

LARGE SHAREHOLDERS AND BANKS: WHO MONITORS AND HOW?

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ABSTRACT

Large Shareholders and Banks: Who Monitors and How?*

We investigate the nature of monitoring by stake holders using data on Japanese manufacturing firms. Shareholders and bank-centred corporate groups monitor firms by reducing activities with scope for managerial moral hazard such as advertising, R&D and entertainment expenses. Monitoring of this type takes place even when the monitored firm is not in financial distress. Although in Japan it is difficult to distinguish empirically between monitoring motivated by debt and monitoring motivated by equity stake, the data indicate that shareholders monitor firms continuously, while debt holders may intervene when firm performance is poor.

JEL Classification: G21, G30

Keywords: banks, Japanese corporate groups, large shareholders, managerial moral hazard, monitoring

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NON-TECHNICAL SUMMARY

Problems of conflicting interests between management and firm stake holders have been the focus of a large volume of literature since the 1930s. In particular, much attention has been devoted to the study of available mechanisms for the disciplining and monitoring of managers. This paper sheds light on the actual nature of monitoring activity by large share and debt holders. We present empirical evidence indicating that monitoring involves a significant reduction of activities with scope for managerial moral hazard. Using a sample of Japanese manufacturing firms, we show that activities with high potential for managerial 'empire building' such as advertising, R&D, and entertainment expenses, are negatively correlated with shareholder concentration and with the fraction of stock and debt held by bank-centred financial corporate groups. Monitoring of this type takes place even when the monitored firm is not in financial distress. While the evidence we present indicates that monitoring by shareholders, in particular shareholders within corporate groups, takes place continuously, the evidence regarding continuous monitoring by debt holders is less robust, suggesting that debt holders tend to intervene mainly when firm performance is poor.

Existing evidence on the monitoring role of large shareholders and banks is mixed. Although there is some indication of monitoring by stake holders, there is little agreement on who monitors and how. We investigate whether large share and debt holders restrict activities of client firms when there is scope for managerial moral hazard, by conducting a series of statistical tests designed to examine if the levels of spending on such activities differ significantly between firms with concentrated ownership or with close ties to a major bank, and firms which borrow largely at arm's length. The analysis is based on correlations between ownership concentration, bank dependence, and expenditures on a number of activities which are likely to involve private benefits to managers.

Our sample includes approximately 180 listed Japanese manufacturing firms in the chemical industry. We focus on Japan both because of data availability and because Japanese (and German) banks are regarded as typical real world examples of monitoring by large debt holders. We construct five measures of managerial moral hazard:

- 1) The ratio of cash and marketable securities to sales. Available cash and marketable securities enable managers to pursue their own objectives without close supervision by debt or shareholders.

- 2) R&D intensity; the ratio of R&D expenditures to 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.
- 3) The ratio of expenditures on advertising and promotions to sales. Like R&D, advertising is likely to involve private benefits to managers, in addition to a direct effect on firm sales and profits.
- 4) 'Entertainment expenses' divided by sales.
- 5) General sales and administrative expenses, deflated by sales.

We use the following measures of monitoring:

- 1) Monitoring by shareholders is likely to increase with ownership concentration. We therefore collect data on the cumulative percentage of all shares held by the ten largest shareholders.

For a subset of firms which are members in financial corporate groups, we construct additional measures of monitoring:

- 2) A measure of affiliation with a financial corporate group centred around one of the major (eight) banks.
- 3) The ratio of borrowing from members of the firm's corporate group to total debt. The fraction of total borrowing which originates in group affiliated financial institutions can be regarded as a measure of the firm's loans which are closely monitored by the group's bank.
- 4) The percentage of shares held by group members. This is a measure of the extent to which shares are held by stable, long-term shareholders with the incentive and ability to influence firm behaviour.

Our empirical results indicate that there is a strong and negative correlation between the above measures of monitoring and expenditures on activities which may involve private benefits to managers. We show that ownership concentration and stable shareholding within the financial corporate groups are particularly important in this respect. We also present some evidence on monitoring by debt holders within the bank-centred groups. The negative correlation between bank monitoring and expenditures on activities with scope for managerial moral hazard is less robust, however. This leads us to suspect that the driving force behind managerial monitoring in good times is equity

stake, while banks may play an important role during financial distress, as shown in other studies.

Our analysis contributes to the literature on corporate governance in several ways. First, it constitutes an additional piece of evidence on the existence of monitoring, especially by large shareholders. Second, while most previous work has focused on indirect consequences of monitoring (such as profits, return on equity, stock prices), this paper identifies specific activities which are restricted by monitors, and thus sheds light on how monitoring takes place in practice. Third, our findings suggest that some active monitoring on behalf of stake holders actually occurs in good times too, not only in periods of financial distress.

1. Introduction

Problems of conflicting interests between management and firm stake holders have been the focus of a large volume of literature since Berle and Means (1932). Jensen and Meckling (1976) and Shleifer and Vishny (1986), among others, have discussed available mechanisms for the disciplining and monitoring of managers. This paper sheds light on the actual nature of monitoring activity by large share and debt holders. We present empirical evidence indicating that monitoring involves a significant reduction of activities with scope for managerial moral hazard. Using a sample of Japanese manufacturing firms, we show that activities with high potential for managerial "empire building" such as advertising, R&D, and entertainment expenses, are negatively correlated with shareholder concentration and with the fraction of stock and debt held by bank-centered financial corporate groups. Monitoring of this type takes place even when the monitored firm is not in financial distress. While the evidence we present indicates that monitoring by shareholders, in particular shareholders within corporate groups, takes place continuously, the evidence regarding continuous monitoring by debt holders is less robust, suggesting that debt holders tend to intervene more actively when firm performance is poor [Morck and Nakamura (1992), Kaplan and Minton (1994)].

Existing evidence on the monitoring role of large shareholders is mixed. Demsetz and Lehn (1985) find no significant relationship between ownership concentration and accounting profit rate. Brickley, Lease and Smith (1988) provide evidence that large institutional investors vote more than the average shareholder, in particular against anti-takeover amendments, indicating that institutional investors do not rubber stamp management policy. Wruck (1989) finds that private placements of equity result in higher shareholder concentration, and

are associated with a positive stock price response. The public, realizing that higher shareholder concentration entails closer monitoring, places a higher value on the firm¹. Leach and Leahy (1991) argue, among other things, that when non-diversifiable firm risk is high, there is more room for managerial discretion, and hence the benefit to shareholders from monitoring is higher. However, they find no evidence for higher shareholder concentration in firms with higher standard deviation of return on equity.

The evidence on the monitoring role of banks is also mixed, but considerably less so than the evidence on monitoring by shareholders. For a sample of leading West German companies, Cable (1985) finds a positive relationship between ownership concentration and profitability (measured as the ratio of after-tax profits to capital) as well as between the ratio of bank borrowing to total corporate debt and profitability. On the other hand, Edwards and Fischer (1994) find little evidence for monitoring by German banks, and argue (p.227) that Cable's results should be interpreted as supporting the monitoring role of large shareholders, not of banks as delegated monitors.

There is evidence on bank monitoring in Japan, especially in periods of financial distress. Sheard (1989) describes monitoring by Japanese main banks in detail. Morck and Nakamura (1992) find that poor stock market performance leads to an increased probability that a bank executive will be named to the board of directors in the subsequent year. Kaplan and Minton (1994) report qualitatively similar results. These findings are consistent with the view that close bank-firm relations enable banks to gather information on their clients and hence reduce the costs of financial distress [Hoshi, Kayshap and Scharfstein (1990a)], and

¹ Another interpretation is that the public perceives a private placement as an attempt to avoid disclosure of favorable information to interested third parties (e.g. product market competitors), and therefore concludes that the management must be "on to something good" [Yosha (1994)].

possibly mitigate liquidity constraints [Hoshi, Kashyap and Scharfstein (1990b, 1991)]. Aoki (1990) emphasizes that banks in Japan intervene in firm management only in periods of financial distress, while granting full autonomy to well run companies.

Our paper is related to this literature in several ways. First, it constitutes an additional piece of evidence on the existence of monitoring, especially by large shareholders. Second, while most previous work has focused on indirect consequences of monitoring (such as profits, return on equity, stock prices)², this paper identifies specific activities which are restricted by monitors, and thus sheds light on how monitoring takes place in practice. Third, our findings suggest that some active monitoring on behalf of stake holders actually occurs in good times too, and is not restricted only to periods of financial distress. Finally, although it is difficult to identify the motivation for monitoring when debt holders simultaneously hold equity (as is the case in Japan and Germany), we suspect, as others have, that monitoring in good times is motivated by equity stake, while debt-motivated monitoring is more likely when firm performance is poor.

The basic logic of our approach is presented in the next section, with the aid of a simple model. In section 3 we present the empirical methodology. The results are presented and discussed in section 4. Section 5 concludes.

2. Restricting Managerial Moral Hazard

We illustrate our basic logic with a model. Consider a firm that 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

² Notable exceptions are Prowse (1990) and Flath (1993) which are discussed in more detail below.

of advertising, x_2 , which generates only private benefits (e.g. visibility) to management. Firm profits are

$$\pi = x_1 + \gamma y - c(x_1 + x_2 + y) ,$$

where $c(\cdot)$ is strictly increasing and strictly convex and $\gamma \in (0,1)$. That is to say, activity y is a less than perfect substitute for activity x_1 in terms of productivity, and the private benefits activity x_2 contributes nothing to revenue.

The objective function of the firm's management is

$$u(\pi) + \beta u(x_2) ,$$

where $u(\cdot)$ is strictly increasing and strictly concave, and $\beta > 0$ measures the relative importance that management attributes to private benefits. If management is not constrained by monitoring it will choose $y^* = 0$ (since $\gamma < 1$), and x_1^* and x_2^* that satisfy

$$c'(x_1^* + x_2^*) = 1 ; \quad \frac{u' [x_1^* - c(x_1^* + x_2^*)]}{u'(x_2^*)} = \beta . \quad (1)$$

Profit maximization, however, would dictate $y = x_2 = 0$ and x_1 such that $c'(x_1) = 1$. A monitor who is interested in profit maximization will therefore want to restrict x_2 . We assume, however, that the monitor can observe only $x_1 + x_2$, but cannot distinguish between the two activities. We believe that it is probably hard for a monitor to judge, or at least to argue in a verifiable manner, whether a particular advertising campaign is wasteful or not. Under this assumption, and when activity y is a close substitute for activity x_1 (γ close enough to unity), the monitor will want to restrict the total expenditure on advertising by imposing a constraint of the form

$$x_1 + x_2 \leq \bar{x} .$$

The firm will respond by reducing both x_1 and x_2 , and will engage in a positive level of activity y . The overall effect on profits is positive. The intuition is that when γ is close to 1 the loss of profits incurred by switching from x_1 to y is small. On the other hand, the gains are substantial since y involves no potential for moral hazard. Summarizing, we have the following:

Claim: If activity y is a close substitute for activity x_1 (γ close to unity), then $\partial\pi/\partial\bar{x} < 0$, i.e. the monitor will want to reduce \bar{x} as much as possible. The proof can be skipped without loss of continuity.

Proof: Consider the firm's problem:

$$\begin{aligned} & \text{Max}_{x_1, x_2} u(\pi) + \beta u(x_2) \\ & \text{s. t. } x_1 + x_2 \leq \bar{x} . \end{aligned}$$

When the constraint is strictly binding

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

and the necessary conditions for utility maximization are

$$c'(\bar{x} + \hat{y}) = \gamma , \tag{2}$$

$$\frac{u'[\hat{x}_1 + \gamma \hat{y} - c(\bar{x} + \hat{y})]}{u'(\bar{x} - \hat{x}_1)} = \beta . \tag{3}$$

It follows that there is a low enough value of \bar{x} such that for all \bar{x} less than this critical value, $\hat{y} > 0$ and

$$\frac{\partial \hat{y}}{\partial \bar{x}} = -1 , \tag{4}$$

that is, a reduction of one Yen in the expenditure on advertising entails an

increase of exactly one Yen in the expenditure on the (less productive) alternative to advertising³.

Totally differentiating (2) and (3) with respect to \bar{x} yields

$$\frac{\partial \hat{x}_1}{\partial \bar{x}} = \frac{u''(\cdot)}{u''(\cdot) + \beta u''(\cdot)} \quad (5)$$

and

$$\frac{\partial \hat{x}_2}{\partial \bar{x}} = \frac{\beta u''(\cdot)}{u''(\cdot) + \beta u''(\cdot)} \quad (6)$$

where (\cdot) stands for $\bar{x} - \hat{x}_1$ and $(\cdot\cdot)$ stands for $\hat{x}_1 + \gamma \hat{y} - c(\bar{x} + \hat{y})$.

Thus, for all $\gamma \in (0,1)$

$$\frac{\partial \hat{x}_1}{\partial \bar{x}}, \frac{\partial \hat{x}_2}{\partial \bar{x}} > 0; \quad (7)$$

$$\frac{\partial \hat{x}_1}{\partial \bar{x}} + \frac{\partial \hat{x}_2}{\partial \bar{x}} = 1,$$

namely, as the constraint on advertising expenditures tightens, the firm reduces both productive and non-productive advertising. Using these facts we can derive the effect of \bar{x} on firm profits

$$\frac{\partial}{\partial \bar{x}} [\hat{x}_1 + \gamma \hat{y} - c(\bar{x} + \hat{y})] = \frac{\partial \hat{x}_1}{\partial \bar{x}} - \gamma. \quad (8)$$

By (5), the partial derivative of \hat{x}_1 with respect to \bar{x} is bounded away from unity⁴. Hence there is a $\gamma_0 < 1$ such that for all $\gamma \geq \gamma_0$ the derivative in (8) is strictly negative, implying that profits increase as the constraint becomes tighter (i.e. as \bar{x} decreases), which completes the proof.

³ If \bar{x} is only slightly less than $x_1^* + x_2^*$, then \hat{y} is zero, namely the firm reduces the amount of advertising, but does not engage instead in an alternative form of marketing. The lower is γ , the lower is the critical value of \bar{x} below which \hat{y} becomes strictly positive.

⁴ This step makes the perfectly innocuous assumption that $\lim_{\gamma \rightarrow 1} u''(\cdot\cdot) < 0$.

According to this stylized model, the monitor would want to set $\bar{x}=0$, which is clearly unrealistic. In order to derive a sensible empirical implication from the analysis, we make the assumption that the extent to which the monitor can reduce \bar{x} (or alternatively, the probability with which it can enforce the constraint) increases with its power to exert control. If the power to exert control increases with the fraction of stock owned by the monitor and with the amount of debt it holds, then we would expect to see lower levels of advertising for firms with a concentrated ownership structure and whose largest lender holds a big fraction of the firm's outstanding debt.

Similar logic applies to other activities such as entertainment expenses, R&D, and to the fraction of assets held in liquid form. All these activities are prone to managerial abuse and "empire building", and each has a (possibly less efficient) substitute. Rather than entertain clients in restaurants and clubs, they can be invited to tour the plant; rather than perform R&D, new technology can be purchased, or less innovative technology can be used; assets can be kept in a less liquid form, such as inventories, equipment etc. We therefore expect managers of closely monitored firms to spend less on all these activities.

While ours is a model of active monitoring by stake holders, it is of course possible to formulate a model with similar predictions where a process of self selection (according to advertising and other expenditures) determines each firm's ownership and financial structure. We address this issue explicitly in the design of our statistical tests, and again in Sections 4.3 and 4.4. Notice also that in our model monitoring does not reduce costs since firm managers can only shift resources between x and y (in the spirit of the multi-task principal-agent literature). It is, of course, possible to model monitoring as a cost reducing activity (which reduces waste), and derive similar predictions.

3. Methodology and Empirical Design

In order to investigate whether large share and debt holders restrict activities of client firms when there is scope for managerial moral hazard, we conduct a series of statistical tests designed to examine if the levels of spending on such activities differ significantly between firms with concentrated ownership or with close ties to a major bank, and firms which borrow largely at arm's length. The analysis is based on correlations between ownership concentration, bank dependence, and expenditures on a number of activities which are likely to involve private benefits to managers.

Our sample includes approximately 180 listed Japanese manufacturing firms in the chemical industry. We focus on a single (two-digit) industry in order to avoid as much as possible major inter-industry effects on the behavior of firms in the sample. We restrict attention to listed firms because of data availability. Since the liberalization of Japanese capital markets during the 1980s may have affected the ability of banks to influence their clients' behavior [Hoshi, Kashyap and Scharfstein (1993), Weinstein and Yafeh (1994)], we collect data on firms in the sample for both 1982 (pre-liberalization) and 1990 (when the deregulation process is largely complete).

Using the *Japan Development Bank* data tapes, we construct five measures of managerial moral hazard, denoted by *MHI* through *MH5*⁵:

(1) *MHI*: the ratio of cash and marketable securities to sales. Available cash and marketable securities enable managers to pursue their own objectives without close supervision by debt or shareholders [Jensen (1986), Prowse (1990)]. Notice that *MHI* is actually a stock, not an activity.

(2) *MH2*: R&D intensity, the ratio of R&D expenditures to sales. Research and

⁵ These correspond to activity x_i in the stylized model presented above.

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 [Prowse (1990), Flath (1993)].

(3) *MH3*: the ratio of expenditures on advertising and promotions to sales [Flath (1993)]. Like R&D, advertising is likely to involve private benefits to managers, in addition to a direct effect on firm sales and profits.

(4) *MH4*: "entertainment expenses" divided by sales, and:

(5) *MH5*: general sales and administrative expenses, deflated by sales. This measure includes part of the expenses in (2) through (4), plus many other hard to monitor items such as travel expenses, corporate pensions, administrative expenses etc.

We now turn to stake holders' interests. Monitoring by shareholders is likely to increase with ownership concentration [e.g. Shleifer and Vishny (1986)]. For the firms in our sample, we collect data (also from the *Japan Development Bank* tapes) on *TOPTEN*, defined as the cumulative percent of all shares held by the ten largest shareholders.

For a subset of firms, we can obtain additional measures of monitoring from the Dodwell Marketing Consultants' *Industrial Groupings in Japan* reports, which we use in order to identify main bank clients and members in financial corporate groups in our sample. A large volume of literature has argued that main banks closely monitor their clients through stable, long term relationships which involve bank debt and equity as well as bank-appointed personnel [see, for example, Sheard (1989), Aoki, Patrick and Sheard (1994)]. Dowdell classifies a firm as group-affiliated (about half 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 financial corporate group (*keiretsu*).

Dowdell provides also information on the extent of loans and shareholding by the entire corporate group. We use the Dodwell data to construct measures of firm dependence on debt financing from "close" financial institutions which are likely to be monitored by the firm's main bank, and on equity ties with the entire corporate group:

(1) *MB*: a dummy variable based on the Dowdell definition, that equals one if a firm belongs to a financial corporate group centered around one of the major (eight) main banks.

(2) *GBD*: the ratio of borrowing from members of the firm's corporate group to total debt. The fraction of total borrowing which originates in group affiliated financial institutions can be regarded as 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 (1990b)]⁶.

(3) *GSH*: the percent of each main bank client's shares held by group members. We regard *GSH* as a measure of the extent to which shares are held by stable, long term shareholders with the incentive and ability to influence firm behavior. Hoshi, Kashyap and Scharfstein (1993) have argued along similar lines that managers of group-affiliated firms may be more inclined to operate in the interests of shareholders because of substantial, stable equity holdings by other group firms.

(4) *POWER* $\equiv d*GBD+(1-d)*GSH$ where *d* is the ratio of debt to the book value of all liabilities. This is a measure of the group's ability to monitor and influence firm behavior through the supply of both debt and equity capital.

We test the hypothesis that firms with close ties to a bank-centered group,

⁶ Hoshi et. al. use Toyo Keizai's *Keiretsu no Kenkyu* as their source of data on main bank dependence, rather than the Dodwell reports. The differences between these two sources, and in particular, the advantages of the Dodwell definition over that of *Keiretsu no Kenkyu* are discussed in detail in Weinstein and Yafeh (1993).

or with a concentrated ownership structure spend, on average, less than other firms on *MH1* through *MH5* by estimating several specifications of a system of Seemingly Unrelated Regressions (SUR) in which our measures of managerial moral hazard are jointly regressed on various measures of group dependence and ownership structure:

$$MH_{ki} = \alpha_k + \beta_k B_i + \varepsilon_{ki} \quad (k=1, \dots, 5)$$

where B_i is a measure of firm i 's ties to a corporate group or ownership structure (*MB*, *GSD*, etc.) and ε_{ki} are error terms.

For each specification, we conduct a χ^2 (Wald) test on the joint significance of the β coefficients. There are two ways to interpret our statistical analysis. First, spending on activities such as advertising or entertainment can probably be adjusted fairly easily, while the firm's debt and equity structure are fixed in the short run, and, to a large extent, historically determined⁷. If any changes in ties to a bank or a corporate group can only be made in the long run, then the estimated β coefficients will be unbiased estimates of the differences in spending on *MH* activities between firms with different degrees of ownership concentration and group dependence. Alternatively, it is possible to assume that the five measures of moral hazard and our measures of ownership structure are drawn from a joint normal distribution. If this assumption holds in the data, the estimated coefficients will also be unbiased. Notice that this interpretation does not require strict exogeneity of the explanatory variables; it is merely a statistical test of the correlations in the sample without any implied causal relationship. We therefore test whether the probability that any observed correlations between spending on MH_k and ownership

⁷ This assumption is particularly reasonable for the period prior to the deregulation of Japanese financial markets. Hoshi (1993) and Yafeh (1994) have shown that bank firm relations in Japan were fostered largely during and immediately after World War II.

or debt structure are not random, that is, whether the unconditional expectations of MH_t are statistically different from the expectations conditional on bank dependence and ownership structure.

Table I presents statistics for the subsamples of group-affiliated main bank clients and independent firms for 1982⁸. Slightly over half the firms in the sample were classified as belonging to one of the bank-centered corporate groups 1982 and in 1990. As in other studies [Hoshi, Kashyap and Scharfstein (1991), Weinstein and Yafeh (1994)], group-affiliated firms in the sample tend to be bigger and more leveraged than independent firms. Affiliated firms are, on average, less profitable than their independent peers, especially when ordinary income is used as a measure of profitability⁹. Nevertheless, the two subsamples are quite heterogenous, and other than having different banking relations, there is no reason to believe that there are any major underlying differences between the two groups of firms (we examine this point more formally below). On average, firms in the sample reduced their leverage ratios during the 1980s, a trend typical of Japanese firms during the period of financial liberalization, and reduced their dependence on loans from financial institutions within the corporate group as well. The mean value of *GBD* in 1982 for main bank clients was 28.19%, and only 22.74% in 1990. Levels of group shareholding, *GSH*, remained stable at approximately 26% in both 1982 and 1990.

4. Results and Discussion

4.1 Monitoring and Shareholder Concentration

⁸ Sample statistics for 1990 are qualitatively similar.

⁹ Since ordinary income includes interest payments, this observation is consistent with the claim that main bank clients pay higher than average interest on debt [Weinstein and Yafeh (1994)].

We begin by examining the effect of ownership concentration on firm behavior. Table II presents the results of SUR regressions of *MH* activities on cumulative shareholding by the largest ten shareholders (*TOPTEN*). Firms with a concentrated ownership structure tend to spend less on activities with potential scope for managerial moral hazard. The effect is of large magnitude: for example, a 10% increase in shareholding by the top ten shareholders is associated with a reduction of over \$ 50 million in R&D outlays in 1982 (when evaluated at the sample mean). The coefficients are also highly (jointly) significant. The result is consistent with Shleifer and Vishny (1986): large shareholders indeed play a role in disciplining managers. It also sheds 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 the Bank-Centered Corporate Groups

First, we examine the differences in the five measures of managerial moral hazard between firms with close ties to a bank-centered corporate group and "unaffiliated" firms. Table III indicates that in both 1982 and 1990, firms with close ties to a financial corporate group spent less on virtually all activities which are likely to allow managers to act unmonitored¹⁰. The differences are of very substantial magnitude: "independent" firms spent on research and development (*MH2*) 27% more than group-affiliated firms in 1982 and nearly 42% more in 1990. In other words, although firms with ties to one of the bank-centered corporate groups are on average larger than "independent" firms (see Table I), absolute levels of R&D outlays are nearly equal, and expenditures on advertising and

¹⁰ The only exception is the level of cash and deposits held by main bank clients in 1982, which is higher than the level held by independent firms. However, part of this (small) difference is likely to be due to "compensating balances" deposited with the main bank in exchange for loans when interest rates were regulated, and therefore should not be interpreted as an indication of a large degree of managerial discretion.

promotion (*MH3*) by independent firms are nearly three times higher in 1982, and roughly two and half times higher in 1990. The differences in entertainment expenditures and in general sales and administrative expenses are also of large magnitude. Indeed, judging by the χ^2 statistic, we can reject the (joint) hypothesis that there is no (negative) correlation between affiliation with a bank-centered corporate group and expenditures on *MH1* through *MH5* with a confidence level of over 99%.

We proceed by looking at the subsample of group-affiliated firms more closely. While some firms are heavily dependent on finance from their bank-centered financial group, others raise a relatively small proportion of their capital from their main bank and other group-affiliated financial institutions. First, we divide our 1990 sample into firms with below average dependence on group financing (measured by *GBD*) and those with higher than average dependence on debt to their main bank and related financial institutions. Table IV indicates that, indeed, expenditures on activities *MH1* through *MH5* are lower for firms within the bank-centered corporate groups than for independent firms, and even lower for firms that raise large amounts of debt through their main bank and related financial institutions. Table V, presents qualitatively similar results from SUR regressions of *MH* activities on group debt (*GBD*), group shareholding (*GSH*) and our weighted measure of group supplied debt and equity, (*POWER*). No matter what variable is used, higher dependence on a main bank and a financial corporate group is associated with a more limited scope of *MH* activities. The coefficients on all measures of group dependence are also (jointly) statistically significant, as is clear from the χ^2 statistics. In Table VI, the experiments are repeated for 1982. The results are generally similar, although in 1982 firms with high *GBD* do not seem to spend less on their *MH* activities. One possible

explanation may be that the restrictions on commercial debt and equity issues prior to 1983 made firms highly dependent on their main banks even if their actual debt was low [Weinstein and Yafeh (1994)]. It may also be that the incentives of banks to monitor their clients increased following the deregulation of financial markets during the 1980s. Alternatively, monitoring within the corporate groups (and by the main banks) may be driven more by share than by debt holding. According to this interpretation, *GBD* performs statistically less well than, for example, *GSH*, because it is only an imperfect proxy for equity relations. We return to this issue below.

We also make use of the time dimension in our data and examine the correlations between changes in the intensity of *MH* activities and changes in measures of group dependence between 1982 and 1990 (not shown). We find, as expected, that increased dependence on a corporate group, as measured by *GSH* or *POWER* is typically associated with a decline in spending on *MHI* through *MH5*. However, here again, (changes in) *GBD* are not strongly correlated with (changes in) *MH* activities. This result is consistent with the conjecture that it is group shareholding that has the most significant effect on managerial objectives.

The fact that dependence on a financial corporate group reduces spending on activities which may involve moral hazard may be due to monitoring by large debt holders represented by the main bank, or due to the fact that a corporate group represents the interests of a large block of interested shareholders. As pointed ^{out} by Edwards and Fischer (1994), when German (and Japanese) banks simultaneously hold debt and equity, they may act as delegated monitors on behalf of either share or debt holders. Clear empirical identification of the motive for monitoring is therefore difficult to obtain. Although we cannot provide a complete answer to this question, we conduct a few experiments: in Table VII we

re-estimate the system of equations with *TOPTEN* as an additional right-hand-side variable. Keeping monitoring by large shareholders constant, it is still the case that the *MB* dummy and *GBD* (in 1990) are negatively and significantly correlated with spending on *MH* activities. This result may be interpreted as evidence that main banks (and possibly other financial institutions within the corporate groups) discipline managers in their capacity as large debt holders. Nevertheless, since *GBD* and *MB* may be imperfect proxies for shareholding by the main bank and the corporate group, the results in Table VII may be interpreted as evidence of more effective monitoring within the corporate group, motivated merely by equity stake. This analysis, therefore, is not sufficient to reject the hypothesis that monitoring is driven solely by shareholding.

The discussion of the motivation for monitoring by banks is related to the literature on "asset substitution." Main banks (and debt holders in general) have an incentive to actively monitor their clients in order to prevent asset substitution by shareholders into risky assets and projects which favor shareholders at the expense of debt holders [Prowse (1990), Flath (1993), Weinstein and Yafeh (1994)]¹¹. The theory predicts that monitored bank clients would spend less on risky activities such as R&D. Indeed, lower R&D outlays by main bank clients due to the bank's risk aversion may explain why group affiliated firms invest more than their peers in (relatively safe) imported technology [Montalvo and Yafeh (1994)], and also why main bank clients do not grow faster than their peers [Weinstein and Yafeh (1994)]. Our results, however, indicate that monitoring within the corporate groups reduces potentially wasteful

¹¹ Prowse (1990), for example, views asset substitution as inefficient, since, in some cases, shareholders may prefer a risky project over a safe project with higher return, only because the firm is leveraged. Bank monitoring to prevent such forms of asset substitution would be socially efficient. However, under a milder interpretation of asset substitution, shareholders will prefer a risky, high return project over a safe, low return investment; then, bank monitoring which prevents clients from picking the high return project is not necessarily desirable.

activities (such as advertising and entertainment expenses) even if there is no danger of "asset substitution" against the interests of lenders (as R&D projects might entail). Since asset substitution theories cannot explain lower spending on advertising and other non-risky activities, our findings seem consistent with a view of the main bank as a (delegated) monitor on behalf of shareholders (within the corporate group), not only lenders.

Overall, the results reported here suggest that in addition to the well documented (see below) dramatic interventions of share and debt holders in firm management during periods of crisis, there is also a continuous process of managerial monitoring which is manifest in patterns of lower spending on *MH* activities by monitored firms. Large shareholders continuously monitor their firms, even when they do not resort to proxy fights and other drastic measures to discipline management. While main banks may provide bankruptcy insurance and assistance during financial distress [Aoki (1990), Hoshi, Kashyap and Scharfstein (1990a), Sheard (1989)], and intervene when firm performance falls below a certain threshold [Morck and Nakamura (1992), Kaplan and Minton (1994)], they (or their group of clients) also exert influence on client firms in "good times". Banks may be motivated to monitor their clients in order to prevent asset substitution into risky assets against the interest of lenders [Prowse (1990), Flath (1993), Weinstein and Yafeh (1994)], but monitoring within the bank-centered corporate groups is certainly not restricted to risky activities; it involves also restrictions on spending on advertising and entertainment expenses. It is possible to conjecture [along the lines of Berglof and Perotti (1994)] that monitoring to avoid wasteful activities in good times is motivated by equity ties within the bank-centered corporate groups, whereas the drastic actions taken by the main bank when client firms are in distress may be designed to protect the

interests of debt holders, as emphasized by Kaplan and Minton (1994).

While existing theories of main bank relations do not fully explain the empirical regularities in our data, our model too is unable to fully characterize main bank ties. As discussed in Section 2, our model predicts higher profits for firms that spend less on potentially wasteful activities. Yet many studies have shown that, in Japan, group-affiliated bank clients are typically less profitable than their independent peers [Caves and Uekusa (1976), Nakatani (1984), Weinstein and Yafeh (1993, 1994)]. In our sample too, bank clients exhibit, on average, lower profitability (Table I). Bank-firm ties within the corporate groups are probably complex, and are likely to include a combination of bank assistance during financial distress and maybe liquidity services for which banks extract rents, combined with active intervention in firm management in order to reduce both risky activities and other activities which lead to managerial private benefits at the expense of debt and shareholders.

4.3 Relationship to the Analyses of Prowse (1990) and Flath (1993)

Prowse (1990) and Flath (1993) reach conclusions similar to ours based on different statistical procedures and using a different theoretical framework. These studies are the only ones we are aware of where an explicit attempt is made to examine closely the relationship between bank monitoring and firm behavior. Prowse (1990) argues that Japanese banks protect their debt from asset substitution policies of shareholders by owning more shares in firms with high R&D outlays or with large reserves of cash. He shows that the correlation between bank debt and bank shareholding in his sample increases with the risk of asset substitution, as measured by a firm's R&D expenses and liquid assets relative to those of its peers. While Prowse's results are not inconsistent with ours (in fact, similar regularities exist between *GBD* and *GSH* in our sample as well), he

treats R&D outlays and cash reserves as given; our analysis, on the other hand, is based on a model where shareholding is fixed in the short run but expenses on R&D and other activities which may involve moral hazard can be adjusted relatively easily.

Flath (1993) suggests that main banks hold more shares in firms that are harder to monitor, which he defines as fast growing firms with high variance in performance and high R&D and advertising outlays. Flath's analysis resembles ours in his search for correlations between bank (not group) shareholding and R&D and advertising outlays. However, since he views bank shareholding as an easy to adjust parameter while firm spending patterns are considered fixed, Flath predicts main bank shareholding to be higher in firms with high R&D and advertising outlays, a prediction contrary to ours. Flath's empirical analysis is based on a Two Stage Least Squares analysis of a restricted sample of main bank clients that are also members of Presidents' Clubs, which excludes the majority of main bank clients [see Weinstein and Yafeh (1993)]. Since he fails to find a statistically significant positive correlation between R&D or advertising intensity and main bank shareholding in his sample, Flath's empirical results are not inconsistent with ours.

4.4 Other Empirical Issues

It is important to consider the possibility that the correlations in our data between ownership structure or bank ties and spending on *MH* activities are driven by some alternative explanation. One such explanation may be differences in reporting patterns between group-affiliated and other firms. Some expense items (e.g. R&D expenses) are occasionally under-reported by Japanese firms [Griliches and Mairesse (1985), Suzuki (1993)], or included in different categories within the financial statements. However, there are no apparent

differences in reporting patterns between group-affiliated and independent firms in 1982, that is, the percentage of firms with zero spending on certain items is not correlated with dependence on a main bank. In 1990, a larger proportion of firms with high dependence on main bank loans report zero R&D and other *MH* activities. Since main banks are closely involved in the operations of client firms, it is unlikely that firms under-report certain activities in order to hide them from their own banks¹². We therefore believe that lower reported values (and in particular zeros) on *MH* activities reflect the actual influence of large shareholders or the corporate group, rather than some reporting irregularity.

We also examine whether the correlations reported here are sensitive to the exclusion of the *MH5* equation from our SUR regressions because some expenses reported in *MH2*, *MH3* and *MH4* may be double-counted. The results are robust to this change and the differences between group-affiliated and independent firms remain quantitatively and statistically significant. Similarly, the exclusion of *MH1* (the liquidity measure) or *MH4* (entertainment expenses which are often reported as zero in 1990) does not qualitatively change our main conclusions.

More important, perhaps, is the possibility that the correlations we observe in the data are driven by some omitted variable that can explain differences in spending on *MH* activities. We investigate several such variables: firm size, profitability and leverage (the ratio of debt to all liabilities). In addition, intra-industry differences between firms operating in different sub-sectors of the (two digit) chemical industry may be important. We address this issue by excluding firms specializing in pharmaceuticals from the sample. Tables VIIIA and VIIIB present the results of some of these experiments for 1990. It is

¹² According to Suzuki (1993), under-reporting of R&D expenditures is due to the fact that research expenses at the plant level are not always included in the firm's aggregate R&D outlays, but in other parts of the financial statements. There is no reason to believe that these reporting practices are correlated with capital and ownership structure.

interesting to note that firm size is not very closely correlated with the intensity of spending on *MH* activities, while profitability seems to raise expenditures, perhaps because of liquidity constraints¹³. Leverage is strongly and negatively correlated with such expenditure, as implied by the Jensen (1986) view of debt as a mechanism to discipline managers. And yet the negative correlations between monitoring by large shareholders and within the corporate groups persist even when these additional variables are included on the right-hand-side¹⁴.

We also examine if the impact of debt-motivated monitoring, measured by *GBD*, intensifies when firm performance is poor (profits are below average) by interacting *GBD* with a dummy variable for low profits. The results (not shown) indicate that the coefficient on *GBD* is indeed negative and significant only for poorly performing firms. This could be viewed as evidence that debt holders intervene when there is increased risk of default. However, this correlation is not robust, and it disappears when profitability is included on the right-hand-side.

Finally, we observe that pharmaceutical firms in our sample differ from firms in other chemical sectors. For example, R&D expenditures among pharmaceutical firms in 1990 are on average 9% of sales, vs. 2% for other chemical firms. Similarly, advertising expenses among pharmaceutical firms average around 9.5% of sales while non-pharmaceutical firms spend only 1.5%

¹³ In fact, the positive correlation between profitability and expenditures on *MH* activities effect is weaker when the sample is restricted to main bank clients only. This is consistent with the Hoshi-Kashyap-Scharfstein (1991) view of main bank relationships as an institution which alleviates liquidity constraints.

¹⁴ It is also possible to include all these additional measures simultaneously as right-hand-side variables. This does not qualitatively affect the conclusions of this section. In this specification, *GBD* is statistically much less significant than *GSH*, supporting the importance of monitoring by shareholders in good times. Notice that since it is hard to argue that profitability or leverage are exogenous, one needs to make a strong assumption about joint normality of the variables in order to argue that measured coefficients are unbiased.

(although none of these differences is statistically significant). In general, our results are not sensitive to the exclusion of these firms from the sample (Table VIIIb)¹⁵. It is extremely interesting to note that innovative pharmaceutical firms tend to rely much less on main bank and group finance than the average chemical firm (only 36% are affiliated with a bank-centered corporate group vs. 62% of the non-pharmaceutical firms). This is consistent with our view of R&D as a (risky) activity which is reduced by main bank relations. Furthermore, this result could indicate that there is, indeed, some process of self-selection whereby firms in rapidly changing industries tend to opt for arm's length financing while reliance on bank-finance seems more appropriate for firms in sectors with older technology. We suspect that, in addition to inter-firm differences within given industries, there may also exist significant inter-industry differences between sectors using rapidly changing technology and more "traditional" sectors¹⁶.

5. Concluding Remarks

Several conclusions emerge from the analysis. Large share and debt holders play a role in monitoring managers. More interestingly perhaps, managerial monitoring seems to be a continuous process that reduces firm expenditures on activities with scope for managerial moral hazard. This monitoring process takes place even when firm performance is satisfactory.

So far, we have not been able to fully identify the motivation for monitoring by large debt holders that are also shareholders. Nevertheless, the

¹⁵ However, levels of significance fall in our 1982 regressions when pharmaceutical firms are excluded. This may be due to increased incentives for monitoring after the deregulation of the 1980s.

¹⁶ Allen (1993) argues that bank monitoring suits industries with better known technology, whereas arm's length finance is more appropriate for industries where technology is rapidly changing.

evidence presented in this paper, together with the results of other studies such as Kaplan and Minton (1994), is consistent with monitoring motivated by shareholding when firm performance is good, and increased intensity of managerial monitoring by debt holders when performance is poor.

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Table I: Some Sample Statistics (1982)*

	Group-Affiliated Firms		Independent Firms	
	Mean	Std.	Mean	Std.
Sales (billion ¥)	137122	230391	99442	203461
Debt (billion ¥)	103921	171871	68509	159372
Equity (billion ¥)	25116	41578	19277	26449
Operating Income/Sales	0.048	0.044	0.082	0.065
Ordinary Income/Sales	0.028	0.055	0.067	0.069
Group Borrowing/Debt(%)	28.19	15.09	N/A	N/A
Group Shareholding(%)	26.91	16.82	N/A	N/A
Top 10 Shareholders(%)	50.02	13.98	45.55	15.25
N:	89		88	

Notes:

*-In 1990, there are 105 main bank clients and 81 independent firms. Sample statistics for 1990 are qualitatively similar.

Table II: Seemingly Unrelated Regressions:
Measures of Moral Hazard on Ownership Concentration^{*}

	1982	1990
MH1	0.0002 (0.0005)	-0.0008 (0.0007)
MH2	-0.0005 (0.0001)	-0.0007 (0.0002)
MH3	-0.0008 (0.0002)	-0.0012 (0.0003)
MH4	-0.00004 (0.00002)	0.00001 (0.00001)
MH5	-0.0027 (0.0005)	-0.0029 (0.0006)
N:	177	186
χ^2 Statistic:	29.42	33.11
(<i>P</i> Value):	0.00	0.00

Notes:

*-SUR coefficients in regressions of *MH1* through *MH5* on constants and ownership concentration separately; heteroskedastic-consistent standard errors in parentheses; χ^2 Statistic and *P* value test for the joint significance of the coefficients. Ownership concentration is measured by *TOPTEN*, cumulative shareholding of the largest ten shareholders. All 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.

Table III: Measures of Moral Hazard and Group Affiliation: Sample Statistics[†]

	Panel A: 1982		Panel B: 1990	
	Group-Affiliated	Independent	Group-Affiliated	Independent
MH1	0.238 (0.083)	0.223 (0.082)	0.262 (0.144)	0.265 (0.152)
MH2	0.018 (0.024)	0.023 (0.030)	0.031 (0.034)	0.044 (0.049)
MH3	0.016 (0.040)	0.043 (0.072)	0.020 (0.052)	0.047 (0.081)
MH4	0.002 (0.002)	0.004 (0.004)	0.0003 (0.001)	0.0008 (0.002)
MH5	0.172 (0.108)	0.228 (0.155)	0.219 (0.112)	0.277 (0.178)
N:	88	88	105	81
χ^2 Statistic:	15.95		14.31	
(<i>P</i> Value):	0.003		0.006	

Notes:

[†]-All 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. χ^2 Statistic and *P* value test for the joint significance of the differences.

Table IV: Measures of Moral Hazard and Sources of Debt (1990)

	Independent Firms	Low GBD Firms [†]	High GBD Firms [†]
MH1	0.265 (0.152)	0.269 (0.153)	0.253 (0.135)
MH2	0.044 (0.049)	0.033 (0.032)	0.029 (0.036)
MH3	0.047 (0.081)	0.025 (0.063)	0.014 (0.036)
MH4	0.0008 (0.002)	0.0005 (0.001)	0.0002 (0.001)
MH5	0.277 (0.178)	0.230 (0.109)	0.207 (0.116)
N:	81	54	51

Notes:

[†]-High GBD firms are main bank clients with an above average ratio of group borrowing to debt. All 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.

Table V: Seemingly Unrelated Regressions:
Measures of Moral Hazard and Dependence on a Bank-Centered Group, 1990¹

	GBD	GSH	POWER
MH1	-0.00220 (0.00083)	-0.00029 (0.00079)	-0.00145 (0.00105)
MH2	-0.00035 (0.00016)	-0.00060 (0.00014)	-0.00066 (0.00017)
MH3	-0.00053 (0.00038)	-0.00094 (0.00031)	-0.00052 (0.00023)
MH4	-0.000008 (0.000006)	-0.0000004 (0.0000051)	-0.000007 (0.000006)
MH5	-0.00109 (0.00065)	-0.00179 (0.00054)	-0.00209 (0.00065)
N:	105	105	105
χ^2 Statistic:	14.59	27.46	29.52
(P Value):	0.01	0.00	0.00

Notes:

*-SUR coefficients in regressions of *MH1* through *MH5* on constants and each measure of bank dependence separately; heteroskedastic-consistent standard errors in parentheses; χ^2 Statistic and *P* value test for the joint significance of the coefficients. *GBD* is group borrowing over debt; *GSH* is group shareholding and *POWER* is their weighted average. All 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.

Table VI: Seemingly Unrelated Regressions:
 Measures of Moral Hazard and Dependence on a Bank-Centered Group, 1982^f

	GBD	GSH	POWER
MH1	-0.00038 (0.00074)	-0.00055 (0.00047)	-0.00009 (0.00070)
MH2	-0.00006 (0.00015)	-0.00047 (0.00012)	-0.00042 (0.00014)
MH3	0.00046 (0.00057)	-0.00057 (0.00021)	-0.00021 (0.00022)
MH4	0.000006 (0.000015)	0.000014 (0.000010)	0.000010 (0.000014)
MH5	0.000278 (0.001102)	-0.00154 (0.00061)	-0.00124 (0.00081)
N:	89	88	88
χ^2 Statistic:	1.84	25.11	10.05
(<i>P</i> Value):	0.87	0.00	0.07

Notes:

^f-SUR coefficients in regressions of *MH1* through *MH5* on constants and each measure of bank dependence separately; heteroskedastic-consistent standard errors in parenthesis; χ^2 Statistic and *P* value test for the joint significance of the coefficients. *GBD* is group borrowing over debt; *GSH* is group shareholding and *POWER* is their weighted average. All 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.

Table VII: Seemingly Unrelated Regressions:
Measures of Moral Hazard on
Group Affiliation and Ownership Concentration, 1990^t

	MH1	MH2	MH3	MH4	MH5
MB	-0.0005 (0.0217)	-0.0102 (0.0062)	-0.0229 (0.0100)	-0.0005 (0.0003)	-0.0027 (0.0006)
TOPTEN	-0.0008 (0.0007)	-0.0007 (0.0002)	-0.0011 (0.0003)	0.0000 0.0000	-0.0488 (0.0219)

χ^2 Statistic MB Coefficients: 11.96 N: 186
(P Value): 0.03

χ^2 Statistic TOPTEN Coefficients: 28.35 N: 186
(P Value): 0.00

	MH1	MH2	MH3	MH4	MH5
GBD	-0.0022 (0.0008)	-0.0003 (0.0002)	-0.0005 (0.0004)	-0.000008 (0.000006)	-0.0009 (0.0006)
TOPTEN	0.0002 (0.0009)	-0.0006 (0.0002)	-0.0008 (0.0003)	-0.000005 (0.000007)	-0.0022 (0.0007)

χ^2 Statistic GBD Coefficients: 12.52 N: 105
(P Value): 0.03

χ^2 Statistic TOPTEN Coefficients: 15.34 N: 105
(P Value): 0.01

Notes:

*-SUR coefficients in regressions of *MH1* through *MH5* on constants, a measure of bank dependence and TOPTEN separately; heteroskedastic-consistent standard errors in parentheses; χ^2 Statistic and P value test for the joint significance of the coefficients. TOPTEN is the cumulative shareholding of the largest ten shareholders. MB is a dummy variable that equals 1 if a firm has a main bank (belongs to a bank-centered group). GBD is group borrowing over debt. All 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.

Table VIIIa: Robustness Tests
Seemingly Unrelated Regressions: Measures of Moral Hazard on
Group Dependence, Ownership Concentration and Additional Variables, 1990*

	MH1	MH2	MH3	MH4	MH5
Assets	-0.00012 (0.00057)	0.00026 (0.00015)	0.00027 (0.00017)	-0.000008 (0.000003)	-0.00019 (0.00046)
GBD	-0.0022 (0.0008)	-0.00029 (0.00015)	-0.00047 (0.00036)	-0.000009 (0.000006)	-0.00104 (0.00065)

χ^2 Statistic GBD Coefficients: 13.34 N: 105
(P Value): 0.02

	MH1	MH2	MH3	MH4	MH5
Profit	1.41 (0.16)	0.0029 (0.0007)	0.0037 (0.0012)	0.0014 (0.0033)	1.16 (0.20)
TOPTEN	0.00028 (0.00072)	-0.00049 (0.00015)	-0.00095 (0.00028)	-0.000011 (0.000014)	-0.0021 (0.0064)

χ^2 Statistic TOPTEN Coefficients: 18.98 N: 186
(P Value): 0.000

	MH1	MH2	MH3	MH4	MH5
DDE	-0.365 (0.056)	-0.041 (0.017)	-0.059 (0.022)	-0.00030 (0.00047)	-0.185 (0.0583)
GSH	-0.00004 (0.00056)	-0.00058 (0.00013)	-0.00089 (0.00029)	-0.0000004 (0.0000050)	-0.0016 (0.0005)

χ^2 Statistic GSH Coefficients: 28.14 N: 106
(P Value): 0.00

Notes:

*-SUR coefficients in regressions of *MH1* through *MH5* on constants, measures of bank dependence or *TOPTEN* separately; heteroskedastic-consistent standard errors in parentheses; χ^2 Statistic and *P* value test for the joint significance of the coefficients. *GBD* is group borrowing over debt. *GSH* is group shareholding. *TOPTEN* is the cumulative shareholding of the largest ten shareholders. *ASSETS* is the sum of fixed and current assets. *PROFIT* is the ratio of operating profits to sales. *DDE* is the ratio of debt to debt plus equity. All 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.

Table VIIb: Seemingly Unrelated Regressions:
 Measures of Moral Hazard on Measures of Group Shareholding and
 Ownership Concentration 1990 Sample, Pharmaceutical Firms Excluded*

	GSH	TOPTEN
MH1	0.00024 (0.00079)	-0.00065 (0.00078)
MH2	-0.00031 (0.00011)	-0.00035 (0.00010)
MH3	-0.00059 (0.00033)	-0.00058 (0.00026)
MH4	0.000001 (0.000004)	-0.000002 (0.00001)
MH5	-0.000909 (0.000467)	-0.00132 (0.00048)
N:	90	145
χ^2 Statistic:	13.63	18.23
(P Value):	0.02	0.03

Notes:

*-SUR coefficients in regressions of *MH1* through *MH5* on constants and measures of bank dependence and ownership concentration separately; heteroskedastic-consistent standard errors in parentheses; χ^2 Statistic and *P* value test for the joint significance of the coefficients. *GSH* is group shareholding. *TOPTEN* is the cumulative shareholding of the largest ten shareholders. All 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.