain why the relation between *TOPTEN* and *MH3* is statistically insignificant.

Next, we examine a sample of 170 firms in the electronics industry (also much smaller in size than the firms in the chemical industry), finding no correlation between ownership concentration and the five *MH* activities (Panel B of Table IX). We interpret this as evidence that in rapidly changing consumer-oriented industries where advertising and R&D constitute a vital part of firm activity, it is probably not in the shareholders' interests to impose a cap on such outlays - the probability of "spilling the baby with the water" is rather high (see also in the Appendix). This may well be the case even though the ratio of advertising to sales in the electronics industry is not higher than in the chemical industry. The view that R&D and advertising are more essential in advanced consumer-oriented industries and therefore should not be curtailed by monitoring is further corroborated by the fact that the no correlation between ownership concentration and spending on *MH* activities is observed within the (much smaller sample of firms in the) pharmaceutical industry (see Section 4.3.4 above). Finally, another possible reason for the fact that *MH* activities are not related to ownership concentration in the electronics industry may have to do with competition in this sector which is often described as fierce – the intensity of competition itself can serve as a disciplinary mechanism for managers, so that stake holders need not

resort to active monitoring of the type described in the chemicals industry.¹⁰

6. Concluding Remarks

Several conclusions emerge from the analysis. Large shareholders play a role in monitoring managers. More interestingly perhaps, we advance the hypothesis that managerial monitoring involves a reduction in firm expenditures on activities with scope for managerial moral hazard. This monitoring mechanism seems to take place in “traditional” manufacturing industries even when firms are not in distress.

Although we have not been able to reach firm conclusions regarding monitoring by large debt holders, the evidence presented in this paper, together with the results of other studies such as Kaplan and Minton (1994), is consistent with monitoring motivated by stable shareholding when firm performance is good, and increased intensity of managerial monitoring by debt holders when performance is poor.

Appendix

We present a simple model where a monitor restricts activities with scope for managerial private benefits. Management can undertake three activities: A productive activity, x_1 , say advertising; a substitute activity, y , such as direct mail marketing; and a non-productive form of advertising, x_2 , which generates only private benefits to management, and contributes nothing to firm performance. Although activity y positively affects firm performance (future profits, market share etc.), it constitutes a less than perfect substitute for activity x_1 in the following sense: The overall “productive” effect of activities x_1 and y on firm performance is $x_1 + \gamma y$ where $0 \leq \gamma < 1$.

The objective function of management is

$$u(x_1 + \gamma y) + \beta u(x_2) - c(x_1 + y) - c(x_2)$$

where $u(\cdot)$ is strictly increasing and strictly concave, and $\beta > 0$ measures the relative importance that the manager attributes to private benefits. The function $c(\cdot)$ reflects the cost of managerial effort exerted on the various activities. The function is strictly increasing, strictly convex, and satisfies $c'(0)=0$.

If management is not constrained by monitoring it will choose $y^* = 0$ (since $\gamma < 1$), and x_1^* and x_2^* that satisfy

$$u'(x_1^*) = c'(x_1^*); \tag{A1}$$

$$\beta u'(x_2^*) = c'(x_2^*).$$

Assume that management is monitored by a stake holder of the firm who seeks to maximize

$$v(x_1 + \gamma y) - x_2$$

where $v(\cdot)$ is a strictly increasing and strictly concave function, reflecting the benefits from

¹⁰ The Bank of Japan's *Juyo Kigyo Keiei Bunseki* (Analysis of Management of Major Corporations, 1990-91 volumes) documents 1991 average operating profit rates of 3 percent in the electronics industry relative to 6 percent in the chemical industry. In 1990, the corresponding figures are 5 percent in electronics and 7 percent in chemicals.

productive advertising. From the monitor's perspective, activity x_2 generates no benefits (only costs), so he will want to prevent management from spending on this activity. We assume, however, that only $x_1 + x_2$ can be observed by the monitor (and by outsiders in general), i.e. it is not possible to distinguish between the two activities. The monitor can, however, exert control by imposing a restriction of the form

$$x_1 + x_2 \leq \bar{x} \quad (\text{A2})$$

at a cost $h(\bar{x})$, where $h(\cdot)$ is strictly decreasing and strictly convex. That is, the marginal cost of reducing \bar{x} increases at an increasing rate (approaching infinity as \bar{x} approaches zero). Alternatively, the function $h(\bar{x})$ can be interpreted as the probability that an observed cap on \bar{x} will result in a reduction in productive spending on x_1 .

Denote management's choice of x_1 , x_2 , and y when faced with the constraint (A2) by \hat{x}_1 , \hat{x}_2 , and \hat{y} , and assume that the constraint is strictly binding, i.e.,

$$\hat{x}_1 + \hat{x}_2 = \bar{x} < x_1^* + x_2^*$$

and that the solution is interior. Using the constraint to substitute for x_2 in management's objective function, the necessary conditions for utility maximization are

$$u'(\hat{x}_1 + \gamma\hat{y}) - \beta u'(\bar{x} - \hat{x}_1) - c'(\hat{x}_1 + \hat{y}) + c'(\bar{x} - \hat{x}_1) = 0 \quad (\text{A3})$$

$$\gamma u'(\hat{x}_1 + \gamma\hat{y}) - c'(\hat{x}_1 + \hat{y}) = 0 \quad (\text{A4})$$

where (A3) and (A4) are the first order conditions with respect to x_1 and y .

Totally differentiating (A3) and (A4) with respect to \bar{x} we find that as the constraint tightens both \hat{x}_1 and \hat{x}_2 are reduced, whereas \hat{y} increases.

The monitor takes as given the manager's optimal choice of \hat{x}_1 , \hat{x}_2 , and \hat{y} , and solves the problem

$$\text{Max}_{\bar{x}} v(\hat{x}_1 + \gamma\hat{y}) - \hat{x}_2 - h(\bar{x})$$

Assuming an interior solution to the monitor's problem, a constraint \bar{x} will be imposed on the firm's managers such that the following first order condition is satisfied

$$-h'(\bar{x}) = \partial \hat{x}_2 / \partial \bar{x} - v'(\hat{x}_1 + \gamma\hat{y})(\partial \hat{x}_1 / \partial \bar{x} + \partial \gamma\hat{y} / \partial \bar{x})$$

that is, the marginal cost of reducing \bar{x} equals the net marginal benefit, which equals to the marginal benefit due to the reduction in wasteful activities less the marginal loss due to the reduction in productive activities.¹¹

¹¹ Since it is not central to our analysis, we do not derive the second order conditions of the monitor's problem. If, for example, $u(\cdot)$ and $c(\cdot)$ are quadratic, the first derivatives of \hat{x}_1 , \hat{x}_2 , and \hat{y} with respect to \bar{x} are constants; then the concavity of $v(\cdot)$ and the convexity of $h(\cdot)$

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Table I: Sample Statistics
Panel A: 1982 vs. 1990

All financial data are from the *Japan Development Bank*. Data on group borrowing and group shareholding for group-affiliated firms are available from Dodwell Marketing Consultants.

	1982 (177 firms)		1990 (185 firms)	
	Mean	Std. Dev	Mean	Std. Dev
Total Assets (billion yen)	101,361	164,208	155,713	224,568
Operating profits/sales	6.5	5.8	6.9	5.1
Holdings by TOPTEN shareholders	47.9	14.9	47.6	13.0
Liquid assets/sales - MH1	0.23	0.08	0.26	0.15
R&D/sales - MH2	0.02	0.03	0.03	0.04
Advertising/sales - MH3	0.03	0.06	0.03	0.07
Entertainment expenses/sales - MH4	0.003	0.003	0.001	0.002
General sales and administrative expenses/sales- MH5	0.20	0.14	0.24	0.15
Number of group-affiliated firms	89		105	
Borrowing from within the corporate group out of total debt (%) - GBD	28.8	15.1	22.7	16.8
Shareholding by members of the corporate group (%) - GSH	26.9		26.5	16.6

Table I: Sample Statistics (Contd.)
Panel B: Group-affiliated vs. Unaffiliated Firms, 1990

Group affiliated firms are identified by Dodwell Marketing Consultants according to the extent and stability of credit, equity, personnel and other ties maintained with a main bank and a bank-centered financial corporate group (*keiretsu*).

	Group-affiliated (105 firms)		Unaffiliated (80 firms)	
	Mean	Std. Dev	Mean	Std. Dev
Total Assets (billion yen)	176,623	233,837	128,197	209,834
Operating profits/sales	6.8	4.3	8.1	5.7
Holdings by TOPTEN shareholders	48.8	13.2	45.9	12.6
Liquid assets/sales - MH1	0.26	0.14	0.26	0.15
R&D/sales - MH2	0.03	0.03	0.04	0.05
Advertising/sales - MH3	0.02	0.05	0.05	0.08
Entertainment expenses/sales - MH4	0.0003	0.001	0.001	0.002
General sales and administrative expenses/sales- MH5	0.22	0.11	0.28	0.18

**Table II: The Effect of Large Shareholders (*TOPTEN*)
on Activities with Scope for Managerial Moral Hazard**

TOBIT regressions of *MH1* through *MH5* on a constant, firm size and cumulative equity holdings of the largest ten shareholders, *TOPTEN*, for 1990 and 1982. Moral hazard variables are deflated by firm sales: *MH1*-cash and marketable securities; *MH2*-R&D; *MH3*-advertising; *MH4*-entertainment expenses; *MH5*-general sales and administrative expenses. Standard errors in parentheses. * denotes a coefficient on *TOPTEN* that is significant at the 5 percent level.

Panel A: 1990 Sample (N=185)

	<i>MH1</i>	<i>MH2</i>	<i>MH3</i>	<i>MH4</i>	<i>MH5</i>
Constant	Yes	Yes	Yes	Yes	Yes
log(ASSETS)	-0.006 (0.009)	-0.006 (0.003)	-0.0002 (0.007)	-0.003 (0.001)	-0.004 (0.009)
<i>TOPTEN</i>	-0.0013 (0.0008)	-0.0006* (0.0003)	-0.0024* (0.007)	-0.00005 (0.00006)	-0.0024* (0.008)

Panel B: 1982 Sample (N=177)

	<i>MH1</i>	<i>MH2</i>	<i>MH3</i>	<i>MH4</i>	<i>MH5</i>
Constant	Yes	Yes	Yes	Yes	Yes
log(ASSETS)	-0.014 (0.005)	0.003 (0.002)	-0.005 (0.004)	-0.001 (0.002)	-0.014 (0.007)
<i>TOPTEN</i>	-0.00003 (0.0004)	-0.0005* (0.0001)	-0.0009* (0.0003)	-0.00006* (0.00001)	-0.0028* (0.0006)

Table III: The Effect of Large Shareholders, Stable Equity and Debt Holdings on Activities with Scope for Managerial Moral Hazard, Group-Affiliated Firms Only *

TOBIT regressions of *MH1* through *MH5* on a constant, firm size and cumulative equity holdings of the largest ten shareholders, *TOPTEN*, group shareholding, *GSH*, or the fraction of debt from financial institutions within the corporate group, *GBD*, for 1990 and 1982. Moral hazard variables are deflated by firm sales: *MH1*-cash and marketable securities; *MH2*-R&D; *MH3*-advertising; *MH4*-entertainment expenses; *MH5*-general sales and administrative expenses. Standard errors in parentheses. * and # denote corporate governance coefficients that are significant at the 5 and 10 percent levels respectively.

Panel A: Large Shareholders

1990 Sample of Group-affiliated Firms (N=105)

	<i>MH1</i>	<i>MH2</i>	<i>MH3</i>	<i>MH4</i>	<i>MH5</i>
Constant	Yes	Yes	Yes	Yes	Yes
log(ASSETS)	0.013 (0.012)	0.008 (0.003)	0.009 (0.008)	-0.0021 (0.0009)	0.005 (0.009)
<i>TOPTEN</i>	0.0005 (0.012)	-0.0004 (0.0003)	-0.0015* (0.0007)	-0.00013# (0.00007)	-0.0021* (0.0009)

1982 Sample of Group-affiliated Firms (N=88)

	<i>MH1</i>	<i>MH2</i>	<i>MH3</i>	<i>MH4</i>	<i>MH5</i>
Constant	Yes	Yes	Yes	Yes	Yes
log(ASSETS)	-0.013 (0.007)	0.005 (0.002)	-0.002 (0.0035)	-0.0008 (0.0001)	-0.006 (0.009)
<i>TOPTEN</i>	0.0005 (0.006)	-0.0003 (0.0002)	-0.0005# (0.0003)	-0.00002* (0.00001)	-0.0023* (0.0008)

Table III Panel B: Group Shareholding Regressions

1990 Sample of Group-affiliated Firms (N=105)

	<i>MH1</i>	<i>MH2</i>	<i>MH3</i>	<i>MH4</i>	<i>MH5</i>
Constant	Yes	Yes	Yes	Yes	Yes
log(ASSETS)	0.011 (0.012)	0.008 (0.004)	-0.006 (0.008)	-0.0012 (0.0005)	0.005 (0.009)
<i>GSH</i>	0.017 (0.09)	-0.03 (0.03)	-0.18* (0.06)	-0.004 (0.003)	-0.16* (0.08)

1982 Sample of Group-affiliated Firms (N=88)

	<i>MH1</i>	<i>MH2</i>	<i>MH3</i>	<i>MH4</i>	<i>MH5</i>
Constant	Yes	Yes	Yes	Yes	Yes
log(ASSETS)	-0.015 (0.007)	0.0044 (0.0025)	-0.0045 (0.0037)	-0.0007 (0.0001)	-0.01 (0.01)
<i>GSH</i>	0.001 (0.05)	-0.026 (0.019)	-0.071* (0.028)	-0.0010 (0.0011)	-0.19* (0.07)

Table III Panel C: Group Debt Regressions

1990 Sample of Group-affiliated Firms (N=105)

	<i>MH1</i>	<i>MH2</i>	<i>MH3</i>	<i>MH4</i>	<i>MH5</i>
Constant	Yes	Yes	Yes	Yes	Yes
log(ASSETS)	0.005 (0.011)	0.009 (0.003)	0.014 (0.007)	-0.0010 (0.0004)	0.013 (0.008)
<i>GBD</i>	-0.21* (0.08)	-0.034 (0.023)	-0.09# (0.05)	-0.0045 (0.0030)	-0.09 (0.08)

1982 Sample of Group-affiliated Firms (N=88)

	<i>MH1</i>	<i>MH2</i>	<i>MH3</i>	<i>MH4</i>	<i>MH5</i>
Constant	Yes	Yes	Yes	Yes	Yes
log(ASSETS)	-0.016 (0.007)	0.006 (0.002)	0.0003 (0.003)	-0.0007 (0.0001)	0.001 (0.01)
<i>GBD</i>	-0.05 (0.05)	-0.0002 (0.0019)	0.04 (0.03)	-0.0003 (0.0010)	0.03 (0.07)

Table III Panel D: Regressions with Several Governance Variables

1990 Sample of Group-affiliated Firms (N=105)

	<i>MH1</i>	<i>MH2</i>	<i>MH3</i>	<i>MH4</i>	<i>MH5</i>
Constant	Yes	Yes	Yes	Yes	Yes
log(ASSETS)	0.008 (0.012)	0.007 (0.003)	0.007 (0.008)	-0.002 (0.001)	0.003 (0.009)
<i>TOPTEN</i>	0.0006 (0.012)	-0.0004 (0.0003)	-0.0015* (0.0007)	-0.00013# (0.00007)	-0.0021* (0.0009)
<i>GBD</i>	-0.21* (0.08)	-0.034 (0.022)	-0.093# (0.053)	-0.007 (0.004)	-0.088 (0.063)

1982 Sample of Group-affiliated Firms (N=88)

	<i>MH1</i>	<i>MH2</i>	<i>MH3</i>	<i>MH4</i>	<i>MH5</i>
Constant	Yes	Yes	Yes	Yes	Yes
log(ASSETS)	-0.014 (0.007)	0.005 (0.002)	-0.0015 (0.0025)	-0.0007 (0.0001)	-0.006 (0.009)
<i>TOPTEN</i>	0.0006 (0.0006)	-0.0003 (0.0002)	-0.0006* (0.0003)	-0.00002* (0.00001)	-0.0024* (0.0008)
<i>GBD</i>	-0.06 (0.06)	0.004 (0.019)	0.05 (0.03)	-0.00003 (0.0010)	0.058 (0.045)

Table IV: Controlling for Firm Age and Leverage, 1990

TOBIT regressions of *MH1* through *MH5* on a constant, firm size, and cumulative equity holdings of the largest ten shareholders, *TOPTEN*. Panel A includes also firm age, defined as years since incorporation, and Panel B includes also leverage, defined as the ratio of debt to total assets. Moral hazard variables are deflated by firm sales: *MH1*-cash and marketable securities; *MH2*-R&D; *MH3*-advertising; *MH4*-entertainment expenses; *MH5*-general sales and administrative expenses. Standard errors in parentheses. * and # denote corporate governance coefficients that are significant at the 5 and 10 percent levels respectively.

Panel A: Large Shareholders Regressions, Controlling for Age (N=185)

	<i>MH1</i>	<i>MH2</i>	<i>MH3</i>	<i>MH4</i>	<i>MH5</i>
Constant	Yes	Yes	Yes	Yes	Yes
log(ASSETS)	-0.006 (0.008)	0.006 (0.003)	-0.00006 (0.0072)	-0.0025 (0.0008)	-0.004 (0.008)
<i>TOPTEN</i>	-0.0014 (0.0008)	-0.0006* (0.0003)	-0.0024* (0.0007)	-0.00006 (0.00006)	-0.0029* (0.0008)
<i>Age</i>	-0.0009 (0.0008)	-0.0003 (0.0003)	-0.0001 (0.0007)	-0.0001 (0.0001)	-0.0001 (0.0008)

Panel B: Large Shareholders Regressions, Controlling for Leverage (N=185)

	<i>MH1</i>	<i>MH2</i>	<i>MH3</i>	<i>MH4</i>	<i>MH5</i>
Constant	Yes	Yes	Yes	Yes	Yes
log(ASSETS)	0.002 (0.008)	0.008 (0.003)	0.006 (0.007)	-0.0026 (0.0008)	0.006 (0.008)
<i>TOPTEN</i>	-0.0009 (0.0008)	-0.0005# (0.0003)	-0.0020* (0.0006)	-0.00005 (0.00006)	-0.0023* (0.0008)
<i>Leverage.</i>	-0.265* (0.048)	-0.086* (0.017)	-0.21* (0.04)	-0.0008 (0.0037)	-0.314* (0.045)

Panel C: Large Shareholders Regressions, Controlling for both Age and Leverage (N=185)

	<i>MH1</i>	<i>MH2</i>	<i>MH3</i>	<i>MH4</i>	<i>MH5</i>
Constant	Yes	Yes	Yes	Yes	Yes
log(ASSETS)	0.0020 (0.0085)	0.0086 (0.0029)	0.0058 (0.0067)	-0.0025 (0.0008)	-0.0055 (0.0077)
<i>TOPTEN</i>	-0.0010 (0.0008)	-0.0005# (0.0003)	-0.0020* (0.0006)	-0.00006 (0.00006)	-0.0023* (0.0007)
<i>Leverage</i>	-0.262 (0.048)	-0.085 (0.017)	-0.211 (0.038)	-0.0005 (0.0038)	-0.316 (0.045)
<i>Age</i>	-0.0005 (0.0007)	-0.0002 (0.0002)	0.0002 (0.0006)	-0.00006 (0.00006)	0.0004 (0.0007)

Table V: Instrumental Variables Estimation of the Effects of Large Shareholders (*TOPTEN*) on Activities with Scope for Managerial Moral Hazard, 1990 (N=169)

TOBIT regressions of *MH1* through *MH5* on a constant, firm size and cumulative equity holdings of the largest ten shareholders, *TOPTEN* using the 1982 values of *TOPTEN* as instruments. Moral hazard variables are deflated by firm sales: *MH1*-cash and marketable securities; *MH2*-R&D; *MH3*-advertising; *MH4*-entertainment expenses; *MH5*-general sales and administrative expenses. Standard errors in parentheses. * and # denote a *TOPTEN* coefficient that is significant at the 5 and 10 percent levels respectively.

	<i>MH1</i>	<i>MH2</i>	<i>MH3</i>	<i>MH4</i>	<i>MH5</i>
Constant	Yes	Yes	Yes	Yes	Yes
log(ASSETS)	0.002 (0.009)	0.007 (0.003)	0.004 (0.007)	-0.0023 (0.0008)	0.001 (0.008)
<i>TOPTEN</i>	-0.0010 (0.0008)	-0.0008* (0.0002)	-0.0021* (0.0007)	-0.00003 (0.00005)	-0.0032* (0.0007)

**Table VI: The Effect of Large Shareholders (*TOPTEN*) on
Activities with Scope for Managerial Moral Hazard, Unaffiliated Firms Only**

TOBIT regressions of *MH1* through *MH5* on a constant, firm size and cumulative equity holdings of the largest ten shareholders, *TOPTEN*, for 1990 and 1982. Moral hazard variables are deflated by firm sales: *MH1*-cash and marketable securities; *MH2*-R&D; *MH3*-advertising; *MH4*-entertainment expenses; *MH5*-general sales and administrative expenses. Standard errors in parentheses. * and # denote corporate governance coefficients that are significant at the 5 and 10 percent levels respectively.

1990 Sample of Unaffiliated Firms (N=80)

	<i>MH1</i>	<i>MH2</i>	<i>MH3</i>	<i>MH4</i>	<i>MH5</i>
Constant	Yes	Yes	Yes	Yes	Yes
<i>log</i> (ASSETS)	-0.023 (0.013)	0.006 (0.005)	-0.004 (0.013)	-0.003 (0.001)	-0.005 (0.015)
<i>TOPTEN</i>	-0.0030* (0.0013)	-0.0005 (0.0005)	-0.0024# (0.0013)	-0.00007 (0.00009)	-0.0028# (0.0015)

1982 Sample of Unaffiliated Firms (N=88)

	<i>MH1</i>	<i>MH2</i>	<i>MH3</i>	<i>MH4</i>	<i>MH5</i>
Constant	Yes	Yes	Yes	Yes	Yes
<i>log</i> (ASSETS)	-0.010 (0.007)	0.002 (0.003)	-0.005 (0.006)	-0.0010 (0.0003)	-0.016 (0.012)
<i>TOPTEN</i>	-0.0006 (0.0005)	-0.0007* (0.0002)	-0.0010# (0.0005)	-0.00009* (0.00002)	-0.0029* (0.0010)

Table VII: Controlling for Differences between 3-digit Sectors within the Chemical Industry in the Estimation of the Effects of Large Shareholders (*TOPTEN*) on Activities with Scope for Managerial Moral Hazard (1990 Sample)

TOBIT regressions of *MH1* through *MH5* on a constant, firm size and cumulative equity holdings of the largest ten shareholders, *TOPTEN*. Moral hazard variables are deflated by firm sales: *MH1*-cash and marketable securities; *MH2*-R&D; *MH3*-advertising; *MH4*-entertainment expenses; *MH5*-general sales and administrative expenses. In Panel A, the regressions include additional dummy variables for firms in the organic chemicals, pharmaceuticals, and oil and fat 3-digit sectors. In Panel B, pharmaceutical firms are excluded. Standard errors in parentheses. * and # denote corporate governance coefficients that are significant at the 5 and 10 percent levels respectively.

Panel A: Large Shareholders with 3-digit Industry Dummies (N=185)

	<i>MH1</i>	<i>MH2</i>	<i>MH3</i>	<i>MH4</i>	<i>MH5</i>
Constant	Yes	Yes	Yes	Yes	Yes
log(ASSETS)	-0.005 (0.009)	0.007 (0.002)	-0.003 (0.006)	-0.002 (0.001)	-0.012 (0.05)
<i>TOPTEN</i>	-0.0008 (0.0009)	-0.0001 (0.0002)	-0.0019* (0.0006)	-0.00005 (0.00006)	-0.0012* (0.0005)

Panel B: Large Shareholders, Pharmaceutical Firms Excluded (N=145)

	<i>MH1</i>	<i>MH2</i>	<i>MH3</i>	<i>MH4</i>	<i>MH5</i>
Constant	Yes	Yes	Yes	Yes	Yes
log(ASSETS)	-0.009 (0.009)	0.004 (0.002)	0.009 (0.007)	-0.003 (0.001)	0.014 (0.005)
<i>TOPTEN</i>	-0.0012 (0.0009)	-0.00024 (0.00017)	-0.0019* (0.0007)	-0.00010# (0.00006)	-0.0012* (0.0005)

Table VIII: Seemingly Unrelated Regression Estimates of the Effect of Large Shareholders (*TOPTEN*) on Activities with Scope for Managerial Moral Hazard, 1990

SUR coefficients in regressions of *MH1* through *MH5* on a constant, firm size and cumulative equity holdings of the largest ten shareholders, *TOPTEN* for 1990 Moral hazard variables are deflated by firm sales: *MH1*-cash and marketable securities; *MH2*-R&D; *MH3*-advertising; *MH4*-entertainment expenses; *MH5*-general sales and administrative expenses. Heteroskedastic-consistent standard errors in parentheses. The *P-Value* is based on a Wald Test and reflects the *joint* significance of the coefficients.

	<i>MH1</i>	<i>MH2</i>	<i>MH3</i>	<i>MH4</i>	<i>MH5</i>
Constant	Yes	Yes	Yes	Yes	Yes
log(ASSETS)	-0.006 (0.009)	0.004 (0.002)	-0.002 (0.005)	-0.0003 (0.0001)	-0.004 (0.008)
<i>TOPTEN</i>	-0.0013 (0.0008)	-0.0006 (0.0002)	-0.0012 (0.0004)	-0.000002 (0.000012)	-0.0030 (0.0007)

P-Value (probability that the five coefficients on *TOPTEN* are all zero) – 0.00

Table IX: The Effect of Large Shareholders (*TOPTEN*) on Activities with Scope for Managerial Moral Hazard in the Metal Products and Electronics Industries, 1990

Sample statistics (Panel A) and TOBIT regressions (Panel B) of *MH1* through *MH5* on a constant, firm size and cumulative equity holdings of the largest ten shareholders, *TOPTEN*, for 1990 in the two-digit metal products and electronics industries. Moral hazard variables are deflated by firm sales: *MH1*-cash and marketable securities; *MH2*-R&D; *MH3*-advertising; *MH4*-entertainment expenses; *MH5*-general sales and administrative expenses. Standard errors in parentheses. * and # denote corporate governance coefficients that are significant at the 5 and 10 percent levels respectively.

Panel A: Sample Statistics

	Metal Products (61 firms)		Electronics (170 firms)	
	Mean	Std. Dev	Mean	Std. Dev
Holdings by <i>TOPTEN</i> shareholders	48.2	11.9	50.1	14.2
Liquid assets/sales - <i>MH1</i>	0.40	0.26	0.31	0.32
R&D/sales - <i>MH2</i>	0.03	0.05	0.02	0.02
Advertising/sales - <i>MH3</i>	0.005	0.009	0.01	0.02
Entertainment expenses/sales - <i>MH4</i>	0.002	0.002	0.0005	0.002
General sales and administrative expenses/sales- <i>MH5</i>	0.14	0.06	0.17	0.07

Panel B: Large Shareholders Regressions

Metal Products

	<i>MH1</i>	<i>MH2</i>	<i>MH3</i>	<i>MH4</i>	<i>MH5</i>
Constant	Yes	Yes	Yes	Yes	Yes
log(ASSETS)	0.009 (0.008)	0.005 (0.003)	0.014 (0.005)	-0.0004 (0.0003)	0.012 (0.018)
TOPTEN	-0.0041 (0.0029)	-0.0023# (0.0013)	0.00013 (0.00017)	-0.0002* (0.0001)	-0.0004 (0.0007)

Electronics

	<i>MH1</i>	<i>MH2</i>	<i>MH3</i>	<i>MH4</i>	<i>MH5</i>
Constant	Yes	Yes	Yes	Yes	Yes
log(ASSETS)	0.024 (0.048)	0.012 (0.005)	0.019 (0.004)	-0.005 (0.002)	0.022 (0.009)
TOPTEN	-0.003 (0.002)	-0.0001 (0.0002)	0.0004 (0.0002)	-0.00007 (0.00005)	0.0003 (0.0004)