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Large Shareholders and Banks: Who Monitors and How?

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Abstract

Using a sample of Japanese firms in the chemical industry, we show that concentrated shareholding is associated with lower expenditure on activities with scope for generating managerial private benefits. We interpret this as evidence of a hitherto undocumented form of monitoring by large shareholders. We then examine whether such monitoring is also performed by creditors and, in particular, banks. Finally, we briefly examine the relation between ownership concentration and spending on activities with scope for managerial private benefits in two other industries. The results in the metal product industry are roughly similar to those in the chemicals. By contrast, we find no evidence of this type of monitoring in the Japanese electronics industry, and suggest a number of explanations.

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1. Introduction

Empirical studies of corporate governance have been mainly concerned with the disciplinary effect of executive compensation schemes and managerial turnover, and the relation of ownership structure and firm performance. Evidence is accumulating, and it is apparent that large shareholders play an important role in monitoring firm management.[1]

In this paper we propose another mechanism of monitoring by large shareholders. It is often argued (e.g., Jensen 1986) that managerial moral hazard can take the form of excessive spending on projects that promote the careers and visibility of managers but are not in the best interest of shareholders. We conjecture that shareholders - and possibly other stakeholders - restrict such activities. Under the common assumption that monitoring costs are not fully shared among shareholders, the free rider problem associated with monitoring is mitigated when ownership is more concentrated. Therefore, concentrated ownership should entail lower expenditure on activities with high scope for generating managerial private benefits. Using a sample of Japanese manufacturing firms in the chemical industry, we verify this conjecture empirically. To the best of our knowledge, evidence on this type of monitoring has not been presented previously.[2]

We believe that forms of monitoring other than managerial compensation are important for two main reasons. First, performance-based managerial incentive schemes are not always effective, especially when the available measures of firm performance are noisy.[3] Indeed, we find that in our sample of Japanese firms the restraining effect of ownership concentration on activities with scope for managerial private benefits is especially strong (and more significant) in firms with highly volatile profits. Second, until recently, the use of managerial incentive schemes

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[1] Freixas and Rochet (1997) and Shleifer and Vishny (1997) provide extensive surveys. Empirical studies establishing the general importance of large shareholders in corporate governance include Demsetz and Lehn (1985), Shleifer and Vishny (1986), Morck, Shleifer, and Vishny (1989) and, more recently, Bertrand and Mullainathan (2001). Studies focusing on the positive relation between ownership concentration and board turnover or restructuring of poorly performing firms include Kaplan and Minton (1994), Denis, Denis, and Sarin (1997), Franks, Mayer, and Renneboog (2001), and Kang and Shivdasani (1995, 1996, 1997).

[2] Bertrand and Mullainathan (2001) propose a related idea. They contrast two theories of managerial compensation. The first, which they call the "contracting view," corresponds to standard managerial compensation theory (as in Holmstrom and Milgrom 1987, 1991). The second, called the "skimming view," promotes the idea that managers may influence the determination of their wages and set their own pay "constrained by the availability of cash or by fear of drawing shareholders' attention." Their empirical evidence suggests that both views have merit, but that in poorly governed firms the "skimming view" fits better (e.g., there is more "pay for luck").

[3] This follows from the analysis in Holmstrom and Milgrom (1987, 1991) who show that an optimal managerial incentive scheme exhibits a negative relation between the sensitivity of compensation to performance and the extent to which measures of firm performance are noisy. Findings in Aggarwal and Samwick (1999), who use a sample of US firms, provide empirical support for this claim.

outside the US has been rare. For example, Japanese companies began to offer stock options to executives only in 1997 (because the use of such options was illegal until then), and by spring 1998 only 56 companies offered stock options to their executives. Even among these few firms "the average value of stock options issued... is a far cry from the millions of dollars in stock options the US executives are often granted" (*The Wall Street Journal,* April 9, 1998). Similar figures are presented in *The New York Times* (January 19, 1999) where the structure of CEO pay in ten developed economies is compared. Long-term incentives, such as stock options, account for a much bigger share of a US executive's salary than they do for CEOs in Japan, Germany, France, the UK, or Canada.[4]

We also examine if, in addition to shareholders, banks too monitor client firms in a similar fashion. This question cannot be easily answered empirically because of the difficulty in disentangling the effect of leverage per se and the effect of bank debt on activities with scope for managerial moral hazard. We find that spending on such activities is negatively correlated with leverage in general, which is in line with Jensen's (1986) "free cash flow" view. We perform several tests in an attempt to isolate the marginal monitoring effect of bank debt, but do not find strong evidence in support of such monitoring. The evidence is laid out for the reader to judge. Our own conclusion is that large shareholders are probably more important than banks for the type of monitoring we investigate.[5] Because virtually all firms in our sample exhibit positive profits, this type of monitoring seems to take place even when firm performance is normal.

Finally, we discuss the prevalence of the monitoring scheme we document in two other industries, metal products and electronics. The results for metal products are roughly similar to what we observe in the chemical industry although significance levels are somewhat lower,

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[4] The fact that managerial incentive schemes have been, in general, extremely rare outside the US, and particularly so in Japan, fits the logic of our conjecture since European, and especially Japanese executives, are likely to be more risk averse than their American counterparts (Horioka, 1990). This is in line with the analysis in Holmstrom and Milgrom (1987, 1991) who show that the sensitivity of compensation to performance should be smaller the more risk averse is the manager (agent). Moreover, social norms which restrict the wage differential between executives and other employees, therefore limiting the applicability of managerial incentive schemes (see Jensen and Murphy 1990), are probably more prevalent in Japan and Europe than they are in the US. Nevertheless, there is evidence of a rapid increase in the use of managerial compensation schemes outside the US in recent years. For example, see Conyon and Leech (1994), Conyon, Gregg, and Machin (1995), and Main, Bruce, and Buck (1996) for the UK, and Dore (2000) for Japan.

[5] For a survey of empirical studies of bank monitoring, see Shelifer and Vishny (1997). Empirical studies of bank monitoring in Japan, especially in periods of financial distress, include Sheard (1989), Kaplan and Minton (1994), Kang and Shivdasani (1995, 1997), and Morck and Nakamura (1999). Prowse (1990) and Flath (1993) examine patterns of bank shareholding in Japan as a proxy for bank monitoring. Cable (1985) and Edwards and Fischer (1994) study bank monitoring in Germany.

maybe due to the small sample. By contrast, in electronics we find no evidence of large shareholders restricting spending on activities with scope for managerial private benefits. One explanation is that the intense competition in the electronics industry disciplines management reducing managerial private benefits.

In the next section we present the basic logic of our approach. The main data set for the chemical industry and the empirical specification are presented in Section 3, and the results are reported in Section 4. Section 5 extends the analysis to two additional samples, and Section 6 concludes.

2. The Basic Idea and its Empirical Implications

The logic of our central empirical test is centered on the idea that management can undertake "productive" activities that improve firm performance, and "wasteful" activities that generate only private benefits to management. Shareholders observe the total amount of "productive" and "wasteful" activities undertaken, but not each separately. For example, the "productive" activity can be thought of as entertaining clients in restaurants to create business networks, and the "wasteful" activity as expenditures on fancy restaurants that do not contribute to firm performance. Similarly, these activities can represent well-targeted expenditure on advertising versus expenditure on a highly visible but ineffective campaign of advertising and public relations which benefits only management's "ego." Shareholders cannot distinguish between "productive" and "wasteful" expenses on entertainment and advertising (otherwise the monitoring problem would be trivial). This reflects a difficulty of judging, or at least of arguing in a verifiable manner, whether the third glass of beer with a client, or an expensive television commercial, are essential for business.

Both activities consume resources and, for a given wage, shareholders would like management to allocate as little as possible time to "wasteful" activities. Assuming that shareholders observe a noisy signal of the amount of "productive" activities, they can offer management a pecuniary incentive scheme as in, e.g., Holmstrom and Milgrom (1987, 1991) which will induce management to engage in more of these activities and less of the "wasteful" activities.

But, as shown in Holmstrom and Milgrom (1991), this type of incentive scheme is ineffective if the signal is noisy. Therefore, shareholders are likely to use additional monitoring

devices that are not sensitive to the amount of noise in performance signals. For example, they can restrict the *total* amount of spending on the "productive" and the "wasteful" activities (e.g., the total amount of entertainment expenses).[6]

How would such a constraint on spending be imposed in practice? Presumably, when management is monitored, owners can occasionally intervene and "advise" management on the amount of advertisement or entertainment outlays. This form of intervention probably involves (fixed) costs, for example, due to the need to become familiar with the firm's operations, and the time and effort devoted to meetings with management. The literature on managerial moral hazard typically regards monitoring as a public good whose benefits accrue to all the shareholders. Under the widely held assumption that monitoring costs cannot be easily shared, the free rider problem associated with monitoring is mitigated when ownership is more concentrated, so that we would expect concentrated ownership to be associated with less spending on activities with scope for private benefits. This, of course, does not imply that concentrated ownership is always optimal: it is well known since Demsetz and Lehn's (1985) study, that the benefits of improved monitoring that accompany concentrated ownership should be weighed against various costs such as increased risk, reduced liquidity, etc.

Reducing the amount of spending on activities with potential for managerial private benefits need not be achieved via *explicit* expenditure caps. If managers anticipate disciplinary measures in response to large entertainment or advertising expenses, they will refrain from excessive spending on these activities and will engage in "substitute" activities at their own initiative. Thus, the monitoring mechanism we study may be effective even if explicit expenditure caps are not imposed. Nevertheless, explicit caps are sometimes imposed and made public. One such case was recently reported in the press when Nissan decided to "break drastically with (Japanese) tradition and ban almost all corporate entertainment," a decision that "startled and dismayed the business community" (*The Financial Times*, April 24, 1998). In addition, there have been news reports about American companies attempting to impose limits on managerial travel expenditures (e.g. *The Financial Times*, July 26, 1998).[7]

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[6] In that case, management may engage in "substitute" activities: rather than entertain clients in restaurants and clubs, they can be invited to tour the plant or try the new product; rather than spend on advertising campaigns, direct mailing can be used.

[7] This type of expenditure caps on specific activities should be familiar to academics. Many organizations that extend research grants limit the amount of money that can be spent on international travel - an activity that obviously can be very "productive" but may involve hard to detect "private benefits." The US National Science Foundation and the US-Israel Bi-National Foundation set strict limits on international travel while the Israeli National Science

To summarize, the central empirical implication of this logic is that concentrated ownership should be associated with less spending on activities with potential for managerial private benefits. A second implication is that the effect should be more pronounced for firms with volatile performance, since in such firms pecuniary incentive schemes are less effective in disciplining mangers.[8]

3. The Sample, Variables, and Test Specification

Our main sample includes approximately 180 listed Japanese manufacturing firms in the chemical industry in 1990. We check the robustness of our findings using 1982 data for the same firms. We focus on a single (two-digit) industry in order to avoid as much as possible major inter-industry effects. Of course, there are still potentially important differences within the two-digit classification of the chemical industry, which we address later. Two additional samples of firms, one in the metal products and electronics industries are discussed in Section 5.

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.[9]

(2) *MH2*: R&D expenditures deflated by sales. Research and development projects may involve managerial private benefits (due to discretion or prestige, for example) and, at the same time, the value of R&D outlays tends to be hard to monitor by non-specialist outsiders (see Prowse, 1990, and Flath, 1993).

Foundation forbids any international travel.

[8] Our approach has further implications regarding managerial compensation that we are unable to pursue empirically. Shareholders will typically not completely ban expenditure on activities with scope for managerial private benefits because the more restricted is management's choice, the higher is the wage that must be paid to compensate for the forgone "perks." This implies that in firms with more stringent restrictions on such activities, managerial compensation should be higher. Unfortunately, this prediction is not very helpful empirically since in firms that use managerial incentive schemes we should also expect to see high wages (to compensate managers for the additional risk they undertake). (The latter scheme implies both a high level of wages as well as high sensitivity of wages to (ex-post) performance, whereas the former makes predictions only regarding the level of wages.) Another implication which we do not consider empirically is that restrictions on the amount of spending on activities with potential for managerial private benefits should be positively related to firm value (otherwise shareholders would not want to restrict these activities in the first place). This empirical implication is hard to test because it requires a counterfactual estimate of what firm value would have been without restrictions on management's activities; see Habib and Ljungqvist (2000) who measure the effect of managerial incentives on Tobin's Q relative to an efficient frontier.

[9] Notice that *MH1* is actually a stock, not an activity. Jensen (1986) argues that cash and other liquid assets enable managers to pursue their own objectives without close supervision by shareholders or creditors. Prowse (1990) also

(3) *MH3*: Advertising and promotion expenditures deflated by sales. Like R&D, advertising is likely to involve private benefits to managers (e.g. visibility, "ego," or "empire building," see Flath, 1993).

(4) *MH4*: Entertainment expenses deflated by sales. This is, perhaps, the most obvious example of an activity that can be productive, but can very easily be turned into private benefits. Moreover, it is virtually impossible for anyone but the "entertaining manager" himself to know if a particular dinner party contributes to firm performance or not.[10]

(5) *MH5*: General sales and administrative expenses deflated by sales. This measure includes some hard to monitor items such as travel expenses, managerial retirement funds, and administrative expenses.

For brevity, we will refer to activities *MH1* through *MH5* as "*MH* activities." Naturally, these variables may proxy for firm characteristics other than managerial private benefits, an issue we examine empirically later.

As our main measure of ownership concentration we construct the variable *TOPTEN*, which is defined as the cumulative percent of all shares held by the ten largest shareholders (drawn also from the Japan Development Bank). To verify the robustness of our results, we also experiment with two alternative measures of ownership concentration. The first is the cumulative shareholding of the top five shareholders and the second is the Herfindahl index of ownership concentration.[11]

Our main focus is the relation between the *MH* activities and ownership concentration, but we will also examine the effect of debt holding on these activities. In addition to leverage, we construct several measures of the size of bank debt and its concentration (drawn from *Toyo Keizai*'s *Kigyo Keiretsu Soran*). These measures are the value and share of total debt held by the largest creditor bank, a Herfindahl index of bank debt concentration, and the ratio of overall bank debt to assets.

We test the hypothesis that firms with high ownership concentration spend less on *MH* activities by estimating the regressions (one regression for each of the variables *MH1* through *MH5*),

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uses cash and liquid assets as a proxy for the need to monitor management.

[10] See Morck and Nakamura (1999) for further discussion of entertainment expenses as a measure of managerial private benefits.

[11] Both are drawn from *Toyo Keizai*'s *Dai Kabunushi Soran*.

$$MH_i = \alpha_i + \beta_i GOV_i + \gamma_{i1} Z_1 + \ldots + \gamma_{in} Z_n + \varepsilon_i , \qquad i=1, \ldots, 5$$

where GOV_i is ownership concentration, and $Z_1,\ldots,Z_n$ are firm characteristics: the natural logarithm of firm assets (to control for scale economies), leverage (the ratio of debt to debt plus equity, to control for capital structure and liquidity constraints), and company age (to control for "learning," reputation, or life-cycle effects).[12] Since all five *MH* activities are non-negative, we estimate the equations using a Tobit procedure, assuming that the error terms are independent across the equations.[13]

We conduct a simple joint significance test of the coefficients on GOV_i in the five equations. The test statistic is calculated as follows: under the null hypothesis, ownership concentration does not affect any of the five *MH* activities, that is, $\beta_i=0$ for $i=1,\ldots,5$. Moreover, under the null, the estimated coefficients of the β_i parameters are independent. This is because if high ownership concentration happens to be correlated (in the sample) with one *MH* activity it is unlikely that it will be correlated with other *MH* activities (unless the null hypothesis is false). Thus, under the null hypothesis, the sum across the five equations of the estimated β_i coefficients divided by the square root of the sum of their variances is (approximately) standard normal, and the probability that the null hypothesis is correct can be calculated.

Sample statistics are displayed in Table 1. Spending on certain *MH* activities is substantial: spending on R&D and advertising outlays (*MH2* and *MH3*) amounts, on average, to about half of total operating profits, while spending on general sales and administrative expenses (*MH5)* amounts to nearly four times total operating profits.[14]

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[12] A measure of bank monitoring will be added to the regressions later.

[13] Estimating the equations using OLS, as a system of Seemingly Unrelated Regressions (SUR), yields similar results. (Since the regressors are the same in all the equations, there is no efficiency gain from estimating them as a system.)

[14] Not all five *MH* activities are highly correlated. The correlations between *MH5* and *MH2* and between *MH5* and *MH3* are high, about 0.7, but the correlation between *MH2* and *MH3* is about 0.3. *MH4* is not highly correlated with the other *MH* activities. In addition, because firms often report "zero" for some *MH* activities, particularly entertainment and advertising expenses (*MH3* and *MH4*), and to a lesser extent R&D (*MH2*), the distribution of these variables is skew: the median values for *MH2*, *MH3*, and *MH4* are 0.025, 0.0006, and 0, respectively. One explanation is provided by Suzuki (1993) who argues that R&D expenditures are often under-reported because 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. Even though under-reporting is apparent in our data, we find no reason for these reporting practices to be correlated with the firm's ownership structure, and therefore do not believe that they are likely to bias our results.

4. Empirical Results for the Chemical Industry

Monitoring and shareholder concentration: The benchmark specification

Panel A of Table 2 displays Tobit regressions of *MH* activities on cumulative shareholding by the largest ten shareholders, *TOPTEN*, for the entire 1990 sample of firms in the chemical industry, controlling for firm size, leverage, and age.[15] Firms with a more concentrated ownership structure spend less on activities with scope for managerial moral hazard. This is particularly evident in spending on R&D, advertising, and general sales and administrative expenses (*MH2*, *MH3*, and *MH5*). The effect is of large magnitude: for example, a 10 percent point increase in ownership by the top ten shareholders is associated with a reduction of about one sixth of total R&D outlays (when evaluated at the sample mean). The effect on advertising expenditures is much bigger. Moreover, all five coefficients are negative and even though only three are statistically significant individually, they are jointly highly significant. Another variable that is clearly of both statistical and economic significance is leverage. For example, a one standard deviation increase in leverage would reduce R&D outlays by about half, and eliminate advertising expenditures completely. We discuss possible interpretations of this result later and, in particular, whether it is due to the effect of bank debt or to debt in general.

Monitoring and the variability of firm performance

As noted above, restricting activities with scope for private benefits is a type of monitoring that does not rely on any observable signals of performance. It is, therefore, likely that companies with highly volatile profits (i.e., with noisy performance signals) should use it more extensively. To examine this prediction, we use information on the variance of operating profitability between 1977 and 1986 (based on calculations in Weinstein and Yafeh, 1998) for a sub-sample of 114 firms included in both our study and theirs. To guarantee that the omission of the other firms creates no selection bias, we repeat the regressions of Panel A for this sub-sample, finding a negative and statistically significant correlation between *TOPTEN* and the *MH* activities. Moreover, the coefficients are very similar to those reported for the full sample: –0.01,

[15] There is no conventional measure of goodness of fit for Tobit regressions. With very few exceptions noted in the tables, the reported regressions pass (at the 1 percent significance level) the likelihood ratio (χ^2) test where each regression is compared with a "constant only" regression.

-0.05, -0.30, -0.002, -0.25 for *MH1-MH5* and, as in Panel A, the coefficients on *MH3* and *MH5* are individually statistically significant. We then divide the sample in two according to whether the variance of profitability is above or below the sample median. Panel B presents regressions similar to those in Panel A for the sub-sample of firms with highly volatile profits. It is clear from the table that for these firms the effect of *TOPTEN* on the *MH* activities is larger and more significant than in the full sample.

Do banks monitor by restricting activities with scope for managerial private benefits?

Because so much has been written about the role of Japanese banks in corporate governance, we investigate whether bank ties affect spending on activities with scope for managerial private benefits. As mentioned, the main difficulty is to disentangle empirically the effect of leverage per se, and the incremental effect of bank debt on such activities. To this end, we construct two measures of bank debt concentration that proxy for the incentive and ability of banks to monitor management. The first measure is the share of the largest creditor in total debt, and the second is the Hefindahl index of bank debt concentration. The logic is that when bank debt is concentrated, the largest creditors have an incentive to devote resources to the formation of bank-firm ties and to collecting information on the firm's operations and quality of management. (If bank debt were not concentrated, a free rider problem would arise.) These creditors, being large, can exert restraining influence on spending more effectively.

We re-estimate our basic regression with each of these measures of bank monitoring as an additional regressor. Since we control for leverage, the coefficient on these regressors captures the incremental effect of bank monitoring above and beyond that of bank debt per se. Panels A and B of Table 3 indicate that the coefficients on *TOPTEN* and leverage remain unchanged, but the coefficients on the measures of bank debt concentration are not statistically significant. These results do not support the view that bank-firm relations (measured by the concentration of bank debt) are important for the monitoring mechanism we investigate.

Next, we re-estimate our basic regression including as an additional regressor a measure of the magnitude of debt to the largest creditor. Since we control for firm size, the absolute amount of debt to the largest creditor captures the extent to which a firm is dependent on this creditor. The larger this dependence the greater the ability of the creditor (bank) to monitor the firm's management. The results are displayed in Table 3, Panel C. The coefficients on *TOPTEN*

and leverage remain unchanged, and the coefficient on the magnitude of debt to the largest creditor is negative in all the regressions and statistically significant in one. This result provides some support for the view that bank-firm relations (measured by the dependence of firms on credit from one bank) are important for the monitoring mechanism we investigate.

Finally, we split leverage for each firm in our sample to the ratio of bank debt to assets and the ratio of non-bank debt to assets. We re-estimate our basic regression including both variables as regressors in place of leverage. The results are displayed in Table 3, Panel D. The coefficient on *TOPTEN* remains unchanged, and the coefficients on both measures of bank and non-bank debt are negative and typically significant. The magnitude and significance levels are similar, although in two regressions (*MH1* and *MH3*) the coefficient on bank debt is larger (more negative) and more significant.

Our interpretation of the fact that both bank and non-bank debt affect negatively activities with potential for managerial moral hazard (panel D) is that "debt is debt is debt." Combined with the results reported in panels A and B, we believe that, in our sample, banks do not have a special monitoring role (besides being large creditors). We further interpret these results as indication that, when firm performance is normal, debt holders and banks discipline management mainly through a Jensen-type restriction on their "free cash flow." For example, highly levered firms may be liquidity constrained and unable to raise funds to finance their R&D or advertising outlays. (During periods of distress, bank intervention and monitoring are crucial as documented in many studies; see footnote 5.)[16]

We acknowledge, however, that the evidence on this point is not sharp. The fact that bank and non-bank debt both negatively affect activities with potential for managerial moral hazard (panel D) need not be that "debt is debt is debt." Rather, it may reflect the separate monitoring roles of leverage through a Jensen-type restriction on "free cash flow" on the one hand, and the monitoring role of banks through relationship formation with firms on the other hand. As mentioned, the results in Panel C provide support for this view.

[16] To address the possibility that ownership concentration picks up some of the monitoring role of banks (since the banks themselves are often shareholders), we re-estimated the regressions in this sub-section omitting the variable *TOPTEN*. The results are unchanged in the main.

Robustness Tests and Alternative Interpretations

Instrumental variables and TSLS estimation

The regression specifications so far have been based on the assumption that spending on activities such as advertising or entertainment can be adjusted easily, while ownership structure is stable in the short run and, to a large extent, historically determined. This assumption is corroborated by historical studies showing that many equity relations in Japan were formed during and immediately after World War II (e.g., Hoshi, 1994, Yafeh, 1995). Nevertheless, in order to address the Demsetz and Lehn (1985) concern that ownership structure may be endogenous, we examine two additional empirical specifications. In the first, 1982 ownership concentration is used as an instrument for its 1990 counterpart, yielding a negative correlation between ownership concentration and spending on *MH* activities and coefficients which are very similar to those reported in Panel B of Table 2. In particular, the coefficients on *TOPTEN* in the five regressions are –0.03, -0.05, -0.18, -0.004, and -0.24, with the coefficients on *MH2*, *MH3* and *MH5* individually statistically significant. In the second specification, we follow Demsetz and Lehn (1985) and Leech and Leahy (1991) and adopt a two-stage estimation strategy. In the first stage, ownership concentration is regressed on firm characteristics that determine the desirability of concentrated ownership (firm size, age, and variance of operating profitability). In the second stage, we use the fitted values of ownership concentration from this regression. Panel A of Table 4 shows that the negative correlation between ownership concentration and spending on *MH* activities is present in this specification as well, with four of the *TOPTEN* coefficients individually statistically significant and of larger magnitude than those reported in Table 2, Panel A.

Are the results a peculiar feature of 1990?

We re-estimate our system of equations for 1982, and find that the negative and significant correlation between ownership concentration and spending on *MH* activities is clearly present here as well (results not shown).

Alternative measures of ownership concentration

To examine if our results depend on the variable used to measure ownership concentration, we reproduce the basic results of Table 2, Panel A using the cumulative

shareholding of the top five shareholders and the Herfindahl index of ownership concentration as alternative measures of ownership concentration. The results hold up (not shown). Similarly, the results in Panel B of Table 2 with respect to the sub-sample of firms with high volatility of profits are also unchanged when the cumulative shareholding of the top five shareholders or the Herfindahl index of ownership concentration are used as measures of ownership concentration.

Monitoring and relationships with customers and suppliers

The negative relation between ownership concentration and spending on certain *MH* activities (e.g. advertising expenses) may be due to the fact that in Japan shareholders are often customers and suppliers. Hence, firms with concentrated ownership can afford to spend less on product promotion. Although we do not have data on the composition (identity) of the top ten shareholders, we do have information on the total percent of equity held by other non-financial corporations (presumably mostly suppliers and customers). When we divide the sample in two according to this criterion, we find that the negative correlation between *TOPTEN* and the *MH* activities is clearly present in the sub-sample of 103 firms with below-average shareholding by non-financial corporations. Again, the coefficients on *TOPTEN* for this sub-sample are very similar to those reported in Table 2, Panel A. This suggests that our results are not just picking up economies of scale in activities such as R&D and advertising among firms with cross-ownership ties.

Ownership concentration and growth prospects

The negative relation between ownership concentration and R&D or advertising intensity may be related to investment opportunities, for example, if firms with concentrated ownership have poor growth prospects. We address this issue by adding Tobin's *Q* to the 1982 sample regressions. The data are drawn from Hayashi and Inoue's (1991) seminal paper on *Q* in a model of multiple capital goods and state-of-the-art measurement of capital stocks. We focus on 1982 because of data availability (Hayashi and Inoue's sample does not cover 1990), and also because of the dramatic decline in the equity prices in the Tokyo Stock Exchange in 1990 which might affect the measurement and interpretation of Tobin's *Q*. The results, presented in Panel B of Table 4 (for the 119 firms included in both our sample and in Hayashi-Inoue's), indicate that the

negative relation between *TOPTEN* and the *MH* activities holds when investment opportunities are controlled for.

Controlling for differences between sectors within the chemical industry

We also investigate the possibility that differences between firms operating in different sectors of the (2-digit) chemical industry are important by including three-digit sector dummies in the regressions. The results (not shown) remain unchanged.

"Compensating balances," bank influence, and cash holdings

Cash and liquid assets may reflect "compensating balances" demanded by Japanese banks as a way to extract rents from their clients. We do not believe this could be a major issue in 1990 after Japanese banks lost most of their monopoly power (Weinstein and Yafeh, 1998). Moreover, in 1990, after Japanese capital markets were liberalized, there was little need to circumvent interest rate regulations through "compensating balances."

Entertainment expenses, business networks, and company age

Entertainment expenditures may proxy for the size of a firm's business network. We do not believe this to be the case both in view of the reports on Nissan's recent decision to curb these expenditures, and because age has only little effect on *MH4* in the regressions.

Principal components analysis

In Panel C of Table 4 we use principal components analysis to aggregate the five measures of private benefits, *MH1-MH5,* into a single measure (see Greene, 1990). This aggregate measure is then regressed on ownership concentration and the other control variables. It is found to be strongly and negatively related to ownership concentration, in line with our earlier results.

5. Empirical Results for other Industries

To investigate how widespread is the monitoring mechanism we describe we examine two additional samples of listed Japanese firms in 1990. The first, consisting of 61 listed firms in the metal products industry, is described in the left-hand column of Table 5, Panel A. Firms in this

sample are smaller than in the chemical industry. This sample exhibits a negative correlation between ownership concentration and spending on most *MH* activities (Panel B of Table 5), but the statistical significance of the coefficients is not as high as in the chemical industry, perhaps due to the smaller size of the sample. Notice that advertising expenditures in the metal products industry are particularly low with a low variance across firms (Panel A), which may explain why the relation between *TOPTEN* and *MH3* is statistically insignificant.

Next, we examine a sample of 174 firms in the electronics industry, finding no clear relation between ownership concentration and *MH* activities (Panels A and C of Table 5). We conjecture that in rapidly changing consumer-oriented industries where advertising and R&D constitute a vital part of firm activity it may not be in the shareholders' interest to impose a cap on such outlays. One reason could be that in the electronics industry, R&D and advertising are much more effective than their substitute activities. 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. Another reason why the *MH* activities are not related to ownership concentration in the electronics industry may be fierce competition. If competition itself serves as a disciplinary mechanism for managers, shareholders need not resort to active monitoring of the type we describe.[17] Finally it is possible that performance signals in the consumer electronics industry provide more precise indication of the effectiveness of R&D and advertising relative to other industries.[18]

6. Concluding Remarks

Our analysis suggests that, at least in the Japanese chemical industry and probably in other "traditional" sectors, large shareholders play a role in monitoring managers by imposing a reduction of firm expenditures on activities with scope for managerial private benefits. Unlike managerial incentive schemes, this monitoring mechanism is not affected by the degree of noise in observable measures of firm performance, and indeed our results suggest that it is more heavily used in firms with high performance volatility. We also find evidence for the disciplinary role of

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

[18] The results for the metals and electronics industries do not change when alternative measures of ownership concentration (shares held by the top five shareholders, or a Herfindahl index) are used. There is still a negative (and slightly more significant) relation between ownership concentration and spending on *MH* activities in the metals industry, but not in electronics.

debt, which appears to limit management's free cash flow and reduce spending on these activities. We do not find as much support for the conjecture that banks are particularly important in this respect. Finally, monitoring by reducing activities with scope for managerial private benefits is not present in the consumer electronics industry, either because of the different technological nature of this sector or because the intense product market competition in this industry leads to lower managerial moral hazard.

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Table 1: Sample Statistics (N=185)

All financial data are from the Japan Development Bank, and refer to firms in the chemical industry in 1990.

	Mean	**Standard Deviation**
Total Assets (billion yen)	155,713	224,568
Operating profits/sales (%)	6.9	5.1
Leverage (debt to total assets)	0.60	0.20
Holdings by *TOPTEN* shareholders (%)	47.6	13.0
Holdings by *TOPFIVE* shareholders (%)	35.7	14.7
Herfindahl index of ownership concentration	0.06	0.08
Debt to largest creditor (billion yen)	5,245	13,929
Fraction of bank debt held by the largest creditor	0.23	0.18
Herfindahl index of bank debt concentration	0.15	0.16
Liquid assets/sales – *MH1* (%)	26.4	14.7
R&D/sales – *MH2* (%)	3.6	4.1
Advertising/sales - *MH3* (%)	3.1	6.7
Entertainment expenses/sales – *MH4* (%)	0.06	0.17
General sales and administrative expenses/sales- *MH5* (%)	24.3	14.7

Table 2: The Effect of Large Shareholders (*TOPTEN*) on Activities with Scope for Managerial Moral Hazard in the Chemical Industry

Tobit regressions of *MH1* through *MH5* on (a constant and) cumulative equity holdings of the largest ten shareholders, *TOPTEN*, controlling for firm size, age, and leverage (debt to debt plus equity). All *MH* variables are deflated by firm sales: *MH1*-cash and marketable securities, *MH2*-R&D expenses, *MH3*-advertising expenses, *MH4*-entertainment expenses, *MH5*-general sales and administrative expenses. Standard errors are in parentheses. * and # denote coefficients that are significant at the 5 and 10 percent levels respectively.

Panel A: Tobit Estimates, Full Sample (N=185)

	MH1	***MH2***	***MH3***	***MH4***	***MH5***
Constant	Yes	Yes	Yes	Yes	Yes
Log(ASSETS)	0.2	0.8*	0.6	-0.25*	0.6
	(0.8)	(0.3)	(0.7)	(0.08)	(0.8)
TOPTEN	-0.09	-0.05#	-0.20*	-0.005	-0.23*
	(0.08)	(0.03)	(0.06)	(0.006)	(0.08)
Age	-0.05	-0.01	0.02	-0.006	0.04
	(0.07)	(0.02)	(0.06)	(0.006)	(0.07)
Leverage	-26.2*	-8.3*	-21.2*	-0.04	-31.7*
	(4.8)	(1.7)	(3.8)	(0.37)	(4.6)

p-value of the probability that the coefficients on *TOPTEN* are jointly zero: 0.00.

Panel B: Tobit Estimates, Sub-sample of Firms with High Profit Volatility (N=57)

The sub-sample of firms with high profit volatility consists of 57 firms whose variance of operating profitability between 1977 and 1986 is above the median (out of a total of 114 firms in the chemical industry included in the sample of Weinstein and Yafeh, 1998, for which data are available).

	MH1	***MH2***	***MH3***	***MH4***	***MH5***
Constant	Yes	Yes	Yes	Yes	Yes
Log(ASSETS)	2.2	0.9	-0.6	0.1	-0.6
	(1.7)	(0.6)	(1.1)	(0.1)	(1.5)
TOPTEN	-0.01	-0.13*	-0.35*	-0.00	-0.46*
	(0.16)	(0.05)	(0.12)	(0.00)	(0.14)
Age	-0.03	-0.01	0.06	-0.01	0.04
	(0.17)	(0.05)	(0.10)	(0.01)	(0.14)
Leverage	-13.8	-12.2*	-25.4*	-0.1	-44.3*
	(9.7)	(3.2)	(6.3)	(0.5)	(8.4)

p-value of the probability that the coefficients on *TOPTEN* are jointly zero: 0.00. The *MH4* regression in this table is not statistically different from a "constant only" regression.

Table 3: The Effect of Bank Debt on Activities with Scope for Managerial Moral Hazard

Tobit regressions of *MH1* through *MH5* on (a constant and) measures of bank debt concentration controlling for cumulative equity holdings of the largest ten shareholders, *TOPTEN*, firm size, age, and leverage (debt to debt plus equity). In addition, we include measures of bank debt: the fraction of bank debt held by the largest creditor (Panel A), a Herfindahl index of bank debt concentration (Panel B), the absolute amount owed to the largest lender (Panel C), and the ratio of bank debt to assets (Panel D). All moral hazard variables are deflated by firm sales: *MH1*-cash and marketable securities, *MH2*-R&D expenses, *MH3*-advertising expenses, *MH4*-entertainment expenses, *MH5*-general sales and administrative expenses. Standard errors are in parentheses. * and # denote coefficients that are significant at the 5 and 10 percent levels respectively.

Panel A: Tobit Estimates: Regressions Including Share of Bank Debt Held by Largest Creditor (N=184)

	MH1	*MH2*	*MH3*	*MH4*	*MH5*
Constant	Yes	Yes	Yes	Yes	Yes
Log(ASSETS)	0.3	0. 9*	0.4	-0.25*	0.4
	(0.8)	(0.3)	(0.7)	(0.08)	(0.8)
TOPTEN	-0.10	-0.05#	-0.20*	-0.005	-0.23*
	(0.08)	(0.03)	(0.06)	(0.006)	(0.08)
Largest creditor's share of total debt	2.0	1.8	-5.6	-0.1	-4.3
	(5.7)	(1.9)	(4.3)	(0.4)	(5.3)
Age	-0.05	-0.01	0.02	-0.006	0.04
	(0.07)	(0. 02)	(0.06)	(0.006)	(0.07)
Leverage	-26.2*	-8.4*	-20.0*	-0.03	-30.8*
	(4.9)	(1.7)	(3.9)	(0.4)	(4.6)

p-value of the probability that the coefficients on *TOPTEN* are jointly zero: 0.00; the probability that the coefficients on the share of the largest creditor are jointly zero: 0.47.

Panel B: Tobit Estimates: Regressions Including a Herfindahl Index of Bank Debt (N=184)

	MH1	*MH2*	*MH3*	*MH4*	*MH5*
Constant	Yes	Yes	Yes	Yes	Yes
Log(ASSETS)	0.3	0. 9*	0.5	-0.25*	0.5
	(0.9)	(0.3)	(0.7)	(0.08)	(0.8)
TOPTEN	-0.10	-0.05#	-0.20*	-0.005	-0.24*
	(0.08)	(0.03)	(0.06)	(0.006)	(0.08)
Herfindahl index of bank debt	0.8	2.5	-3.4	-0.1	-4.5
	(6.5)	(2.1)	(4.9)	(0.4)	(6.0)
Age	-0.05	-0.01	0.02	-0.006	0.04
	(0.07)	(0. 02)	(0.06)	(0.006)	(0.07)
Leverage	-26.0*	-8.4*	-20.7*	-0.04	-31.1*
	(4.9)	(1.7)	(3.9)	(0.4)	(4.5)

p-value of the probability that the coefficients on *TOPTEN* are jointly zero: 0.00; the probability that the coefficients on the Herfindahl index of bank debt concentration are jointly zero: 0.65.

Panel C: Tobit Estimates: Regressions Including the Amount of Bank Debt Held by the Largest Creditor (N=184)

	MH1	*MH2*	*MH3*	*MH4*	*MH5*
Constant	Yes	Yes	Yes	Yes	Yes
Log(ASSETS)	0.2	1.2*	1.1	-0.25*	1.2
	(0.9)	(0.3)	(0.7)	(0.09)	(0.8)
TOPTEN	-0.09	-0.04	-0.19*	-0.004	-0.23*
	(0.08)	(0.03)	(0.06)	(0.006)	(0.08)
Debt held by the largest creditor	-9.4	-8.5*	-12.2	-2.81	-12.0
	(8.6)	(4.1)	(10.1)	(3.21)	(8.7)
Age	-0.06	-0.02	0.01	-0.007	0.02
	(0.07)	(0.02)	(0.06)	(0.006)	(0.07)
Leverage	-24.2*	-6.8*	-18.9*	0.1	-28.9*
	(5.2)	(1.8)	(4.1)	(0.4)	(4.9)

p-value of the probability that the coefficients on *TOPTEN* are jointly zero: 0.00; the probability that the coefficients on the amount of debt held by the largest creditor are jointly zero: 0.00. The coefficients on debt held by the largest creditor are multiplied by 10,000.

Panel D: Tobit Estimates: Regressions with Bank Debt and Non-Bank Debt Included Separately (N=184)

	MH1	*MH2*	*MH3*	*MH4*	*MH5*
Constant	Yes	Yes	Yes	Yes	Yes
Log(ASSETS)	-0.01	0.8*	0.5	-0.25*	0.7
	(0.8)	(0.3)	(0.7)	(0.08)	(0.8)
TOPTEN	-0.03	-0.05#	-0.18*	-0.003	-0.24*
	(0.08)	(0.03)	(0.07)	(0.006)	(0.08)
Age	-0.06	-0.01	0.01	-0.007	0.03
	(0.07)	(0.02)	(0.06)	(0.006)	(0.07)
Bank debt to assets	-37.2*	-8.4*	-26.3*	-0.5	-31.2*
	(5.9)	(2.1)	(5.3)	(0.5)	(5.7)
Non-bank debt to assets	-11.7#	-8.1*	-15.7*	0.4	-31.4*
	(6.5)	(2.3)	(5.1)	(0.5)	(6.2)

p-value of the probability that the coefficients on *TOPTEN* are jointly zero: 0.00; the probability that the coefficients on bank debt to assets are jointly zero: 0.00; the probability that the coefficients on non-bank debt to assets are jointly zero: 0.00.

Table 4: Extensions and Robustness Tests

Panel A presents TSLS estimates where ownership concentration is endogenously determined. Panel B presents results from regressions that include Tobin's *Q*, calculated by Hayashi and Inoue (1991), as an additional control variable. This sub-sample consists of 119 firms out of the 1982 sample for which data on *Q* are available from Hayashi and Inoue (1991). Panel C presents regressions based on an aggregate measure of *MH*, which is constructed using principal components analysis. Estimates in Panels A and B are derived from Tobit regressions of *MH1* through *MH5* on (a constant and) cumulative equity holdings of the largest ten shareholders, *TOPTEN*, controlling for firm size, age, and leverage (debt to debt plus equity). Estimates in Panel C are from an OLS regression with robust standard errors. Moral hazard variables are deflated by firm sales: *MH1*-cash and marketable securities, *MH2*-R&D expenses, *MH3*-advertising expenses, *MH4*-entertainment expenses, *MH5*-general sales and administrative expenses. * and denote coefficients that are significant at the 5 and 10 percent levels respectively.

Panel A: TSLS Tobit Estimates (N=114)

First Stage Regression: *TOPTEN* = 90.39 - 3.37 * Log(ASSETS) - 42.43 * Variance of profitability - 0.09 * Age
(10.5) (0.83) (38.14) (0.08)

Second Stage Regressions:

	MH1	*MH2*	*MH3*	*MH4*	*MH5*
Constant	Yes	Yes	Yes	Yes	Yes
Log(ASSETS)	-6.9#	-6.7*	-5.1#	0.3	-18.1*
	(4.1)	(0.9)	(2.8)	(0.5)	(3.0)
Fitted value of *TOPTEN*	-2.2*	-2.2*	-1.9*	0.13	-5.7*
	(1.1)	(0.3)	(0.8)	(0.13)	(0.8)
Age	-0.19	-0.18*	-0.10	0.01	-0.3*
	(0.14)	(0.03)	(0.10)	(0.01)	(0.1)
Leverage	-12.6#	-7.8*	-25.6*	0.1	-34.4*
	(7.1)	(1.7)	(5.5)	(0.6)	(5.2)

p-value of the probability that the coefficients on *TOPTEN* are jointly zero: 0.00 . The *MH4* regression in this table is not statistically different from a "constant only" regression.

Panel B: Tobit Estimates, Controlling for Tobin's *Q* (1982, N=119)

	MH1	*MH2*	*MH3*	*MH4*	*MH5*
Constant	Yes	Yes	Yes	Yes	Yes
Log(ASSETS)	-1.5*	0.36*	-0.35	-0.11*	-0.9
	(0.6)	(0.21)	(0.42)	(0.02)	(0.8)
TOPTEN	-0.04	-0.02	-0.08*	-0.006*	-0.18*
	(0.05)	(0.02)	(0.04)	(0.002)	(0.07)
Tobin's *Q*	0.62#	0.50*	-0.00	-0.01	10.7*
	(0.34)	(0.12)	(0.24)	(0.01)	(4.7)
Age	-0.03	0.007	-0.027	0.002	0.09
	(0.05)	(0.019)	(0.038)	(0.002)	(0.07)
Leverage	9.7*	-5.2*	-13.3*	-0.35*	-32.4*
	(3.7)	(1.4)	(2.7)	(0.13)	(5.1)

p-value of the probability that the coefficients on *TOPTEN* are jointly zero: 0.00 .

Panel C: Principal Components Analysis (N=185)

OLS regression with robust standard errors (in parentheses). The dependent variable is an aggregate measure of *MH* expenditures.

	Aggregate *MH*
Constant	Yes
Log(ASSETS)	0.06 (0.04)
TOPTEN	-0.015* (0.005)
Age	0.002 (0.004)
Leverage	-2.11* (0.30)
Adjusted R-Squared	0.26

Table 5: The Effect of Large Shareholders (*TOPTEN*) on Activities with Scope for Managerial Moral Hazard in the Metal Products and Electronics Industries

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

Panel A: Sample Statistics

	Metal Products (N=61)		**Electronics (N=174)**	
	Mean	**Standard Deviation**	**Mean**	**Standard Deviation**
Total Assets (billion yen)	55,796	86,237	211,232	576,570
Holdings by *TOPTEN* shareholders (%)	48.2	11.9	49.9	14.1
Liquid assets/sales - *MH1* (%)	40.3	27.0	32.8	35.9
R&D/sales - *MH2* (%)	3.0	5.1	1.7	2.4
Advertising/sales - *MH3* (%)	0.5	0.9	1.1	2.1
Entertainment expenses/sales - *MH4* (%)	0.2	0.2	0.05	0.2
General sales and administrative expenses/sales - *MH5* (%)	14.4	6.2	16.9	7.2

Panel B: Monitoring by Large Shareholders, Metal Products (N=61)

	MH1	*MH2*	*MH3*	*MH4*	*MH5*
Constant	Yes	Yes	Yes	Yes	Yes
Log(ASSETS)	3.2	2.2	0.5*	-0.12	0.008
	(6.9)	(1.4)	(0.2)	(0.11)	(0.8)
TOPTEN	-0.6*	-0.22	-0.00	-0.01	-0.12#
	(0.3)	(0.14)	(0.00)	(0.01)	(0.07)
Age	-0.3	0.01	-0.01	0.02	-0.17*
	(0.2)	(0.10)	(0.01)	(0.008)	(0.06)
Leverage	-15.4	4.3	-0.03	-0.4	0.8*
	(16.6)	(8.0)	(1.1)	(0.6)	(0.4)

p-value of the probability that the coefficients on *TOPTEN* are jointly zero: 0.01. The *MH4* regression is different from a "constant only" regression at the 10 percent level only.

Panel C: Monitoring by Large Shareholders, Electronics (N=174)

	MH1	*MH2*	*MH3*	*MH4*	*MH5*
Constant	Yes	Yes	Yes	Yes	Yes
Log(ASSET)	8.3#	1.2*	1.7*	-0.48*	2.2*
	(4.4)	(0.5)	(0.4)	(0.17)	(1.0)
TOPTEN	-0.25	-0.01	0.032#	-0.010#	0.04
	(0.18)	(0.02)	(0.017)	(0.006)	(0.04)
Age	-0.47*	-0.008	0.001	-0.010#	0.016
	(0.19)	(0.020)	(0.018)	(0.006)	(0.044)
Leverage	22.8	-0.7	-2.3	-0.84	-0.4
	(15.0)	(1.5)	(1.4)	(0.51)	(3.4)

p-value of the probability that the coefficients on *TOPTEN* are jointly zero: 0.29 .