



**Discussion Paper Series**

No.203

**Voluntary Information Disclosure and Corporate Governance  
The Empirical Evidence on Earnings Forecasts**

Naohito Abe  
Yessica C.Y. Chung

January 2007

**Hitotsubashi University Research Unit  
for Statistical Analysis in Social Sciences**  
A 21st-Century COE Program

Institute of Economic Research  
Hitotsubashi University  
Kunitachi, Tokyo, 186-8603 Japan  
<http://hi-stat.ier.hit-u.ac.jp/>

## **Voluntary Information Disclosure and Corporate Governance**

### **The Empirical Evidence on Earnings Forecasts<sup>1</sup>**

**Naohito Abe <sup>2</sup>**

Institute of Economic Research, Hitotsubashi University.

Kunitachi, Tokyo

Phone: +81-425-80-8347.

Fax: +81-425-80-8333.

E-mail: [nabe@ier.hit-u.ac.jp](mailto:nabe@ier.hit-u.ac.jp)

**Yessica C.Y. Chung**

Graduate School of Economics, Hitotsubashi University

Kunitachi, Tokyo

Phone: +81-80-6582-2674

E-mail: [ged2107@srv.hit-u.ac.jp](mailto:ged2107@srv.hit-u.ac.jp)

---

<sup>1</sup> We are grateful to Chih-Ying Chen, Joseph Fan, Mineko Furuichi, Hiroyuki Okamuro, and Kazuyuki Suda for their helpful comments. We also wish to thank the Japanese Banking Association, the Japan Society for the Promotion of Science, and COE-Hi-Stat for financial support.

<sup>2</sup> Corresponding author

## **Voluntary Information Disclosure and Corporate Governance The Empirical Evidences on Earnings Forecasts**

### **Abstract**

This study investigates the determinants of companies' voluntary information disclosure. Employing a large and unique dataset on the companies' own earnings forecasts and their frequencies, we conducted an empirical analysis of the effects of a firm's ownership, board, and capital structures on information disclosure. Our finding is consistent with the hypothesis that the custom of cross-holding among companies strengthens entrenchment by managers. We also find that bank directors force managers to disclose information more frequently. In addition, our results show the borrowing ratio is positively associated with information frequency, suggesting that the manager is likely to reveal more when his or her firm borrows money from financial institutions. However, additional borrowings beyond the minimum level of effective borrowings decrease the management's disclosing incentive.

JEL Classification: G10; G14; G18

Key words: Voluntary information Disclosure; Corporate Governance; management earnings forecast;

## 1. Introduction

The corporate governance literature has discussed many mechanisms for resolving the fundamental issue: the agency problem.<sup>3</sup> Perhaps the most pervasive and important factor causing the agency problem between a manager and an investor is the informational asymmetries between them.<sup>4</sup> If managers who are better informed about their future prospects have divergent incentives with their investors, they may expropriate investors' benefits for their private objectives.

One of the principal remedies to agency problems is the law. Regulatory interventions could give outside investors certain powers to protect their investment against expropriation by insiders, and meanwhile, require corporate insiders to enforce investor protections, particularly on conveying inside information.<sup>5</sup> In Japan, companies accessing capital markets are required to follow The Commercial Code and the Securities and Exchange Law. The Commercial Code requires all kinds of companies to prepare individual financial statements, consisting of a balance sheet, an income statement, and a proposal for distribution and appropriation of retained earnings, and to disclose the balance sheet. In addition, the Securities and Exchange Law requires publicly held companies to prepare and disclose both consolidated and individual financial statements. Furthermore, to enhance the transparency of corporate accounting, since 1974, Tokyo Securities Exchange (TSE) has requested the managers of all exchange-listed firms to

---

<sup>3</sup> Berle and Means (1932) and the influential work of Jensen and Meckling (1976) emphasize that the managers of publicly traded firms pursue their own private objectives, which need not coincide with those of outside investors.

<sup>4</sup> Bhattacharya (1979) and Miller and Rock (1985) use information-asymmetry models, arguing that managers know more than investors about the firm's future prospects.

<sup>5</sup> See La Porta et al. (1998) for example, who explore the legal rules covering protection of corporate shareholders and creditors, the origin of these rules, and the quality of their enforcement in 49 countries.

submit a Brief Letter of Financial Results, or “Kessan Tanshin” in Japanese (hereafter Tanshin) within 70 days of the end of the fiscal year.

Tanshin has been watched with keen interest by outside investors because it contains precious information that is not provided by annual reports. First, traditional financial statements do not always provide the forward-looking information that outside investors might find useful. In contrast to annual reports, Tanshin reports forecast values for the coming year’s sales, ordinary income, profits, and dividends, not just the current year’s values. Second, as opposed to earnings-related forecasts delivered by market analysts, Tanshin have been made by managers who have superior information to outside investors on their firms’ expected future performance, which outside financial analysts are not able to know. Moreover, rather than reporting interval estimates or implicit expects, Tanshin reports point earnings forecasts.<sup>6</sup> Finally, all firms are required to disclose the forecasts at least once a year, but are virtually given a free hand in the decision on the timing and frequency of the release.

The Japanese legal system gives managers the discretion to reveal more or withhold corporate information. Some managers reveal information only once to meet the criterion, whereas others reveal information more than nine times in the same year. Figure 1 shows the trends of frequency from 1996 to 2004. We observe that most companies disclosed their earnings forecasts less than twice each year before 2000. In contrast, the number of disclosure began to exhibit heterogeneity in 2001. Although the precise reasons behind the increase are still to be investigated, we can point out several factors that might have contributed to the change. First, all the listed companies will be required to issue financial

---

<sup>6</sup> Skinner (1994) points out that good news disclosures tend to be point or range estimates, whereas bad news disclosures tend to be qualitative statements about the current quarter’s earnings.

statements every quarter from 2008. Although the quarterly issuance of Tanshin is not required, it is possible that some firms began to issue financial statements as well as Tanshin to achieve a smooth transition from an annual system to a quarterly system by adopting the future system in advance. Second, foreign investors have increased their presence in the Japanese stock market. It is possible that company managers felt increasing pressure from foreign investors to disclose information to the entire capital market. Third, more and more listed companies began to rely on direct finance rather than indirect finance for financing their activities. If the role of the main bank system as a substitute for other good corporate governance mechanisms is deteriorating, the importance of information disclosure to the capital market for firms must increase. The latter two aspects motivate this study.<sup>7</sup>

Tanshin data contain several characteristics that provide us with a good opportunity to investigate the relationship between information disclosure and firm characteristics. First, as noted above, all the listed companies have to issue at least one Tanshin report every year that contains forecast of sales, profit, etc., for the coming fiscal year. Therefore, our dataset can cover all the listed companies, which prevents self-selection bias. Second, the number of Tanshin issued by a company each year is not fixed. Some companies submit nine Tanshin a year, whereas some issue just one a year. Therefore, we can utilize this information to identify companies' willingness to disclose their situation to the public. Many previous works use the accuracy of analyst forecasts as a proxy of information

---

<sup>7</sup> The released revised accounting standards for information disclosure are as follows: Amendment for Accounting Standard for Consolidated Financial Statement (1997), Accounting Standard for Consolidated Statement of Cash Flows, etc (1998), Accounting Standard for Interim Consolidated Financial Statements (1998), Accounting Standard for Operating Risk, Performance, and Corporate Governance (2003).

disclosure.<sup>8</sup> One of the potentially serious problems in using the forecast errors is the effect of window dressing.<sup>9</sup> This refers to a company that obtains exactly the same amount of profits as was forecast by analysts, either because the company previously gave the correct information to the public, or because the company manipulated the account information to ensure the reported profit matched the forecast value. Although frequency information is not completely free from window dressing effects, we expect the effects are not serious. To our best knowledge, this is the first study that uses Tanshin data for investigating the relationship among management's earnings forecasts and firm characteristics.<sup>10</sup>

Using Japanese data provides an additional advantage for analyzing information disclosure. Japanese corporate governance has long been known as a system of bank-centered financing. Although the effectiveness of the so-called main bank system is now under serious debate, many listed companies still borrow nonnegligible amounts of money from banks and accept former bankers on their board of directors. By utilizing detailed information on the bank–company relationship in Japan, we can investigate the effects of the main bank system on information disclosure.<sup>11</sup>

Accordingly, this study examines how a firm's ownership structure, borrowing from financial institutions, relationship with banks, and scale influence the manager's decision

---

<sup>8</sup> See Koga and Uchino (2006), for example.

<sup>9</sup> Evidence indicates that analysts' earnings forecasts play a valuable role in improving market efficiency (Barth and Hutton 2000). However, Lang and Lundholm's (1993) study shows that management's disclosure decision has effects on analysts' decisions. The results of Abarbanell and Bushee (1997) suggest that analysts' forecast revisions fail to include all the information about future earnings and, on average, investors appear to recognize this fact.

<sup>10</sup> Kato, Skinner and Kunimura (2006) use Tanshin data to provide evidence on the properties of management forecasts in Japan, but do not further investigate the governance mechanism of management disclosure.

<sup>11</sup> For example, Hoshi, Kashyap, and Scharfstein (1990a, 1990b, 1991) have explored the cross-sectional differences in corporate governance structures among Japanese Keiretsu and independent firms to examine corporate finance theories based on information asymmetry and agency.

on information release. With the comprehensive data on Tanshin, this research contributes to corporate governance literature in three ways. First, this research makes a crucial contribution to the field of corporate disclosure by suggesting that managers' earnings forecasts are overwhelmingly influenced by large shareholders. Furthermore, cross-holding enhances the entrenchment concern resulting from opaque corporate information. Second, a manager whose company performed badly is inclined to release information more frequently, possibly in order to establish a reputation for transparent accounting reports. Third, financial institutions-oriented financing encourages managers to issue frequently.

The remainder of this research is organized as follows. Section 2 provides our research hypotheses and methodology. Section 3 describes the data and descriptive statistics for all variables adopted in this research. Section 4 presents the empirical results of the determinants of the manager's disclosure decision, and conducts several robustness tests. Section 5 concludes this research.

## **2. A Simple Model and Empirical Methodology**

### **2.1 Model**

This section develops a simple empirical model of information disclosure. As discussed in the previous section, Japanese listed firms are required to disclose future sales and profit forecasts at least once a year. Suppose at time  $t$ , that a company  $i$  announces to the public through Tanshin that its expected logged sales in 12 months are  $E_t[\ln Sales_{t+12,i}]$ .

As time passes, the company obtains more information on its business, which implies



that the expected value of future sales will change and become more accurate. Suppose the company does not issue Tanshin between time  $t$  and  $t + \Delta t$ . At time  $t + \Delta t$ , the expected (logged) sales at  $t+12$  become  $E_{t+\Delta t}[\ln Sales_{t+12,i}]$ .

We define the absolute value of the departure of the expected sales from the previous estimate as:

$$\delta_{t+\Delta t,i} = |E_{t+\Delta t}[\ln Sales_{t+12,i}] - E_t[\ln Sales_{t+12,i}]|. \quad (2.1)$$

Assume that there is a cost for a firm to issue Tanshin and make its forecast sales value public. In such a case, similar to the (s, S) model for inventories or the menu costs model for price change, it is natural to regard the issuance of Tanshin as an optimal stopping time problem.

Suppose that following its initial Tanshin announcement, company  $i$  issues new Tanshin in every fiscal year when and only when:

$$\delta_{t+\Delta t,i} > z_i, \quad (2.2)$$

where  $z_i$  is the threshold value of the new information disclosure. Assume the threshold value is different among companies and can be written as a function of the benefit and cost of issuing new Tanshin, such as:

$$z_i = f(B_{it} - C_{it}), f' > 0, f'' < 0. \quad (2.3)$$

$B_{it}$  denotes the benefit from issuing new Tanshin. Previous theoretical research<sup>12</sup> points out that the most important benefit from greater disclosure is a reduction in the cost of equity capital. That occurs because greater disclosure can address the adverse selection problem resulting from asymmetric information, thereby mitigating the investor's demand for additional compensation for risky uncertainty. Therefore,  $B_{it}$  can

---

<sup>12</sup> Verrecchia (1982), Diamond and Verrecchia (1991).

be regarded as a function of variables that affects the agency problems between outside investors and the company manager.

Among many possible determinants of  $B_{it}$ , we focus on (1) the company's reliance on indirect finance, (2) board composition, (3) ownership concentration, (4) cross-holding, and (5) relationship with the bank.

First, if company  $i$  heavily relies on banks or other financial institutions for its financial activity, there is not so much gain for the company from information disclosure to outside investors. Therefore,  $B_{it}$  is expected to be small for such a company. Second, if outside board members are playing disciplinary roles for the sake of outside investors, as found by Weisbach (1988), a company with more outside board members tends to have greater benefits from information disclosure.

The effects of ownership structure and bank relations are somewhat more complicated. Among all the corporate investors, large shareholders are in principle able to appoint board members representing their interests, and meanwhile they can hire or fire incumbent managers. In addition, large shareholders can also exercise their power by blocking ratification of unfavorable decisions, which results in a greater value for  $B_{it}$  with large shareholders.

However, large shareholders may also cause adverse effects on  $B_{it}$ . When large shareholders effectively control corporations, their policies may result in the expropriation of minority shareholders. For example, Morck et al. (1988) report a large and significant value discount for US firms with large shareholders. They interpret this finding as evidence of managerial entrenchment.<sup>13</sup> Along a similar vein, large

---

<sup>13</sup> The first empirical evidence now recognized as indicative of managerial entrenchment is Johnson et

shareholders may harm outside investors' interests in term of corporate financial disclosure. Especially in Japan, many firms mutually hold other companies' shares and cement their relationship through these holdings. This cross-holding reduces the threats of hostile takeovers for incumbent managers and strengthens the managers' benefits at the expense of outside investors. In other words, cross-holding among firms weakens managers' incentives to reveal information to the public. In sum,  $B_{it}$  can be increasing with the existence of large shareholders, while it is also likely that cross-holding among firms trade off those benefits.

As the main source of external funding, it has been argued that banks play important roles in corporate financing and governance. In Japan, banks not only provide firms with loans but also hold firms' equity. Furthermore, banks send top managers to the board of directors of a firm. Acting merely as a lender, a bank will get at most a fixed payment (interest and principle) and will care more about a firm's downside. However, as a shareholder, a bank cares much more about the value of the stock that is associated with a firm's performance. The dual roles enhance banks' incentives to monitor the firms they lend to and in which they hold shares.<sup>14</sup> Therefore, there is a view that taking advantage of the ability of banks to collect information about their borrowers, bank monitoring might be the optimal governance mechanism, when monitoring costs are low and takeovers rarely happen.<sup>15</sup> In such a case,  $B_{it}$  is a decreasing function of the degree of the

---

al. (1985).

<sup>14</sup> Deposit insurance eliminates the incentive of a bank to monitor a firm for its depositors. However, equity is more risky than debt. On the other hand, the bank-borrower relationship may give banks informational rents. Relationship banks will have some idea of the firm's credit quality and will take this information advantage in the equity market.

<sup>15</sup> John and Kedia's (2000) work suggests that different economies would design different optimal corporate governance systems. One implication of their analysis is that the optimal governance system in Japan may continue to rely on bank monitoring if banks are able to maintain a comparative advantage in monitoring.

relationship between the company and bank.

In sum,  $B_{it}$  is a decreasing function of (1) the degree of indirect finance, and (2) the degree of cross-holding.

$c_{it}$  in equation (2.3) is the cost for issuing a new Tanshin. One obvious factor from the costs is the scale of the company. The bigger the company is, the more costly it is to gather correct information on all the company activities. Therefore, we assume  $c_{it}$  is an increasing function of the company scale.

As an empirical model, we use the following linearized model:

$$Frequency_{it} = X_{it} \alpha + \hat{\delta}_{it} \beta + (X_{it} * \hat{\delta}_{it}) \gamma + \varepsilon_{it}, \quad (2.4)$$

where  $Frequency_{it}$  is the number of Tanshin issued by company  $i$  in fiscal year  $t$ ,  $X_{it}$  is a vector that represents company characteristics such as ownership concentration and board composition,  $\hat{\delta}_{it}$  is the absolute value of the departure of the realized sales from its forecasted value, and  $\varepsilon_{it}$  is the iid error term. The third term on the right-hand side of (2.4), the interaction term of  $X_{it}$  and  $\hat{\delta}_{it}$ , is expected to capture the effects of corporate governance on information disclosure.

Based on the arguments in this section, we set the following hypotheses in relation to the sensitivity of information disclosure to the absolute value of the difference between the forecast and realized values of company performance.

*H1: Need for external funds increases the sensitivity.*

*H2: Large shareholders increase the sensitivity, whereas cross-holding shares among*

*firms has an adverse effect on information disclosure.*

*H3: The existence of a bank director increases the sensitivity.*

Although  $\gamma$  in (2.4) is the main parameter when we test the above hypotheses, we also pay attention to  $\beta$  because the data we use in the empirical analysis may not correspond exactly with  $\hat{\delta}_{it}$ . If there are unobservable variables that contain similar information to  $\hat{\delta}_{it}$ , the interaction effects will appear as a part of  $\beta$ . In such a case,  $\beta$  includes the corporate governance effects on information disclosure.

## 2.1 Methodology

We employ an ordered probit model to analyze the effects of the determinants of frequency of information disclosure.<sup>16</sup> Let  $y$  be the observed frequency of issuance of Tanshin, which is determined by the following model with a latent  $y^*$ :

$$y^* = X\beta + e \quad e|X \sim Normal(0,1), \quad (3.1)$$

where  $X$  does not contain a constant. Let  $\alpha_1 < \alpha_2 < \dots < \alpha_j$  be unknown cutoff points (for threshold parameters), and define:

$$\begin{aligned} y=0 & \quad \text{if } y^* \leq \alpha_1 \\ y=1 & \quad \text{if } \alpha_1 < y^* \leq \alpha_2 \\ & \quad \vdots \end{aligned} \quad (3.2)$$

---

<sup>16</sup> To control unobservable firm characteristics, it is more appropriate to adopt a “fixed effects” model. We do not take this approach because 1) with such short time horizons, four years, biases due to incidental parameter problems are serious, and 2) fixed effects models significantly weaken the power of statistics.

$$y = J \quad \text{if } y^* > \alpha_J.$$

For example, if  $y$  takes values 0, 1, and 2, then there are two cutoff points:  $\alpha_1$  and  $\alpha_2$ .

The parameters  $\alpha$  and  $\beta$  can be estimated by maximum likelihood. For each  $i$ , the log-likelihood function is:

$$\begin{aligned} \ell_i(\alpha, \beta) = & 1[y_i = 0] \log[\Phi(\alpha_1 - x_i \beta)] + 1[y_i = 1] \log[1 - \Phi(\alpha_2 - x_i \beta) - \Phi(\alpha_1 - x_i \beta)] \\ & + \dots + 1[y_i = J] \log[1 - \Phi(\alpha_J - x_i \beta)] \end{aligned} \quad (3.3)$$

### 3. Description of the Sample and Data

#### 3.1 Sample

The data used in this study consists of all the listed firms in Japan except foreign companies, banks, insurance firms, and securities companies. The sample period covers 2001–2004. Our datasets are constructed from two main sources. The NEEDS database contains data on Tanshin, borrowings, ownership structure, and company financial statements, while Toyo Keizai provides us with detailed information on board composition, including age, academic background, previous career, director hierarchy, and so forth. Therefore, we are able to identify the banking connection from the career background of the individual director.<sup>17</sup> From information on the ownership structure and shares held by each company, we construct a dataset on cross-holding.<sup>18</sup>

Firms that became bankrupt, merged, or were acquired are omitted from our sample. Matching the two main datasets by Nikkei Code<sup>19</sup> and fiscal year, we obtain 2270, 2376,

---

<sup>17</sup> Taking advantage of detailed information on individual directors, we define firms as banking-connected if they have directors coming from banks on their boards, and non banking-connected firms otherwise. In addition, it should be noted that we include neither executive directors, who do not have obligations or responsibilities for managing and monitoring, nor statutory auditors, for they are barred from performing management function in the sample.

<sup>18</sup> We used annual reports to check the contents of the Nikkei and Toyo Keizai datasets.

<sup>19</sup> The Nikkei code is compiled by *Nikkei Economics Inc.* for exchange-listed and OTC firms. Unlike the

2389, and 2414 observations for 2001–2004, respectively.

### 3.2 Descriptive Statistics

Table 2 reports the frequency of Tanshin disclosure. Frequency is calculated from the total number of forecasts within one year. The sample shows disclosure frequency increased from 2001 to 2004. The mean frequency of 3.8 in 2004 is significantly higher when compared to a value of 2.06 in 2001.

Table 4 reports the descriptive statistics on the explanatory variables used in this study. For 2001–2004, the Top 10 shareholders and “the special few” shareholders together hold about 50% of all the shares, whereas foreign shareholders hold only 5.8% of shares.<sup>20</sup> That is to say, overall, the listed firms in Japan have been dominated by large shareholders.<sup>21</sup> In addition, the ratio of borrowing to assets averaged 21% during this period. This implies that firms still relied heavily on indirect financing when they raised corporate funds; at the same time, 34% of listed firms further cement the relationship with banks by accepting the banker directors on their director of boards. That also shows that listed firms still kept tight relationships with their main banks in the early 2000s.<sup>22</sup>

We employ return on equity (ROE), and return to assets (ROA) to measure firm

---

Tosho code (where company IDs are created by the Tokyo Stock Exchange), the Nikkei code for firms, which is repealed from stock exchange trading, is retained.

<sup>20</sup> It should be noted that we take lagged values of all variables except ROE, ROA, and the forecast deviation. However, owing to a lack of data on the composition of majority shareholders for 2000, we do not have the special shareholders' ratio, the bank shareholder's ratio, the foreign shareholder's ratio, the cross-holding ratio, and the bank cross-holding ratio in Table 5.

<sup>21</sup> Prowse (1992) shows that the top five shareholders of all listed Japanese corporations hold 33.1% of the firms' shares on average, and households and foreign shareholders hold only 31.7%.

<sup>22</sup> We have also regressed the frequency of reporting on the ratio of outside directors to board size (outsider's ratio), but the result is not significant. The outsider's ratio has decreased slightly from 40.4% in 2001 to 35.5% in 2004. Most outside directors are from the banking industry. This implies that firms still regarded the connection with banks as a helpful means to raise capital in the early 2000s, despite the fact that the effectiveness of the main bank system had been seriously criticized.

performance. Japanese firms had ROE of  $-0.67$  in 2001, and better performance lifted this to  $3.4$  in 2004. As well, a number of variables are controlled to capture the fundamental determinants of the frequency of managements' earnings forecasts. First, for firms with the highest forecast frequency that tend to also show the highest contemporaneous forecast, potential endogeneity can be mitigated by controlling the forecast deviation, which is calculated as the absolute value of the difference between the realized value and the initial forecast value. The forecast deviation provides an estimate of the unexpected portion of the management forecast. Second, firm size is measured as the logarithmic value of total assets deflated by the CPI. During the four years from 2001 to 2004, the scale of firms did not show any expansion. Moreover, it is known that disclosure policies have been changing over time. Therefore, a year dummy controls for time trends in frequency of disclosure. Finally, firms played various strategies across different industries. The primary industries of sample firms are divided into 33 different three-digit industry codes, defined by Nikkei Economics Inc. We also have dropped the extreme 1% of all variables except the indicator of the bank-relation variable.

In addition, the third term on the right-hand side of equation (2.4), the interaction term of  $X_{it}$ , and the interaction term of  $\hat{\delta}_{it}$  are measured by multiplying forecast deviation with ownership structure, board structure, the borrowing ratio, and the firm's scale, respectively. Those interaction terms pick up the pure effects of corporate governance on the information disclosure.

#### **4. Empirical Results**

The main empirical results of estimations of (3.3) are reported in Table 5. Model 1 of



Table 5 reports that the variable ‘Top 10 shareholder’ is significantly and negatively related to the frequency. The borrowing ratio and banker directors contribute to the frequency. However, firm size and performance are negatively associated with the managers’ incentives to release information. This indicates concentrated ownership firms and big firms are likely to less reveal financial information to the public. However, managers are pushed into revealing information to suggest financial transparency under the following situations: 1) firm performance goes down; 2) the firm raises funds through financial institutions; 3) there is a banker director on the board; and 4) the foreign shareholders’ ratio is high, which is consistent with the common perception that foreign shareholders expect more financial transparency than domestic investors and therefore contribute to a higher frequency of disclosure.

In model 2 of Table 5, we observe a negative and significant coefficient for the cross-holding ratio, indicating that cross-holding is the most important factor in weakening managements disclosing incentives. The focus of model 3 of Table 5 is the effect of corporate governance on the disclosing strategy. We recast model 2 by adding interaction terms between the forecast deviation and the firms’ fundamental characteristics. The results show explicitly that the borrowing ratio is positively associated with management announcement, and there is a statistically significant interaction between the forecast error and the amount of a company’s borrowings from financial institutions. This implies that an additional company’s borrowing from financial institutions yields a stronger decrease in the frequency of earnings forecasts for a lower forecast error. In Table 5’s model 4, we replace the ‘Top 10’ ratio with the special few shareholders’ ratio, and in model 5, we use ROA as a proxy instead of ROE. We obtain similar results.

In sum, the results in Table 5 support our hypotheses 1 and 3, suggesting that raising funds through financial institutions and attracting foreign investors push managers into consciously revealing earnings forecasts. Bank directors play a positive role in addressing the asymmetric information problem. On the other hand, our results do not support hypothesis 2, suggesting that stable large shareholders have an overwhelming power to negatively influence management forecasts. Meanwhile, among the large shareholders, cross-holding worsens the effects on management announcements. Ironically, the higher disclosure frequency does not necessarily indicate that firms have better performance. Instead, it might indicate that managers increase disclosure frequency for the purpose of yielding a positive reputation effect.

Table 6 and Table 7 test the robustness of the finding that controlling shareholder, crossholding ratio, firm size and firm performance have significantly negative effect on information disclosure, whereas borrowing ratio and banking directors bring significantly positive effect on information disclosure. The results in Table 6 and Table 7 are consistent with the previous results, although crossholding ratio does not have a statistically significant coefficient when interaction terms are included in Table 7.

In sum, empirical evidence leads us to the conclusion that firms with concentrated ownership are relatively reluctant to disclose corporate information. More specifically, cross-holding heightens the asymmetric information problem. Interaction terms Firms with a small scale or with decreasing performance tend to reveal information more frequently. We conjecture that that is because when firms are at the limit of their advantage scale, or performing poorly, they compete with their industrial peers by revealing corporate information frequently in order to attract public attention. In addition,

we confirm the implication of previous studies, which is that information disclosure has a positive effect on reducing capital costs, and thereby firms tend to consciously reveal financial information to the public owing to their need for external finance. Further, our results are consistent with Diamond's (1984) work, which shows that delegated monitoring by a banker may be efficient as a means of avoiding duplication of monitoring by small investors, but contrast with former literature employing analyst's forecast accuracy by Koga and Uchino (2006).

## **5. Conclusions**

This study has investigated the determinants of managers' information disclosure decisions in Japanese listed firms. More specifically, we explore the effects of ownership structure, borrowings from financial institutions, bank relationship, and firm size on a manager's disclosure frequency. Our main findings are as follows. 1) large shareholders have negative effects on a manager's forecast frequency, and furthermore, large cross-holding shareholders increase the concern of entrenchment resulting from opaque corporate information; 2) a high borrowing ratio is favorable to information disclosure; 3) larger firms are reluctant to convey information to the public; and finally, 4) poorly performing firms are likely to advertise themselves via earnings forecasts.

Our results are statistically robust and imply that companies whose shares are concentrated among a few groups do not regard their information disclosure to the public as seriously as do other firms. Nevertheless, we recognize that a large residual effect remains and that this effect might be correlated with measures of the concentration of firms. The effects of the Top 10 shareholder's rate and of the majority shareholder's rate

should be further clarified. Meanwhile, we would like to consider the effect of fluctuations in stock prices on managers' disclosure decisions for our next project.

Ultimately, we recognize that frequency of information disclosure does not completely address concerns about firm manipulation. Although we are certain that this proxy is the best choice when alternatives are not known, we should continue our quest for better proxies.

## References

- Masahiko, A.; H. Patrick, and P. Sheard, 1994, The Japanese main bank system: An introduction overview, in Masahiko Aoki and Hugh Patrick, eds.: The Japanese Main Bank System (Oxford University Press, oxford, U.K.).
- Abarbanell, J., and B. Bushee, 1997, "Fundamental Analysis, Future Earnings, and Stock Prices" *Journal of Accounting Research* 1, 1-24
- Barth, M., and A. Hutton, 2000, "Information Intermediaries and the Pricing of Accruals" working paper. Harvard University and Stanford University.
- Bhattacharya, S., 1979, "Imperfect Information, Dividend Policy, and the "Bird-in-Hand" fallacy Bell" *Journal of Economics* 10, 259-270.
- Berle, A., and G. Means, 1932, *The Modern Corporation and Private Property*. (Macmillan, New York)
- Bushee, B., D. Matsumoto, and G. Miller, 2003, "Open versus closed conference calls: The determinants and effects of broadening access to disclosure" *Journal of Accounting and Economics* 34,149-180.
- Diamond, D., 1984, "Financial intermediation and delegated monitoring", *Review of Economic Studies* 51:393-414
- Diamond, D., and R.Verrecchia, 1994, "Disclosure, Liquidity, and the Cost of Capital" *Journal of Finance* 4, 1325-1359.
- Hoshi, T., A. Kashyap, and D. Scharfstein, 1990a, "The role of banks in reducing the costs of financial distress in Japan", *Journal of Financial Economics* 27, 67-88.
- Hutton, A., G. Miller; and D. Skinner, 2000 July, "Effective voluntary disclosure." working paper. Harvard Business School.
- , 1990b, "The Role of banks in reducing the costs of financial distress in Japan", *Journal of Financial Economics* 27(1): 67-88.
- , 1991, "Corporation structure, liquidity, and investment: evidence from Japanese Industrial Group." *Quarterly Journal of Economics* 106:33-60.
- Jensen, M.; and W. Meckling, 1976, "Theory of the firm: managerial behavior, agency costs and ownership structure", *Journal of Financial Economics* 3:305-360.
- John, K., and S. Kedia, 2000, "Design of corporate governance: role of ownership structure, takeovers, and bank debt", working Paper FIN-00-048(Stern School of business, New York university)
- Koga, K., "The Effect of Bank-based and Market-based financing on corporate disclosure: Evidence from Japan", mimeo.
- Koga, K., and Satomi Uchino 2006, "Bank relations and security analyst forecasts among Japanese firms", mimeo.
- Kato K, Skinner D, and Kunimura M, 2006, "When voluntary disclosure isn't voluntary: management forecasts in Japan" working paper. Osaka university of economics.
- Lev, B., and S. Penman, 1990, "Voluntary forecast disclosure, nondisclosure and stock prices." *Journal of Accounting Research* 28(1) (Spring): 49-76
- Lang, M., and R. Lundholm, 1993, "Cross-sectional determinants of analyst ratings of corporate disclosures", *Journal of Accounting Research*, Vol. 31:375-400
- Lang, M., and R. Lundholm, 1993, "Voluntary disclosure and equity offerings: reducing information asymmetry or hyping the stock", *Contemporary Accounting Research*, Vol. 17 No.4 (Winter 2000) pp.623-62
- La Porta, R.; F. Lopez-de-Silanes; A. Shleifer; and R.Vishny, 1998, "Law and Finance",

- Journal of Political Economy 106, no.6:1113-55.
- Miller, M., and K. Rock, 1985, "Dividend policy under asymmetric information" Journal of Finance 40, 1031-51.
- Morck, R.; A. Shleifer, and R. Vishny, 1988, "Management ownership and market valuation: an empirical analysis", Journal of Financial Economics, 20:1/2, 293-315.
- Penman, S., 1980, "An Empirical Investigation of the Voluntary Disclosure of Corporation Earnings Forecasts" Journal of Accounting Research 18, no.1: 132-60.
- Prowse, S., 1992, "The Structure of Corporate Ownership in Japan." Journal of Finance 47, 1121-40.
- Shleifer, A., and R. Vishny, 1997, "A survey of corporate governance" Journal of Finance 52,737-83.
- Skinner, D., 1994, "Why Firms Voluntarily Disclose Bad News", Journal of Accounting Research 32, no.1:38-60.
- Verrecchia, R., 1982, "Information Acquisition in a Noisy Rational Expectations Economy" Econometrica 6, 1415-30.
- Weisbach, M., 1988, "Outside Directors and CEO Turnover", Journal of Financial Economics 20, 431-60.
- David, W., and Y. Yafeh, 1998, "On the costs of a bank-Centered Financial system: evidence from the changing main bank relations in Japan" The Journal of Finance LIII, no.2:635-72

Table 1. Variable Definition

Variables	Definition	Time
Frequency	Frequency of forecasting announcements.	
Ownership Proxies		
Top 10 ratio	Ratio of shares held by top 10 shareholders.	Lagged value
Special ratio	Percentage of shares held by the “special few”, which consists of the top ten shareholders, directors and their relatives. Only stable holdings are included.	Lagged value
Foreigner ratio	Ratio of shares held by foreigner investors.	Lagged value
Board Proxies		
Bk director	Binary variable taking the value 1 if the firms have banker directors on their boards and zero otherwise.	Lagged value
Outside board ratio	The ratio of outside directors to total directors.	Lagged value
External fund		
Borrowing ratio	The ratio of borrowing to total assets.	Lagged value
Entrenchment Proxies		
Crossholding ratio	The ratio of shares held by majority shareholders whose shares are also held by the firm itself.	Lagged value
Performance Proxies		
ROE	The ratio of operating income to equity.	Current value
ROA	The ratio of operating income to assets deflated by the CPI.	Current value
Control Proxies		
Firm size	Natural Logarithms of (total assets deflated by the CPI).	Lagged value
Forecast deviation	The absolute value of the relative difference between achieved sales and forecasted sales	Current value

Figure 1. The trend in announcement frequency from 1996 to 2004

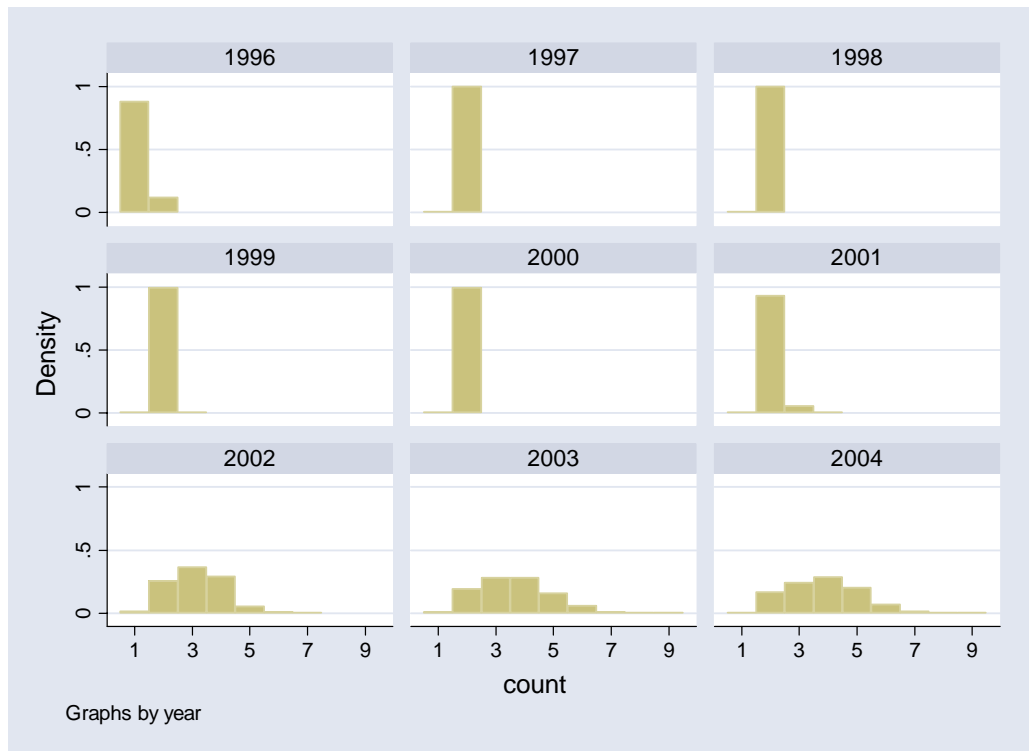




Table 2. Descriptive statistics of frequency from 1996 to 2004

Year	N	Mean	Median	Min	SD	Max
1996	1984	1.12	1	1	0.325	2
1997	2040	2	2	1	0.0495	2
1998	2104	2	2	1	0.0436	2
1999	2137	2	2	1	0.0716	3
2000	2168	1.99	2	1	0.0856	2
2001	2270	2.06	2	1	0.299	4
2002	2376	3.16	3	1	0.973	7
2003	2389	3.63	4	1	1.24	9
2004	2414	3.8	4	1	1.28	9

Note: The sample consists of nonfinancial and nonforeign companies

Table 3. The pairwise correlation coefficients among the variables used in this study

	Count	Top 10	Special	Foreign	Borrow	Cross	Banker	Outside	ROE	ROA	Asset	Deviation
Count	1											
Top 10	0.0102	1										
Special	0.0113	0.9290*	1									
Foreign	-0.0178	-0.0560*	-0.1221*	1								
Borrow	-0.0639*	-0.1704*	-0.1706*	-0.0955*	1							
Cross	-0.0164	-0.0087	-0.011	-0.2402*	0.0472*	1						
Banker	-0.0226*	-0.1380*	-0.1449*	-0.0499*	0.0368*	0.1657*	1					
Outside	0.0622*	0.3461*	0.3470*	-0.1134*	-0.0912*	0.0912*	0.1625*	1				
ROE	0.0015	0.0132	0.0155	0.0073	0.0058	-0.0250*	-0.0135	-0.0171	1			
ROA	-0.0313*	0.1354*	0.0906*	0.1696*	-0.0755*	-0.2974*	-0.0159	-0.018	0.0743*	1		
Asset	-0.1146*	-0.2790*	-0.3731*	0.4078*	-0.0014	-0.0443*	0.0079	-0.2325*	-0.0034	0.0903*	1	
Deviation	0.0445*	0.0245*	0.0582*	0.0453*	-0.0256*	0.0223*	-0.0165	0.0813*	-0.1776*	-0.1690*	-0.1247*	1
Top 10*D	0.0169	0.1307*	0.1339*	0.0387*	-0.0269*	0.0289*	-0.0289*	0.0770*	-0.0243*	-0.0504*	-0.0938*	0.9407*
Special*D	0.0747*	0.1237*	0.1478*	-0.0019	-0.0357*	0.0065	-0.0428*	0.1103*	-0.1783*	-0.1208*	-0.1442*	0.9457*
Foreign*D	-0.015	-0.0024	-0.0103	0.4126*	-0.0438*	-0.0503*	-0.0302*	0.0078	0.0001	0.0156	0.0366*	0.5821*
Borrow*D	0.0064	-0.0831*	-0.0753*	-0.0705*	0.5479*	0.0490*	0.0418*	-0.0142	-0.0082	-0.0870*	-0.0426*	0.1230*
Cross*D	0.0257*	0.0111	0.0264	-0.0389*	-0.0067	0.2619*	0.0167	0.0569*	-0.0259*	-0.1572*	-0.0704*	0.6412*
Banker*D	-0.0053	-0.0623*	-0.0682*	-0.0145	0.0335*	0.0654*	0.3755*	0.0938*	-0.0194*	-0.1379*	-0.0405*	0.4327*
Outside*D	0.0770*	0.0900*	0.0910*	0.0087	-0.0349*	0.0337*	0.0007	0.2812*	-0.3411*	-0.1318*	-0.1255*	0.8338*
Asset*D	0.015	0.0115	0.0444*	0.0776*	-0.0231	0.0351*	-0.0161	0.0721*	-0.1453*	-0.1031*	-0.0673*	0.9869*

Table 3 (continued)

	Top 10*D	Special* D	Foreign* D	Borrow* D	Cross*D	Banker* D	Outside* D	Asset*D
Top 10*D	1							
Special* D	0.9987*	1						
Foreign* D	0.5619*	0.4863*	1					
Borrow* D	0.0790*	0.0797*	0.0054	1				
Cross*D	0.6699*	0.3939*	0.2458*	0.0770*	1			
Banker* D	0.1956*	0.1166*	0.1569*	0.3031*	0.1483*	1		
Outside* D	0.8229*	0.7803*	0.3699*	0.0503*	0.6280*	0.2371*	1	
Asset*D	0.9297*	0.9266*	0.5680*	0.1295*	0.7324*	0.3015*	0.8409*	1

Table 4.

Descriptive statistics on independent variables used in the empirical regression for 2001–2004

Variable		Overall	2001	2002	2003	2004
Top 10 shareholders' ratio	Mean	0.49	0.49	0.49	0.5	0.5
	Median	0.47	0.47	0.47	0.48	0.48
Special shareholders' ratio	Mean	0.49		0.47	0.49	0.5
	Median	0.48		0.46	0.47	0.49
Foreign shareholders' ratio	Mean	0.058		0.059	0.056	0.056
	Median	0.019		0.02	0.017	0.018
Crossholding ratio	Mean	0.027		0.041	0.024	0.018
	Median	0		0	0	0
Borrowing ratio	Mean	0.2	0.21	0.19	0.19	0.19
	Median	0.15	0.16	0.15	0.15	0.15
ROE	Mean	0.35	-0.67	-1.7	0.27	3.4
	Median	2.8	2.6	1.8	2.6	4.1
ROA	Mean	3.5	3.7	2.9	3.4	4
	Median	2.8	3	2.3	2.8	3.2
Banker director	Mean	0.34	0.37	0.35	0.34	0.32
	Median	0	0	0	0	0
Outside director ratio	Mean	0.26	0.24	0.26	0.27	0.27
	Median	0.2	0.19	0.2	0.21	0.2
Firm size	Mean	11	11	11	11	11
	Median	11	11	11	11	11
Forecast deviation	Mean	0.08	0.11	0.079	0.073	0.071
	Median	0.045	0.062	0.044	0.039	0.042
Top 10*Deviation	Mean	0.039	0.051	0.035	0.037	0.032
	Median	0.021	0.029	0.019	0.018	0.019
Special*Deviation	Mean	0.035		0.036	0.036	0.034
	Median	0.019		0.019	0.018	0.019
Foreign*Deviation	Mean	0.0049		0.043	0.035	0.035
	Median	0.0074		0.00079	0.00058	0.00061
Cross*Deviation	Mean	0.0017		0.027	0.0013	0.0011
	Median	0		0	0	0
Borrow*Deviation	Mean	0.017	0.021	0.015	0.016	0.013
	Median	0.0045	0.0073	0.0042	0.0036	0.0037
Banker*Deviation	Mean	0.027	0.042	0.028	0.02	0.021
	Median	0	0	0	0	0
Outside*Deviation	Mean	0.026	0.027	0.026	0.026	0.023
	Median	0.0066	0.084	0.0058	0.006	0.0067
Size*Deviation	Mean	0.83	1.1	0.76	0.74	0.69
	Median	0.49	0.68	0.46	0.42	0.44

Note: The sample includes all nonfinancial and nonforeign companies. We Winsorize the outliers of all variables and use the lagged values of all variables except ROE and forecast deviation. The foreigner shareholders' ratio and the cross-holding ratio are not reported on this table due to the lack of data on the composition of majority shareholders in 2000. The Top 10 shareholders' ratio is the ratio of shares controlled by the top 10 shareholders. The borrowing ratio is the ratio of total borrowings from financial institution to total assets. ROE is the ratio of operating income to total equities. ROA is the ratio of operating income to total assets. Banker director is a binary variable taking a value of 1 if the firm has a banker director on its board and zero otherwise. The outside director ratio is the ratio of directors from outside to the total number of directors. Firm size is a logarithm of the value of total assets deflated by the CPI. The forecast deviation is the absolute value of the difference between the realized value and the initial forecast value.

Table 5. Ordered Probit model of frequency and firms' characteristics

Variable	(1)	(2)	(3)	(4)	(5)
Top10 shareholders' ratio	-.413*** (3.76)	-.446*** (3.83)	-.383** (2.32)	-.297* (1.81)	
Special shareholders' ratio					-.351* (1.95)
Foreign shareholders' ratio	.351* (1.63)	.384* (1.70)	0.453 (1.44)	.584* (1.82)	0.357 (1.15)
Crossholding ratio		-.638** (2.36)	-0.455 (1.28)	-0.54 (1.51)	-0.151 (0.402)
Borrowing ratio	.285*** (3.27)	.287*** (3.07)	.496*** (3.73)	.414*** (3.13)	.368*** (2.56)
Banker director	.0679** (2.22)	.0717** (2.22)	.0913** (1.99)	.0992** (2.17)	.106** (2.17)
Outside director	0.0439 (0.67)	0.0638 (0.91)	0.054 (0.532)	0.0361 (0.359)	-0.0261 (0.241)
ROE	-.00451*** (3.86)	-.0037*** (2.93)	-.00409*** (3.24)		-.00305** (2.16)
ROA				-.0203*** (4.57)	
Firm size	-.061*** (4.55)	-.0593*** (4.2)	-.08*** (4.05)	-.0764*** (3.81)	-.085*** (3.98)
Forecast deviation	2.49*** (10.4)	3.04*** (11.5)	0.515 (0.18)	1.47 (0.503)	1.31 (0.401)
Top 10*Deviation			-1.02 (0.532)	-1.42 (0.738)	
Special*Deviation					-1.27 (0.597)
Foreign*Deviation			-0.684 (0.167)	-2.81 (0.668)	-0.443 (0.11)
Cross*Deviation			-3.26 (0.923)	-2.52 (0.69)	-6.73 (1.76)
Borrow*Deviation			-3.56** (2.11)	-3.05** (1.86)	-2.64 (1.43)
Banker*Deviation			-0.337 (0.617)	-0.327 (0.593)	-0.18 (0.306)
Outside*Deviation			0.0436 (0.0372)	-0.0987 (0.0868)	-0.271 (0.218)
Asset*Deviation			.378* (1.55)	0.309 (1.24)	0.321 (1.19)
Year2002	2.15*** (38.4)	-.592*** (16.5)	-.593*** (16.5)		
Year2003	2.62*** (43.8)	-.15*** (4.14)	-.149*** (4.12)	.436*** (12.8)	.403*** (10.6)
Year2004	2.78*** (45.8)			.59*** (16.7)	.523*** (13.4)
<b>Industry Dummies</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>
Number of observations	7535	5564	5564	5566	4769
Log Likelihood	-8681	-8019	-8013	-7998	-6969
chi2	2396	640	656	654	514

Note: The sample includes all nonfinancial and nonforeign companies. We winsorize the outliers of all variables and use lagged values of all variables except ROE, ROA, and forecast deviation. The Top 10 shareholders' ratio is the ratio of shares controlled by the top 10 shareholders. The foreign shareholders' ratio is the ratio of shares controlled by foreign shareholders. The borrowing ratio is the ratio of total borrowings from financial institution to total assets. ROE is the ratio of operating income to total equities. ROA is the ratio of operating income to total assets. Banker director is a binary variable taking a value of 1 if the firm has a banker director on its board and zero otherwise. The outside director ratio is the ratio of directors from outside to the total number of directors. Firm size is a logarithm of the value of total assets deflated by the CPI. The forecast deviation is the absolute value of the difference between the realized value and the initial forecast value.

Table 6. Ordered Probit, Ordered Logit, and OLS of frequency and firms' characteristics without interaction terms

Variable	oprobit	ologit	xtreg
Top 10 shareholders' ratio	-.446*** (3.83)	-.719*** (3.55)	-.416*** (3)
Foreign shareholders' ratio	.384* (1.7)	.72* (1.77)	0.416 (1.58)
Crossholding ratio	-.638** (2.36)	-1.1** (2.35)	-.634** (2.08)
Borrowing ratio	.287*** (3.07)	.502*** (3.06)	.235** (2.11)
Banker director	.0717** (2.22)	.118** (2.1)	.0772** (2.03)
Outside director	0.0638 (0.91)	0.115 (0.94)	0.07 (0.835)
ROE	-.0037*** (2.93)	-.00678*** (3.11)	-.00247* (1.9)
Firm size	-.0593*** (4.2)	-.106*** (4.31)	-.059*** (3.52)
Forecast deviation	3.04*** (11.5)	5.17*** (11)	3.12*** (11.2)
Year 2002	-.592*** (16.5)	-1*** (16)	-.618*** (19.1)
Year 2003	-.15*** (4.14)	-.277*** (4.31)	-.159*** (4.76)
Industry Dummy	Yes	Yes	Yes
N	5564	5564	5564
ll	-8019	-8027	
chi2	640	598	734

Note: The sample includes all nonfinancial and nonforeign companies. We Winsorize the outliers of all variables and use lagged values of all variables except ROE, ROA, and forecast deviation. The Top 10 shareholders' ratio is the ratio of shares controlled by the top 10 shareholders. The foreign shareholders' ratio is the ratio of shares controlled by foreign shareholders. The borrowing ratio is the ratio of total borrowings from financial institution to total assets. ROE is the ratio of operating income to total equities. ROA is the ratio of operating income to total assets. Banker director is a binary variable taking a value of 1 if the firm has a banker director on its board and zero otherwise. The outside director ratio is the ratio of directors from outside to the total number of directors. Firm size is a logarithm of the value of total assets deflated by the CPI. The forecast deviation is the absolute value of the difference between the realized value and the initial forecast value. Robust t values are presented in the parentheses, where \*, \*\*, and \*\*\* indicate that  $p < .1$ ,  $p < .05$ , and  $p < .01$ , respectively.

Table 7. Ordered Probit, Ordered Logit, and OLS of frequency and firms' characteristics with interaction terms

Variable	oprobit	ologit	xtreg
Top 10 shareholders' ratio	-.383** (2.32)	-.556* (1.92)	-0.295 (1.62)
Foreign shareholders' ratio	0.453 (1.44)	0.775 (1.36)	0.416 (1.23)
Crossholding ratio	-0.455 (1.28)	-0.746 (1.2)	-0.399 (1.04)
Borrowing ratio	.496*** (3.73)	.865*** (3.66)	.397*** (2.72)
Banker director	.0913** (1.99)	.146* (1.82)	.103** (2.05)
Outside director	0.054 (0.532)	0.126 (0.709)	0.0159 (0.143)
ROE	-.00409*** (3.24)	-.00739*** (3.4)	-.00277** (2.13)
Firm size	-.08*** (4.05)	-.139*** (3.92)	-.0806*** (3.69)
Forecast deviation	0.515 (0.18)	1.58 (0.289)	0.503 (0.164)
Top 10*Deviation	-1.02 (0.532)	-2.58 (0.732)	-2.03 (0.977)
Foreign*Deviation	-0.684 (0.167)	-0.259 (0.0329)	0.476 (0.111)
Cross*Deviation	-3.26 (0.923)	-5.84 (0.903)	-4.03 (1.08)
Borrow*Deviation	-3.56** (2.11)	-6.26** (2.03)	-2.7* (1.54)
Banker*Deviation	-0.337 (0.617)	-0.44 (0.448)	-0.447 (0.756)
Outside*Deviation	0.0436 (0.0372)	-0.416 (0.202)	0.761 (0.621)
Asset*Deviation	.378* (1.55)	0.625 (1.34)	.4* (1.53)
Year 2002	-.593*** (16.5)	-1*** (16)	-.619*** (19.1)
Year 2003	-.149*** (4.12)	-.276*** (4.29)	-.159*** (4.75)
Industry Dummy	Yes	Yes	Yes
N	5564	5564	5564
ll	-8013	-8020	
chi2	653	639	701

Note: The sample includes all nonfinancial and nonforeign companies. We Winsorize the outliers of all variables and use lagged values of all variables except ROE, ROA, and forecast deviation. The Top 10 shareholders' ratio is the ratio of shares controlled by the top 10 shareholders. The foreign shareholders' ratio is the ratio of shares controlled by foreign shareholders. The borrowing ratio is the ratio of total borrowings from financial institution to total assets. ROE is the ratio of operating income to total equities. ROA is the ratio of operating income to total assets. Banker director is a binary variable taking a value of 1 if the firm has a banker director on its board and zero otherwise. The outside director ratio is the ratio of directors from outside to the total number of directors. Firm size is a logarithm of the value of total assets deflated by the CPI. The forecast deviation is the absolute value of the difference between the realized value and the initial forecast value. Robust t values are presented in the parentheses, where \*, \*\*, and \*\*\* indicate that  $p < .1$ ,  $p < .05$ , and  $p < .01$ , respectively.

## **Data Appendix**

### **Identification of cross-holding**

We calculate two types of cross-shareholders, based on merging the Nikkei large shareholder database (okabunusi) with the Nikkei company shareholding database (kigyohoyukabu database). The cross-shareholder is defined as a shareholder who is one of the largest 30 shareholders of the company, and whose shares are also held by the company. It should be noted that we do not include the shares held by a company's subsidiaries. In addition, in order to investigate the effect of the banking relationship on information disclosure, we subdivide large cross-shareholders into large banking cross-shareholders who are in banking industry and others.

For example, to identify a cross-shareholder of Kyokuyo Company in 2001, we first check the major shareholders of Kyokuyo Company in 2001. As we can see from Table A1, Daiwa Bank, which owns 4.99% of shares is the largest shareholder of Kyokuyo, and Tyuogyorui Company, which owns 0.6% of shares is the thirtieth largest shareholder of Kyokuyo. According to the Nikkei shareholding company holding database, we observe that among the thirty largest shareholders, Kyokuyo holds the shares of five companies, Daiwa Bank, Mitsubishi Trust, Tokai Bank, Sakura Bank, and Tyuogyorui Company. Therefore, we calculate a large cross-holding ratio as the summation of the shareholding rate of those six companies. Thereby, we obtain a large cross-holding ratio of 10.04, and a large banking cross-holding ratio of 9.44, which is the summation of the shareholding rate of Daiwa Bank (4.99), Mitsubishi Trust (2.89), Tokai Bank (0.88), and Sakura Bank (0.68).



Table A1

nkcode	msdname	msnkcode	msratio	cross
1	Daiwa Bank	70011	4.99	1
1	Norinchukin Bank	28948	4.98	0
1	Shinsei Bank, Ltd.	70002	3.89	0
1	Mitsubishi Trust	70081	2.89	1
1	Sumitomo M.& F. Ins.	70503	2.81	0
1	Toyo Seikan	919	2.78	0
1	Mitsui M.& F. Ins.	70502	2.73	0
1	Tokyo M.& F. Ins.	70501	1.73	0
1	Yasuda F.& M. Ins.	70505	1.68	0
1	UBS AG (London) Asia Equities	9999999	1.55	0
1	Chuo Mitsui Trust & Banking	70084	1.53	0
1	Daiya Co.	9999999	1.42	0
1	Chuo Mitsui Money Trust	9999999	1.29	0
1	Miyaichi Co.	9999999	1.15	0
1	Mitsui Trust, Trust Dept.	9999999	1.11	0
1	Kyoei Co.	9999999	1.02	0
1	Kyokuyo Akitsukai	9999999	0.96	0
1	Tokyo Mutual Life Ins., Ippan	9999999	0.94	0
1	Norinchukin Trust & Banking Co	9999999	0.94	0
1	Lehman Brothers Asia Capital	9999999	0.9	0
1	Tokai Bank	70012	0.88	1
1	Toyo Trust, Trust Acc. A	9999999	0.8	0
1	Japan Securities Finance	70514	0.76	0
1	Nomura Securities	70204	0.76	0
1	Japan Trustee Services Bank	9999999	0.72	0
1	Societe Generale Paris OBE	9999999	0.69	0
1	Sakura Bank	70005	0.68	1
1	Senba Sangyo	9999999	0.62	0
1	Tyuogyorui	1573	0.6	1