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OWNERSHIP STRUCTURE AND DISCLOSURE QUALITY: EVIDENCE FROM MANAGEMENT FORECASTS REVISIONS IN JAPAN

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Abstract

We investigate the relationship between ownership structure and quality of disclosure in the case of Japanese firms. Our measure of disclosure quality is denoted by the attitude of firms toward voluntary revisions of management earnings forecasts, which are effectively mandatory in Japan. The results show that firms with high foreign and domestic institutional ownership are more likely to provide management forecasts revisions in a voluntary and timely manner. In contrast, firms with high bank ownership have a greater propensity to withhold material changes in management forecast estimates until the very last moment when they are legally compelled to reveal that information. These findings suggest that active investors are able to induce firms to adopt better disclosure practices, while investors with close business ties and access to firms' private information appear to restrict the flow of information to other investors.

Keywords: Ownership structure; management forecasts; timeliness; voluntary disclosure; private information

1. Introduction

Firms have good reasons to disclose private information. The benefits of disclosure involve lower cost of capital, higher stock valuation and greater ability to raise funds, which altogether promote firm growth (Pownall and Waymire, 1989; Diamond and Verrecchia, 1991; Lang and Lundholm, 1993; Botosan, 1997; Francis et al., 2005). However, concerns related to product market competition may prevent firms from disclosing their private information (Verrecchia, 1983; Darrough and Stoughton, 1990; Wagenhofer, 1990; Newman and Sansing, 1993). Attitudes toward disclosure also vary across shareholders. Institutional investors require accurate and timely information to allocate their funds more efficiently (Healy et al., 1999; Bushee and Noe, 2000; Ajinkya et al., 2005). In contrast, controlling blockholders prefer fewer disclosures since their longer horizons imply that they have little to gain from a prompt reevaluation of their shares. Furthermore, Sengupta (2004) argues that controlling blockholders have greater access to the firm's private information and would prefer to maintain their informational advantage by discouraging timely and detailed public disclosures.

Empirical studies based on US firms indicate that quality of disclosure is linked to firms' ownership structure. Using management earnings forecasts as a means for firms to convey private information, Ajinkya et al. (2005) find that institutional ownership is associated with more accurate and less biased disclosures. While their focus is on the role of internal governance structures, Karamanou and Vafeas (2005) show that firms with high institutional ownership are more likely to issue management earnings forecasts that are also more precise, whereas insider ownership is associated with fewer and less precise forecasts. Both studies control for the endogeneity of ownership. However, their variable of interest may not accurately capture firms' disclosure quality. In an environment where forecasts are voluntary, firms can freely choose whether and when to issue forecasts. Accordingly, the decision not to issue forecasts does not necessarily indicate poor disclosure, as firms can choose not to issue forecasts simply because they have no incentive to do so. Since prior studies use non-issuers as the control group, the question of whether and how governance structure is associated with the decision to disclose management's private information has not been fully resolved.

In this paper, we investigate the link between ownership structure and disclosure quality using Japanese data. This setting presents several critical advantages. First, Japanese publicly traded firms are strongly encouraged by the stock exchange to issue forecasts of the coming year's earnings at their annual results announcements. Along with the country's much less litigation-prone tradition, such strong requests from the stock exchange make almost all Japanese firms issue forecasts (Kato, et al. 2009; Ota, 2010). This unique feature allows us to circumvent potential self-selection (i.e.,

which firms choose to issue forecasts) and timing issues (i.e., when they issue forecasts).[1] Although their main focus is on how forecasts bias affects the credibility of firms' subsequent forecasts, Kato et al. (2009) use that same feature to confirm that institutional ownership is associated with less biased management forecasts in a setting where forecasts are mandatory. Our study extends these findings by further investigating how differences in the way firms revise their forecasts are associated with initial forecasts biases and how revisions vary with the firms' ownership structure.

Second, once forecasts are issued, firms are not only encouraged by the stock exchange to update these forecasts but are also legally required by the Financial Instruments and Exchange Act to disclose revised forecasts in case significant changes in management estimates arise.[2] The existence of such legal requirement enables us to distinguish those firms that provide revised forecasts voluntarily and to further identify the situations in which firms are most likely to delay the release of new information until the last moment. As the extent to which disclosure provides "useful" information to market participants depends on when it is released (Sengupta, 2004), we consider voluntary revisions of existing forecasts disclosed during the fiscal year as an indication of better disclosure, and legally compelled revisions issued after the fiscal year-end as an indication of poor disclosure. In the sense that we investigate when revised forecasts are released, this study can also be viewed as contributing to the literature on disclosure timing decisions.

A third advantage of using Japanese firms comes from their distinct ownership structure and the way corporate ownership is reported in Japan. First, foreign (mainly institutional) investors are separated from domestic institutional investors. This enables us to test more precisely which type of institution exercises a greater influence on a firm's disclosure behavior. Ajinkya et al. (2005) recognize this heterogeneity but are only able to use concentrated institutional ownership as a proxy for the ability of institutional investors to elicit private information. Recent studies indicate that independent institutions are able to confront management in order to meet their objectives (Ferreira and Matos, 2010). Foreign investors fit that description, as they do not have business relationships with the firms they invest in. Accordingly, we expect foreign ownership to be associated with better disclosure compared to domestic institutional ownership.

In addition, business groups with extensive inter-corporate and bank shareholdings are common in Japan. These business groups were formed around a main bank to pool resources and mitigate business risks (Goto, 1982; Nakatani, 1984; Hoshi et al., 1991; Aoki and Patrick, 1995; Verrecchia and Wang, 2011; Zhang et al., 2016). Coordination of the group involves the sharing of information

[1] In fact, Kato et al. (2009) use this feature to sidestep the issue of self-selection and show that institutional ownership is associated with less biased management forecasts for a large sample of Japanese firms.
[2] See footnote 7 for a detailed description of the legal requirements.

with the managers of other member firms. For instance, meetings (known as *shacho-kai*) are regularly scheduled between the presidents and directors of the various member firms. Since firms affiliated to a business group have straightforward access to bank and inter-corporate loans, their incentives to maximize firm value before raising equity in the capital markets are lower compared to unaffiliated firms.[3] Affiliated firms should also be reluctant to disclose information that might be used to expose the abuse of minority shareholders (e.g., tunneling of resources from a particular firm to the benefit of other member firms). Accordingly, we expect affiliated firms, i.e., firms with a high level of bank and corporate ownership, to be characterized by less disclosure.

The empirical results are largely consistent with our hypotheses. Firms with higher foreign or domestic institutional ownership tend to make better disclosures. More precisely, domestic institutional investors are associated with more timely forecasts revisions, whereas foreign investors are associated with forecasts revisions that are both more frequent and timely. In contrast, firms under the control of banks tend to have poor disclosure practices, while firms with large corporate shareholdings do not appear to have significantly different disclosure practices. Overall, this study contributes to explain the cross-sectional difference in corporate disclosure by showing that the incentives of a firm's major shareholders play a significant role. Shareholders who are likely to benefit from receiving better information appear to induce firms to release timely forecasts revisions. In contrast, shareholders who have little to gain from a prompt release of information appear to influence firms to make fewer and less timely revisions. These findings, which are not biased by potential self-selection and timing issues, confirm the results of Ajinkya et al. (2005) and Karamanou and Vafeas (2005) in a context where large shareholders that are connected with the firm (banks and other firms) play a prevalent role. Our study also extends Kato et al. (2009) by providing new evidence that ownership structure is associated with a firm's propensity to release or withhold private information, and not just with the precision of its forecasts. This result is congruent with Sengupta (2004), who reports that higher institutional ownership is associated with shorter lags in reporting annual earnings, while ownership by blockholders that have access to private information is associated with longer lags.

The remainder of this paper is organized as follows. Section 2 provides an overview of the Japanese institutional setting and develops the hypotheses. Section 3 presents the sample and the research design. Section 4 reports and discusses the empirical results. Section 5 concludes with a summary and discussion of avenues for future research.

[3] Chen et al. (2008) make a similar observation to justify that family firms make fewer earnings forecasts.

2. Institutional background and hypotheses

We open this section with a review of some of the distinctive features of corporate ownership and accounting disclosure in Japan. We then propose five hypotheses regarding the link between a firm's ownership structure and the quality of its disclosures.

2.1. Characteristics of Japan's corporate environment

Analyzing the opportunity for innovative accounting research using Japanese data, Verrecchia and Wang (2011) underscore two remarkable differences that set Japan apart. The first is the prevalence of industrial groups (*keiretsu*) that tie together a large number of Japanese firms; the second is the obligation for listed firms to disclose management forecasts of key accounting figures along with their annual results.

The Japanese system of corporate governance is often depicted through the role played by business groups (called *keiretsu*) involving complex cross-shareholdings and interlocking directorates. The presumed advantages of these groups include improved efficiency due to greater monitoring (Gilson and Roe, 1993), lower agency conflicts between borrowers and lenders (Diamond, 1984) and incentives to invest in relational-specific assets (Caves and Uekusa, 1976). Williamson (1985) conjectures that business groups economize on information and control through standardized communication compared to market transactions. Berglof and Perotti (1994) emphasize that the reciprocal allocation of control rights supports cooperation and mutual monitoring among managers.

In addition to helping to sustain firm performance, group affiliation appears to work as a risk-sharing mechanism. Aoki (1988) argues that the role of cross-shareholding within groups, and in particular the special relations with the main bank, is to mitigate risk and deter hostile takeovers. Nakatani (1984) presents evidence that affiliation to a *keiretsu* has a stabilizing effect on the operating performance of affiliated firms, which allows the latter to borrow more than independent firms. Hoshi et al. (1991) demonstrate that *keiretsu* affiliates are quicker to emerge from financial distress, thanks to the resources provided by other group affiliates. Lincoln et al. (1996) and Zhang et al. (2016) conclude that affiliated firms are better able to absorb the shocks and dislocations that affect the economic sectors in which they operate.

The Japanese corporate environment presents another unique feature. The Japan Exchange Group (JPX)[4] requires timely disclosures and strongly encourages firms to provide management forecasts of

[4] JPX is a financial instruments exchange holding company that comprises the Tokyo Stock Exchange (TSE), Osaka Securities Exchange (OSE), Japan Exchange Regulation (JPX-R), and Japan Securities Clearing Corporation (JSCC).

the coming year's main accounting items together with current financial results at each annual earnings announcement and to update those forecasts throughout the fiscal year, including revision or confirmation of forecasts disclosed with quarterly financial results[5]. More precisely, all listed firms are requested to provide initial point forecasts of sales, operating income, ordinary income or earnings before extraordinary items and taxes (EBET), net income (NI), and earnings per share (EPS) for year t when results for year t-1 are announced and to update their forecasts until the financial results for year t become available.[6] As the provision of initial management forecast is not legally binding, some financial institutions do not provide forecasts, citing the difficulty of predicting future business environment. Nevertheless, nearly all firms provide forecasts (Ota, 2010). In effect, Kato et al. (2009) find that 93.7% of the firms in their sample issue management forecasts and claim that management forecasts are effectively mandated in Japan. Consequently, analysts play a lesser role in providing forecasts of firms' operating performance. Ota (2010) argues that analysts rely heavily on management forecasts to formulate their own forecasts and provides evidence that more than 90% of analysts' forecasts can be explained by management forecasts.

Once forecasts are issued, firms are not only requested by the stock exchange to update forecasts but also required by the Financial Instruments and Exchange Act to disclose revised forecasts to the public immediately when significant changes in management estimates arise, as such changes may have material influence on investors' decisions. In the Cabinet Office Ordinance, significant changes are defined as changes in sales estimates of 10% or more and changes in earnings (EBET and net income) estimates of 30% or more.[7] Ota (2010) argues that the existence of those legal guidelines is one of the factors that have contributed to the practice of management forecasts by Japanese firms, since they will not be held liable, even if they miss their initial forecasts, as long as they follow the guidelines (i.e., costs of biasing forecasts are relatively low).

[5] Firms are also encouraged to issue interim forecasts. However, approximately 20% of the firms do not release interim forecasts.

[6] Firms are expected to provide forecasts of operating income and earnings per share (EPS) from the fiscal year starting in April 2007 in addition to sales, ordinary income, and net income. Range forecasts and/or descriptive information have also been accepted since the fiscal year starting in April 2012. Nevertheless, the vast majority of firms continue to issue point forecasts, and only 0.2-0.3% of firms provide range forecasts.

[7] See Financial Instruments and Exchange Act, Article 166, and Cabinet Office Ordinance on Restrictions on Securities Transactions, Article 51. JPX has similar timely disclosure rules in accordance with these legal guidelines. Article 51 also prescribes alternative criteria for significant changes in EBET and net income (EBET: the difference between the revised forecast and the previous forecast is greater than 5% of net assets or stated capital, whichever is larger; net income: difference between the revised forecast and the previous forecast is greater than 2.5% of net assets or stated capital, whichever is larger). However, it is extremely rare that changes in earnings forecasts matching these criteria occur without matching the criteria based on the 30% changes in earnings forecasts. Accordingly, we use the latter to distinguish mandatory revisions.

In contrast, the management forecasts of US firms are entirely discretionary. Accordingly, it is difficult in US studies to dissociate the information content of the disclosure from the incentives on the part of managers to make the disclosure. Verrecchia and Wang (2011) note that management forecasts in Japan provide a direct measure of management's expected future performance rather than requiring a proxy to be generated for these expectations. The mandatory nature of these disclosures makes it possible to conduct more powerful tests. For instance, Kato et al. (2009) establish that management forecasts in Japan tend to be optimistically biased, unlike in the US where litigation concerns appear to censor the right tail in the distribution of management forecasts. The existence of forecast bias allows them to evaluate the importance of reputation effects in the market by looking at how investors respond to subsequent forecasts. Consistent with intuition, investors are found to discount subsequent forecasts for firms that have issued optimistic forecasts in the past.

2.2. Hypothesis development

Firms are assumed to benefit from better disclosure. By revealing their private information about future cash flows, and thus decreasing the information asymmetry with their potential investors, firms reduce the costs of adverse selection imposed on (uninformed) investors. This consequently enhances their stock liquidity (Glosten and Milgrom, 1985) and decreases their cost of capital (Diamond and Verrecchia, 1991). In addition, greater transparency deters managers from extracting private benefits at the expense of shareholders (Bushman and Smith, 2001; Huang and Zhang, 2012). As a result, better disclosure leads to higher stock valuation and increases the firm's ability to raise funds to finance its investments (Healy and Palepu, 1993; Lang and Lundholm, 1993; Frankel et al., 1995). Nevertheless, it is useful to note that, even without these agency-related benefits, investors can take advantage of better disclosure to efficiently structure their investments and identify the firms they want to invest in.

At the same time, managers are reluctant to disclose private information because such disclosures decrease their ability to consume perquisites. In fact, greater disclosures enhance the ability of capital and labor markets to effectively monitor and discipline underperforming managers (Shleifer and Vishny, 1989; Nagar et al., 2003). It follows that managers have incentives to restrict the flow of information coming out of the firm to protect their positions. Edlin and Stiglitz (1995) suggest that managers may even attempt to exacerbate the information asymmetry by selecting projects that obscure the firm's actual performance.

While good disclosure practices appear to be beneficial to any investor, they can be valued differently by different shareholders. Sengupta (2004) argues that institutional investors require

better disclosures. Accurate information allows them to actively monitor the firm's performance and intervene in the firm's internal affairs. Shleifer and Vishny (1986) explain that their large equity holdings give them strong incentives to monitor management. In contrast, dispersed investors may be held back by their inability to recover their monitoring costs. Research based on US firms suggests that higher institutional ownership is associated with better disclosure practice. Karamanou and Vafeas (2005) report a positive association between institutional ownership and the likelihood of issuing earnings forecasts. In addition, these forecasts are more likely to come in the form of a point estimate rather than in the form of an estimation range. Ajinkya et al. (2005) indicate that these forecasts are also less optimistically biased, the higher the level of institutional ownership is. Sengupta (2004) reveals that firms release their earnings information more quickly when institutional investors are present in their ownership structure.

Recent studies introduce an important distinction between active and passive institutional investors. According to Almazan et al. (2005) active institutions have more skilled employees and are more likely to collect information about the firm's prospects. They also have fewer regulatory and legal restrictions on their investments and are less hampered by business relations with firms. Evidence of greater involvement in firm monitoring is indicated by a higher pay-for-performance sensitivity in managerial compensation. Barabanov et al. (2008) characterize active institutions as having a short-term performance focus while passive institutions are considered to have long-term goals. Their results reveal that active institutional investors aggressively slash their equity holdings before value-decreasing lawsuits are brought against firms, which is consistent with their reliance on information. Because of this dependence on receiving accurate and timely information, active institutions are expected to be pushing for better disclosure.

Japanese corporate ownership classification makes a useful distinction between foreign and domestic institutional investors. In many respects, foreign investors can be viewed as active investors. Anecdotal evidence indicates that their investment horizon is short. Jiang and Kim (2004) observe that foreign ownership in Japan varies widely from year to year, which is consistent with foreign investors engaging in frequent trading to rebalance their portfolios. As a rule, foreign investors rely on extensive information to identify valuable investment opportunities and exit once their return target has been fulfilled. Ahmadjian and Robbins (2005) note that they are more likely to confront managers and openly express their criticism. In contrast, domestic institutions tend to be nicer with incumbent managers and less vocal due to ongoing business ties with their firms. This makes them more passive in nature. Home bias also implies that domestic institutions have fewer options to reallocate their investments. Nguyen (2012) shows that, within each firm, domestic institutional ownership exhibits significantly lower year-to-year variation, compared to foreign ownership.

Kamesaka et al. (2003) highlight an interesting difference between the trading behavior of foreign and domestic institutional investors. Over the period from 1980 to 1997, foreign institutions appear to have used positive feedback trading strategies, which suggest that they identify mispricing and push share prices to new equilibrium values. In contrast, the strategies of domestic institutions are characterized by negative feedback trading, indicating that they resist price adjustments and slow down the price discovery process. In the context of falling share prices, this behavior suggests that domestic institutions are willing to support firms due to their business ties.

The differences that separate foreign and domestic institutions, as well as their similarities, bring us to formulate the following hypotheses:

H1: Higher foreign ownership is associated with better disclosure.

H2: Higher domestic institutional ownership is associated with better disclosure.

H3: Foreign ownership is associated with better disclosure than domestic institutional ownership.

As has been extensively documented in the literature, the Japanese system of corporate governance is characterized by the prevalence of business groups. Berglof and Perotti (1994) describe these groups as mechanisms designed to support cooperative behavior among firms. In the process, valuable information is exchanged through frequent interactions. Gilson and Roe (1993) hypothesize that the long-term relationships within the group promote internal transactions and the exchange of private information between affiliated firms. As a result, interlocked shareholders should have an understanding of the firm's internal decision-making that is usually unavailable, or only at high cost, to the financial market. Jiang and Kim (2000) conclude that more information about future performance should be reflected in the stock price of affiliated firms compared to nonaffiliated firms.

Data reported by Japanese firms distinguish the ownership of banks and nonfinancial firms involved in business groups. The influence of banks might appear to be limited since their ownership in nonfinancial firms has been restricted to less than 5% of each firm's shares since 1987. However, their actual power should be considerably stronger. This is because other banks affiliated to the same business grouping typically hold a substantial (though lower) fraction of the firm's shares. The main bank plays a leading role in coordinating the actions of other banks, giving it significant influence. In addition to their equity stakes, banks provide loans to affiliated firms to conduct their investments. Financing through the group's internal capital markets implies that affiliated banks and corporate owners have access to information not available to other investors. Sheard (1989) explains that affiliated firms consult extensively with the bank when drawing up their business plans and provide

regular reports on their performance. This close information-sharing relationship allows banks to obtain privileged information about the firm and its management, which makes their internal capital allocation more effective.

In general, informed investors are reluctant to share their private information with other market participants. Bushee et al. (2003) show that firms with greater institutional ownership are less likely to have conference calls that provide open access to all investors. Their study suggests that informed investors would prefer the firm to reduce its disclosure activities. Sengupta (2004) suggests that blockholders with access to private information will try to maintain their informational advantage by discouraging timely disclosures. Consistent with this argument, Karamanou and Vafeas (2005) indicate that higher insider ownership is associated with less precise management earnings forecasts. It is therefore unsurprising that firms with large blockholders have been characterized by larger bid-ask spreads and lower depth in their order books (Heflin and Shaw, 2000). Likewise, it can be inferred that Japanese firms with high bank and corporate ownership will be associated with lower disclosure since these shareholders have more private information about the firm. Another factor that might explain why firms affiliated to a business group are more averse to disclosing information about the firm's prospects is that affiliated firms have often underperformed relative to independent firms. Entrenched managers thus have incentives to cloud the firm's accounts to prevent outside investors from properly judging their true performance. Accordingly, affiliated firms (identified by a high percentage of bank and corporate ownership) should display poor disclosure practice.

This leads us to propose the following hypotheses:

H4: Higher bank ownership is associated with lower disclosure quality.
H5: Higher corporate ownership is associated with lower disclosure quality.

3. Data and methodology

We first describe the proxies used for evaluating a firm's disclosure practice. The empirical models relating ownership structure and disclosure quality follow. The section ends with a brief description of the sample.

3.1. Measures of disclosure quality

Disclosure quality has been measured in different ways in the accounting literature. One indicator available for US firms is the AIMR survey of financial analysts, which provides an overall evaluation of a firm's disclosure quality. Lang and Lundholm (1993) observe that this indicator is positively related to firm size consistent with larger firms having better disclosure practice. Botosan

(1997) shows that the AIMR scores are associated with lower cost of equity capital. Nagar et al. (2003) demonstrate that it increases with the proportion of CEO compensation linked to stock returns, suggesting that stock-related compensation can incentivize managers to disclose their private information. Accounting researchers have also used firm-initiated press releases. For instance, Miller (2002) shows that they tend to increase during periods of increasing earnings. Shroff et al. (2013) find that firms started to provide significantly more disclosures through press releases prior to equity offerings after regulatory restrictions were lifted.

Another indicator of disclosure quality is the propensity of management to provide earnings forecasts. Frankel et al. (1995) note that firms dependent on external financing are more likely to issue management forecasts. However, the threat of litigation prevents them from making systematically biased earnings projections. In Japan, management forecasts are effectively mandated. However, the regulatory and legal costs of biasing forecasts are relatively low due to the existence of clear legal guidelines and a culture less inclined toward litigation (Ota, 2010). Kato et al. (2009) take advantage of this feature to evaluate the credibility of management forecasts. Their results indicate that investors discount the forecasts issued by managers who have issued overly optimistic forecasts in the past. Cho et al. (2011) demonstrate that management forecasts are biased just enough so that managers avoid making loss forecasts.

In this paper, we introduce two measures to evaluate a firm's disclosure quality: (i) how often revisions of existing forecasts are voluntarily disclosed during the fiscal year; and (ii) whether a firm issues legally compelled revisions after the fiscal year-end.[8] As discussed earlier, the distinction between voluntary revisions and legally forced revisions is an important aspect of disclosure quality. In essence, we assume that the promptness in which revised forecasts are released is critical given that the extent to which disclosure provides "useful" information to market participants depends on when it is released and not just on the nature of the information (Sengupta, 2004).

While management forecasts are often "updated" throughout the fiscal year, not all of them can be considered as voluntary revisions. First, firms are encouraged by stock exchange rules to release revisions of their forecasts, in particular at quarterly earnings announcements. However, a majority of firms simply confirm their existing forecasts instead of providing revised figures, particularly in the earlier part of the fiscal year. Those confirmatory "updates" (confirmation of previous forecasts) are not counted as revisions in this study. Second, firms are required to update their forecasts by the Financial Instruments and Exchange Act if significant changes in management estimates arise (i.e., ±30% change in earnings forecasts and ±10% change in sales forecasts). Therefore, those revisions

[8] To our best knowledge, none of these measures has been previously used in the disclosure literature.

with significant changes can be viewed as mandatory, and only the remaining revisions are considered voluntary. These forecast revisions are effectively comparable to the management forecasts of US firms that Pownall and Waymire (1989), Frankel et al. (1995) and Karamanou and Vafeas (2005) used to measure the disclosure quality of US firms.

The following example will help clarify the procedure for measuring voluntary revisions. For the fiscal year ending 31 March 2015, Iwatani, a diversified industrial company, provided the following forecasts and updates.

Forecasts	Date	EBET (¥ million)
Initial	May 9, 2014	19,500
Update 1	August 8, 2014	19,500
Update 2	November 7, 2014	19,500
Update 3	February 12, 2015	10,300
Update 4	April 16, 2015	12,700

Iwatani provided updates of its initial forecast 4 times during the fiscal year. Three of these updates were released with quarterly results (updates 1, 2, and 3) while the last one (update 4) was issued aside from any earnings release. Updates 1 and 2 simply confirmed the initial forecast. Update 3 involved a drop in EBET of 47.2% that well exceeds the threshold of 30% that makes a forecast revision mandatory. Finally, update 4 occurs after the fiscal year-end. As a result, none of Iwatani's updates is counted as a voluntary revision.

To measure a firm's propensity to withhold information, we track whether it has issued a legally compelled revision (mandatory revision) after the fiscal year-end. Revisions of earnings forecasts in excess of 30% to the upside or to the downside made just prior to the firm's annual earnings announcement are suggestive of poor disclosure. These revisions are released when managers should already have realized earnings information. Such last-minute revisions may occur because unexpected events prior to the fiscal year-end have caused earnings to change materially. However, such events should be extremely rare. A more likely explanation is that managers are reluctant to disclose their private information in a timely manner and delay the release of revised forecasts until the very last moment when they are legally compelled to do so. Accordingly, mandatory earnings revisions that occur after the fiscal year-end are likely to reflect an inclination toward withholding information.

As an example, consider NittoBest, a medium-sized processed food manufacturer. The firm provided the following EBET forecast and updates for the fiscal year ending 31 March 2015.

Forecasts	Date	EBET (¥ million)
Initial	May 14, 2014	620
Update 1	August 8**,** 2014	620
Update 2	November 12, 2014	620
Update 3	February 12, 2015	620
Update 4	April 23, 2015	199

NittoBest simply confirmed its initial forecast at the 1st, 2nd, and 3rd quarter earnings announcement, leaving the initial forecast figure of ¥620 million in EBET unchanged during the whole of its fiscal year. It then made a last-minute revision on April 23, 2015 to decrease its EBET forecast to ¥199 million, which corresponds to a reduction of two thirds of its initial forecast, well in excess of the 30% threshold that requires a revision according to legal guidelines. The revised figure matched the actual result announced a few days later. This is a typical example of management's tendency to withhold "bad news" until the last moment when they are eventually forced to disclose them. We categorize update 4 as a last-minute mandatory revision and regard it as evidence of untimely disclosure.

3.2. Empirical models

The influence of ownership structure on the propensity of management to provide voluntary revisions of earnings forecasts is tested using the following model:

$$\text{Voluntary revisions (t)} = \beta_0 + \beta_1 \text{ Foreign (t-1)} + \beta_2 \text{ Institutional (t-1)} + \beta_3 \text{ Corporate (t-1)}$$
$$+ \beta_4 \text{ Bank (t-1)} + \beta_5 \text{ Insiders (t-1)} + \beta_6 \text{ Firm size (t-1)} + \beta_7 \text{ Debt ratio (t-1)}$$
$$+ \beta_8 \text{ Volatility (t-1)} + \beta_9 \text{ Loss (t)} + \beta_{10} \text{ Initial bias (t)} + \eta' \text{Industry} + \upsilon' \text{Year} + \varepsilon. \quad (1)$$

Voluntary revisions are the number of voluntary revisions made during the fiscal year. In addition to the total number of revisions, we count separately the number of upward and downward revisions. The dependent variable being a count variable, the model is estimated using Poisson regressions. The variables of interest are represented by the proportion of equity owned by four types of investors. All the ownership variables are measured at the beginning of the fiscal year to reduce endogeneity concerns. Foreign is the fraction of equity owned by foreign investors. Institutional is the fraction of

equity owned by domestic institutional investors. Corporate is the fraction of equity owned by other nonfinancial firms. Bank is the fraction of equity owned by Japanese banks. Our hypotheses predict the coefficients for Institutional and Foreign to be positive, and the coefficients for Bank and Corporate to be negative.

The regressions include a number of control variables. Insiders represents the fraction of equity owned by management. A logarithmic transformation is applied due to the variable's high degree of skewness. Ajinkya et al. (2005) find that the likelihood of issuing earnings forecasts is positively related to the proportion of insider ownership. Firm size is the natural log of total assets. Large firms are generally followed by a larger number of analysts and are thus under greater pressure to increase the quality of their disclosures. Ajinkya et al. (2005) show that larger firms issue earnings forecasts more frequently. Lang and Lundholm (1993) and Eng and Mak (2003) report a positive association between firm size and the quality of the firm's disclosure. Debt ratio is total debt over total assets. This variable is included because highly leveraged firms may need to disclose more information to reassure investors about their future prospects. However, Gul and Leung (2004), Eng and Mak (2003) and Xiao et al. (2004) find evidence that lower leverage is associated with better disclosure. Volatility is the standard deviation of EBET scaled by average EBET over the previous 5-year period. Firms with volatile earnings are expected to revise their forecasts more often. Loss is an indicator variable that is set to 1 if the firm reports a negative EBET in the current period; and 0 otherwise. This variable is included because Ajinkya et al. (2005) find that loss-making firms tend to issue forecasts less frequently in the US. Wang and Hussainey (2013) report a positive relation between return-on-asset and the propensity to provide voluntary forward-looking statements in annual reports. In contrast, Wallace and Naser (1995) find a negative association between disclosure and profitability. Initial bias is initial forecast of EBET less realized EBET for the current period, scaled by total assets. Firms with positively biased forecasts would need to revise their forecasts downward during the fiscal period to avoid negative earnings surprises at annual earnings announcements (Lev and Penman, 1990; Rogers and Stocken, 2005). Finally, we include industry and year dummies.

The influence of ownership structure on the propensity of management to withhold its latest earnings estimates is determined using a similar model to the one described in Equation 1. The dependent variable is an indicator variable that equals 1 if the firm has issued a revision after its fiscal year-end that deviates by 30% or more from its previous forecasts; and 0 otherwise. As above, we distinguish upward and downward last-minute mandatory revisions. The model is estimated using logit regression.

$$\text{Mandatory last-minute revision (t)} = \beta_0 + \beta_1 \text{ Foreign (t-1)} + \beta_2 \text{ Institutional (t-1)}$$
$$+ \beta_3 \text{ Corporate (t-1)} + \beta_4 \text{ Bank (t-1)} + \beta_5 \text{ Insiders (t-1)} + \beta_6 \text{ Firm size (t-1)} + \beta_7 \text{ Debt ratio (t-1)}$$
$$+ \beta_8 \text{ Volatility (t-1)} + \beta_9 \text{ Loss (t)} + \beta_{10} \text{ Initial bias (t)} + \eta' \text{Industry} + \upsilon' \text{Year} + \varepsilon. \quad (2)$$

The ownership variables are entered in the same manner as described above. We expect the coefficients for Bank and Corporate to be positive, indicating that firms involved in cross-holdings are less likely to disclose timely information. The coefficients for Institutional and Foreign are expected to be negative in line with their positive influence on a firm's disclosure policy. The variables Insiders, Firm size, Debt ratio, Volatility, Loss, and Initial bias have been previously described. The coefficient for Firm size is expected to be negative since large firms tend to release more frequent revisions during the fiscal year. For a similar reason, we expect a negative coefficient for Debt ratio since leveraged firms are required to disclose more timely information to address investor concerns. We expect loss-making firms to revise their forecasts before annual earnings announcements to attenuate the negative market reaction to the loss announcement. The coefficient for Initial bias is expected to be positive because firms will need to adjust their forecasts to avoid negative earnings surprises.

3.3. Data source and sample statistics

We use Nikkei Financial Quest (Nikkei FQ) to extract our management forecasts data. Nikkei FQ is a database provided by Nikkei Inc., the leading business news publisher in Japan that, in 2015, completed the takeover of the London-based Financial Times. The database contains accurate, up-to-date, financial information on Japanese companies and securities prices. Our sample includes all firms that released management earnings forecasts over the period from April 2002 to March 2015. The reason we start in 2002 is because detailed shareholder data that enable us to distinguish banks from other financial institutions is available from March 2001 and because we use ownership with a one-year lag. We exclude firms whose reporting periods are less than 12 months and firms with missing financial data or ownership information. We also exclude banks, securities firms, and insurance companies since these firms are subject to specific regulations that are likely to distort their disclosure policies. The above requirements result in a sample of 20,783 firm-year observations.[9]

[9] Note that multiple revisions are aggregated to provide a single number (of revisions) for each firm in a given year. However, we distinguish the direction of the revisions (that is, upward versus downward revisions).

Table 1 provides descriptive statistics for the sample. The financial characteristics of firms whose management have issued earnings forecasts are presented in Panel A. Firms in the sample hold on average ¥260 billion in assets. This figure is lower than the average reported by Kato et al. (2009) since our sample excludes financial firms, which tend to have large balance sheets. However, median total assets in our sample are comparable to theirs, at approximately ¥44 billion. Median sales are also close to ¥44 billion. Average ROA measured by EBET/total assets is 4.68% (median 4.2%). The loss dummy indicates that 9.4% of firms have negative EBET. Finally, the average and median debt/total assets (leverage) ratios are approximately 52%.

The breakdown of ownership structure is indicated in Panel B. Average ownership by domestic institutions is 12.7% while average bank ownership is approximately 4.45%. The combined percentage is lower compared to the figure reported by Kato et al. (2009). This discrepancy can be explained by the fact that most Japanese banks have trimmed their equity holdings following the troubles they have experienced in the late 1990s. Widespread bank mergers and restrictions on their ownership to less than 5% in each firm are also likely to have played a role in the decrease in average bank ownership. Foreign investors seem to have taken advantage of the situation by raising their average holding to 9.47%. Nonetheless, the most common type of shareholder in nonfinancial firms is another nonfinancial company with an average 26.2% (median 23.1%). Consistent with Kato et al. (2009), insider ownership is low with a median for all directors at approximately 1.4% while the mean stands at 6.99% due to the significantly higher insider ownership in family firms.

Characteristics of management forecasts and revisions are displayed in Panel C. The average bias (or difference between forecasted EBET and realized EBET, scaled by total assets) is approximately 0.4%. This bias is not trivial considering that the average EBET/total assets are approximately 4.26%. Kato et al. (2009) indicate that Japanese firms issue optimistic forecasts because of the low litigation costs associated with inaccurate management forecasts. Cho et al. (2011) reveal that earnings forecasts are biased to avoid making a loss forecast.[10] Despite this significant positive bias, a majority of Japanese firms avoid negative earnings surprises. This is because they revise their initial forecasts during the fiscal year. In fact, almost 70% of firms revise their initial forecasts over the fiscal year. Excluding large (mandatory) revisions, the proportion of firms making voluntary revisions during the fiscal year is approximately 46%. A majority of these revisions are to the upside (27.16% against 21.93% for revisions to the downside). Since initial forecasts are effectively mandated, we consider these voluntarily revisions a better indicator of a firm's propensity to disclose

[10] The distribution of forecasts exhibits a clear discontinuity below zero. In effect, the number of small negative forecasts is much lower than what a normal distribution would predict.

private information. Still, a number of firms are not really willing to share their private information with outside investors. This is revealed by the substantial proportion of firms with last-minute revisions. In fact, 32.6% of firms make revisions in the period between the close of their fiscal year and the release of their annual results. As importantly, nearly half of these last-minute revisions (15.6%) are required by a large deviation from the firm's previous earnings forecasts. This pattern suggests that some firms are willing to keep investors informed in a timely manner, while others tend to withhold information. The next section investigates whether this contrasting behavior can be explained by the firm's ownership structure.

4. Empirical results

We first explore and highlight some interesting patterns in management forecasts revisions. Noting that these revisions point to a differential attitude to disclosure, we then investigate whether they are linked to the firm's ownership structure.

4.1. Properties of management forecasts and revisions

Table 2 examines the relationship between earnings surprises and initial earnings forecasts. Earnings surprises, calculated as realized EBET minus the most recent EBET forecast, are categorized as positive or negative. Likewise, initial earnings forecasts are split into positively or negatively biased forecasts. The bottom row of the table shows that 25.9% of firms report negative earnings surprises while 74.1% of firms meet or exceed earnings forecasts. The second row shows that a majority of firms (27.5% versus 20.8%) avoid negative earnings surprises although their initial forecasts are optimistic. Without subsequent revisions, all firms with optimistic initial forecasts would be associated with negative earnings surprises. This indicates that more than half of firms issuing optimistic earnings forecasts at the beginning of a fiscal year revise their forecasts downward to temper their initial optimism.[11] The result is consistent with previous research demonstrating that managers in Japan tend to issue optimistically biased forecasts at the beginning of the fiscal period and then revise their forecasts to avoid negative earnings surprises (Kato et al., 2009). The first row shows that not all firms with pessimistic initial forecasts report positive earnings surprises. In fact, a small proportion of firms in that case (5.1% versus 46.6%) reports negative earnings surprises after making upward revisions to their initially pessimistic forecasts. Nonetheless, most negative earnings surprises (20.8% versus 5.1%) come from firms that issued optimistic forecasts at the beginning of the fiscal year.

[11] Cho et al. (2011) suggest that this optimism may not be completely innocent.

Table 3 investigates the link between initial earnings forecasts and subsequent revisions. To do so, we split the sample of initial forecasts into optimistic and pessimistic forecasts, and compare the proportion of firms with various types of forecast revisions. While one might have expected voluntary revisions to be concentrated among firms with optimistic forecasts, the reality is that they are more prevalent among firms with pessimistic forecasts (50.4% versus 41.6%). Nonetheless, firms with optimistic forecasts tend to revise their forecasts more often during the fiscal year (74.6% versus 65.5%) because they are compelled to make a larger number of mandatory revisions. The direction of the revisions is clearly related to the sign of the initial forecast bias. Firms with optimistic forecasts are more likely to revise their forecasts downward (36.7% of their voluntary revisions are to the downside against 7.7% to the upside). The opposite is true of firms with pessimistic forecasts (45.3% of their voluntary revisions are to the upside against 8.2% to the downside). Forecast revisions after the end of the fiscal year are also heavily concentrated among firms whose initial forecasts are optimistic. The difference is even more dramatic regarding mandatory last-minute revisions to the downside (12.8% are from firms with optimistic forecasts, but only 0.1% are from firms with pessimistic forecasts). This result reveals that Japanese firms are least likely to inform investors when the information (earnings forecasts) they have released are most positively biased. However, the need to avoid negative earnings surprises implies that they have to revise their forecasts just before the announcement of their annual results. This is particularly the case of firms with optimistic forecasts. Due to their stronger propensity to retain information, these firms are compelled to make last minute revisions that may only serve to avoid violating disclosure regulation.

Differences in the patterns of revisions may also be linked to the firm's ownership structure. As a matter of fact, various investors have different requirements in terms of information and are likely to influence the firm's disclosure practices. Table 4 compares forecast bias and revisions by level of foreign, domestic institutional, corporate and bank ownership. The main result is that firms under high foreign, institutional or bank ownership tend to issue significantly less optimistically biased forecasts. On average, the bias becomes negative by the time these firms issue their annual results, allowing these firms to achieve larger positive earnings surprises. Examination of revisions activity indicates that firms under high foreign, institutional and bank ownership are more likely to release voluntary revisions during the fiscal year. Consistent with hypothesis 1, the difference is highly significant for firms under high foreign ownership. In contrast, firms with high inter-corporate shareholdings tend to make fewer voluntary revisions, in line with hypothesis 5. The likelihood of a last-minute mandatory revision is also twice as low for firms under high foreign ownership (approximately 10% against almost 21%). The difference for other types of owners is not as

significant. Overall, these univariate results appear to suggest that ownership structure affects the forecasts revision activity of Japanese firms in a way broadly consistent with our hypotheses. However, these patterns could be driven by firm characteristics with which ownership structure is typically correlated.

Table 5 presents the correlation matrix between ownership and firm characteristics. The relationships between the financial variables are generally consistent with theory. Thanks to their lower earnings volatility, larger firms use higher debt ratios. In line with previous studies on Japanese firms, larger firms are associated with higher profitability and a lower likelihood of losses. Higher volatility is associated with a lower debt ratio and a higher likelihood of losses. As noted in Kang and Stulz (1997), foreign ownership is concentrated in larger, more profitable and low leverage firms. Domestic institutional and bank ownership also tends to be concentrated in larger firms. However, these owners tend to invest in firms with higher debt ratios whose profitability is lower than the average. In contrast, nonfinancial firms hold stakes in smaller, less profitable firms that are characterized by higher debt ratios. Unsurprisingly, the correlation between corporate and foreign and domestic institutional ownership is significantly negative. However, domestic institutions tend to co-invest with banks.

The significant correlation between the ownership variables and the firm's financial characteristics implies that the relationships between the earnings forecasts and the ownership variables highlighted in the univariate analysis could potentially be different in a multivariate setting. Table 6 presents the regressions of forecast bias and absolute error on ownership controlling for the necessary firm characteristics. Column 1 suggests that higher domestic institutional, bank and corporate ownership are associated with significantly lower bias, but that foreign ownership does not affect the bias in management forecasts. Columns 2 and 3 focus on positively and negatively biased forecasts by truncating the dependent variable and using Tobit regressions. Together, the results show that lower bias stems from typically less optimistic forecasts (column 2) and more prudent forecasts (column 3). In column 4, the dependent variable is a dummy indicating that the bias is positive. The result of the logit regression suggests that higher institutional and corporate ownership tends to shift the whole forecast distribution to the left (to the downside). The consequence revealed in column 5 is that the precision of forecast is higher (or the absolute forecast error is lower), the higher domestic institutional, bank and corporate ownership are. In contrast, the more conservative forecasts associated with higher foreign ownership (as indicated in column 3) results in forecasts that are somewhat less precise.

The influence of the remaining variables is in line with prior research findings. Consistent with Kato et al. (2009), larger firms tend to issue less biased forecasts. These forecasts are less positively biased and, to a certain extent, less biased to the downside. As a consequence, the earnings forecasts are significantly more precise. In contrast, highly levered firms tend to make more positively biased forecasts with a forecast distribution that is significantly shifted to the right (to the upside). The influence of profitability is distinctly nonlinear and comes mainly from firms with negative earnings. In fact, the greater are the losses, the more optimistic the forecast bias is (columns 1-2). The effect of earnings volatility is to strongly decrease the precision of forecasts (column 5). More precisely, the entire distribution of forecasts is more dispersed both to the right (column 2) and to the left (column 3). Finally, the strong positive coefficient on lagged optimism shows that forecast bias is highly persistent. Kato et al. (2009) made that point and suggested that the absence of serious legal threat allows Japanese managers to keep issuing biased forecasts. The distribution of forecasts is shifted to the right (column 4) and significantly less precise (column 5).

4.2. Influence of ownership structure on forecasts revisions

Following the observation of relatively widespread variations in disclosure behavior, we now investigate the influence played by the firm's ownership structure. Table 7 reports the regressions of revisions frequency on the ownership variables. The results in columns 1-3 are for the number of voluntarily revisions made during the fiscal year while those in columns 4-6 are for a dummy indicating that a mandatory revision has been made after the fiscal year-end.[12] Column 1 shows that foreign and domestic institutional ownership are associated with a higher propensity to voluntarily update management forecasts. This finding is consistent with the need for institutional investors to receive accurate information in order to rebalance their portfolios and allocate their funds more effectively. The more accurate information released by firms also helps to mitigate the costs of adverse selection that outside investors have to face. However, the test of difference at the bottom suggests that foreign investors are associated with a more intense information flow either because they can pressure firms to release more information or because they prefer to invest in firms that make better disclosures and release more timely information.[13] Because of their business ties with

[12] The logistic regressions using a dummy variable for the occurrence of a voluntary forecast revision lead to similar conclusions. The results are not tabulated to avoid repetition.

[13] Firth et al. (2007) make a similar argument in the case of foreign investors in China. Their results show that higher foreign ownership is associated with greater informativeness of earnings. Likewise, He et al. (2014) reveal that foreign ownership affects auditor choice in China. The exogenous shock to foreign ownership following the opening of the previously restricted B-share market to local investors in 2001 is found to be associated with a decrease in the hiring of Big 4 audit firms, which suggests that foreign investors lead firms to enhance the quality of their disclosures.

local firms, domestic institutions might be less aggressive in pressuring the latter to disclose information that they are reluctant to share. Other considerations might also interfere with the desire to obtain more information, which explains that domestic institutions have a weaker influence on the frequency of forecasts revisions. Columns 2 and 3 analyze upward and downward revisions separately. The coefficients on foreign and domestic institutional are both positive, but weakly significant due to the greater contribution of the control variables. Nonetheless, the results corroborate the positive influence of foreign and domestic institutional investors. In contrast, bank and corporate ownership does not appear to influence the propensity to update management forecasts after controlling for other factors.

The control variables tend to display the anticipated effects on the frequency of voluntary forecasts revisions. Larger and low-leverage firms update their forecasts more often (columns 1-3). The effect of earnings volatility appears to be inconsequential on the frequency of all forecasts revisions. However, distinguishing the direction of the revision reveals that firms with more volatile earnings are less likely to revise their forecasts either upward or downward. While quite surprising, this behavior is consistent with Ajinkya et al. (2005). Interestingly, loss-making firms display extreme reluctance to update their management forecasts, and particularly to revise them downward. A similar behavior has been documented by Ajinkya et al. (2005), who find that loss-making firms are less likely to provide earnings forecasts and point forecasts. Firms with optimistic initial forecasts are also less likely to revise them during the fiscal year. However, this behavior is driven by their much lower propensity to revise their forecasts upward (column 2), which overwhelms their anticipated need to revise their forecasts downward (column 3).

To provide further evidence that firm disclosure behavior is related to ownership structure, we examine the tendency for firms to revise their forecasts between the end of fiscal year and their earnings announcements. These belated revisions are likely to reveal a tendency to withhold information from investors until the very last moment. In particular, earnings revisions that involve significant deviations from previous forecasts should have been disclosed earlier (and be counted as voluntary revisions) had firms been more forthcoming with their investors. Columns 4-6 present the logit regressions of last-minute revisions on the variables describing the firm's ownership structure. The dependent variable is a dummy indicating the occurrence of a last-minute mandatory revision.

The results in column 4 show that foreign investors are associated with a significantly lower incidence of last-minute mandatory revisions. This is aligned with the tendency for firms where aggregate foreign shareholding is high to disclose earnings revisions more frequently during the fiscal year, which preempts the need to make last-minute adjustments to their earnings forecasts.

Domestic institutional investors are also associated with a lower incidence of mandatory last-minute revisions, which is also consistent with their greater propensity to update investors in a timely manner. The effect is more significant for revisions to the downside. Consistent with hypothesis 2, the test of difference in the coefficients on foreign and domestic institutional ownership is positive and significant, indicating that foreign investors are more effective at ensuring that firms disclose material changes in their forecasts without waiting until the last moment.

In contrast, banks are associated with a significantly higher likelihood of last-minute mandatory revisions. This result can be seen for revisions on the upside and for revisions on the downside. The poor disclosure behavior of bank-affiliated firms is unsurprising. Since banks hold shares in firms to support their lending relationships and protect their clients from takeovers, their shares are not intended to be quickly sold. Hence, banks are not expected to benefit from better public disclosures. In a sense, their shareholdings are similar to equity holdings in private firms. Moreover, banks typically have access to detailed information regarding their clients in the course of their lending activities. This private information that is a characteristic of financial intermediaries does not need to be shared with other investors. In fact, better disclosures would reduce the cost of adverse selection and allow firms to access external funds at cheaper rates, notably through bond issuance, which is likely to reduce the rents that banks extract from affiliated firms (Weinstein and Yafeh, 1998). Accordingly, banks appear to be better off when firms limit the flow of information released to the market consistent with hypothesis 3. However, the revisions behavior of nonfinancial firms does not support hypothesis 4, which is associated with poorer disclosure practice.

Examination of the control variables reveals that they are often highly significant, particularly regarding revisions to the downside. Large firms are less likely to make mandatory revisions to their forecasts after the end of the fiscal year. This is consistent with their greater tendency to update investors in a timely manner. An explanation might be the greater resources available to larger firms and their more extensive coverage by financial analysts, which should compel them to make more timely disclosures. The result is consistent with Ajinkya et al. (2005) that larger firms tend to make better disclosures, except that our indicator of disclosure quality is the timeliness of forecasts revisions as opposed to the existence and precision of initial forecasts. In contrast, firms with higher debt ratios tend to make less timely disclosures. This result is congruent with the behavior of firms under significant bank ownership. Firms with more volatile earnings appear more likely to make last minute mandatory revisions possibly because of the greater tolerance of their investors. For different reasons, loss-making firms are more likely to issue last-minute earnings revisions. This provides another indication of the strong positive relationship between firm profitability and disclosure quality. Ajinkya et al. (2005) report similarly that loss-making firms are less likely to issue earnings

forecasts and, when it happens, these forecasts are less precise. Finally, initial bias in earnings forecasts is associated with a significantly lower propensity to revise these forecasts on the upside and a higher propensity to revise them on the downside. Hence, the initial bias does not seem to have been sufficiently corrected during the fiscal period, which leaves plenty to correct before the results announcement.

To obtain a better sense of the magnitude of the effect of ownership, we estimate their marginal effects. The explanatory variables (except the loss dummy) are standardized by demeaning and scaling each variable by its standard deviation. The dependent variable is either an indicator that the firm has made a voluntary revision to its initial forecast during the fiscal year (instead of the number of voluntary revisions) or an indicator that the firm has made a mandatory last-minute revision. Accordingly, the results in Table 8 represent the increase in the probability of making a (voluntary or mandatory) revision for a one standard deviation increase in any of the dependent variable (except the loss dummy where the coefficient indicates the difference in probability between loss-making and non-loss-making firms). Column 1 shows that a one standard deviation increase in foreign ownership is associated with a 2.9% increase in the probability of making a voluntary revision during the fiscal year. The effect for domestic institutional ownership is also positive but much weaker. In fact, the difference with foreign ownership is significant, consistent with hypothesis 2. The comparison of columns 2-3 reveals that the effect of foreign ownership is attributable to upward revisions. The other ownership variables appear to have little effect. The variables with the greatest impact are firm size, which increases the likelihood of a voluntary revision by almost 9%, followed by initial bias (-4.86%) and earnings volatility (-3.57%). In fact, the latter has a much larger impact when one considers the direction of the revision. A one standard deviation increase in the initial bias decreases the probability of an upward revision by more than 21% and increases the probability of an upward revision by more than 11%.

The examination of last-minute mandatory revisions tends to be more revealing about the disclosure behavior of Japanese firms. A one standard deviation increase in foreign ownership is associated with a 3% decrease in the probability of making a mandatory revision after the end of the fiscal year. For domestic institutional ownership, the decrease is less than 1% although it is concentrated in the reduction of downward revisions. The results suggest that both foreign and domestic institutional investors decrease the probability of last-minute mandatory revisions. However, the effect is weaker for domestic institutions. In contrast, bank ownership is associated with a greater probability of making a last-minute mandatory revision either to the upside or to the downside that is close to 1% for a one standard deviation increase in bank ownership. The difference with foreign ownership is highly significant, but less so with respect to domestic institutional ownership. The control variables

generally have the same effects as those regarding voluntary revisions, apart from their smaller magnitude. For instance, firm size and leverage have respectively a negative and position effect on the likelihood of a last-minute mandatory revision. Initial bias continues to decrease the probability of an upward revision and increase the probability of a downward revision. However, the probability increase is approximately a quarter of the one corresponding to voluntary revisions, which suggests that most of the revisions induced by a biased initial forecast occurs before the fiscal year-end. A final interesting observation is that the recognition of losses forces last-minute revisions, both to the upside and to the downside, which is the opposite of the effect seen on voluntary revisions.

5. Discussion and conclusion

In this paper, we investigate the relationship between a firm's ownership structure and the quality of its disclosures. Whereas US studies focus on the propensity to provide management forecasts, we examine the propensity to revise initial forecasts since these forecasts are effectively mandated in Japan. In addition, we investigate whether forecasts revisions are provided in a timely manner as opposed to being released just before the firm's annual earnings announcement with the aim of avoiding violation of legal requirements. The low litigation costs in Japan make firms more likely to adopt disclosure practices that are best suited to their interests or to those of their controlling shareholders.

Consistent with our hypotheses, we find that institutional investors are associated with better disclosures. More precisely, firms with larger foreign and domestic institutional ownership are more likely to provide frequent voluntary revisions to their forecasts. Furthermore, their forecasts revisions tend to be released in a timely manner. These results suggest that institutional investors are able to induce firms to adopt better disclosure practices or that they prefer to invest in firms that are more transparent. Either way, the better informational environment should help their portfolio allocation and trading decisions. In contrast, we find that banks are associated with less timely revisions. As long-term strategic investors, Japanese banks hold shares in client firms to cement lending relationships. These shares are not intended to be sold. Hence, timely updates hardly present any value for them. Moreover, banks already have access to private information through other channels (e.g., through lending and management interactions with the firm's executives), which preempts their need to receive public updates in the form of earnings forecasts revisions. While they also hold shares in suppliers to consolidate their extended business relationships and induce greater customization, nonfinancial firms do not appear to significantly alter the disclosure practice of their affiliates.

Overall, our study extends the prior finding of the influence of ownership structure on a firm's disclosure quality in a different context from the US setting using two different proxies for disclosure quality. Consistent with Ajinkya et al. (2005) and Karamanou and Vafeas (2005), we find that institutional ownership is associated with better disclosures. However, we are able to generate greater insight using Japan's unique context. Unlike in the US, Japanese banks and firms can hold substantial stakes in other listed firms. Because these stakes are strategic in nature, much like the shareholdings of private equity firms, the motivation of their owners differs from that of active investors. This may explain why Ajinkya et al. (2005) find that institutional ownership concentration is not associated with better disclosure while institutional ownership is. Our results are also in line with the observation by Chen et al. (2008) that family firms make fewer earnings forecasts.

Nevertheless, more work needs to be done to explain the differences in disclosure quality. For instance, our framework does not distinguish whether institutional investors cause firms to adopt better disclosure practices or whether they simply select firms with superior disclosure practices. Our investigation of forecasting bias does not fully explain how they are related to subsequent forecasts revisions. Another issue is whether voluntary revisions made before the fiscal year-end are equally informative as last-minute mandatory revisions. We leave these issues for future research. In any case, we concur with Verrecchia and Wang (2011) that the Japanese context offers significant opportunities to better understand why some firms adopt better disclosures than others and whether these disclosures (when they are made) are more informative compared to more opaque firms.

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Table 1. Sample statistics

	Mean	St-dev	Q1	Median	Q3
Panel A: Firm characteristics					
Assets (t-1) in ¥ million	260,807	1,080,036	17,983	43,878	128,397
Sales (t-1) in ¥ million	231,408	896,955	17,416	44,351	137,344
EBET (t-1) in ¥ million	11,506	55,250	516	1,772	6,155
ROA (t-1)	0.0468	0.0713	0.0206	0.0424	0.0733
Loss (t-1)	0.9413	0.2920	0	0	0
Debt ratio (t-1)	0.5167	0.2074	0.3618	0.5229	0.6717
Volatility (t-1)	0.0271	0.0277	0.0105	0.0188	0.0332
Panel B: Ownership variables					
Foreign (t-1)	0.0947	0.1112	0.0108	0.0513	0.1448
Institutional (t-1)	0.1271	0.1131	0.0290	0.1059	0.1983
Corporate (t-1)	0.2619	0.1773	0.1177	0.2314	0.3735
Bank (t-1)	0.0445	0.0490	0.0000	0.0318	0.0739
Insiders (t-1)	0.0699	0.1154	0.0026	0.014	0.0874
Panel C: Management forecasts and revisions					
Forecast bias	0.0040	0.0441	-0.0106	-0.0004	0.0129
Absolute forecast error	0.0211	0.0390	0.0046	0.0116	0.0250
Earnings surprise	0.0010	0.0121	-0.0001	0.0003	0.0035
Timely revision (dummy)	0.6988	0.4588	0	1	1
Voluntary revision (dummy)	0.4612	0.4985	0	0	1
---------- upward revision (dummy)	0.2716	0.4448	0	0	1
---------- downward revision (dummy)	0.2193	0.4140	0	0	0
Last-minute revision (dummy)	0.3261	0.4688	0	0	1
Mandatory last-minute revision (dummy)	0.1560	0.3629	0	0	0
---------- upward revision (dummy)	0.0936	0.2912	0	0	0
---------- downward revision (dummy)	0.0625	0.2420	0	0	0

Notes: ROA is EBET scaled by total assets. Loss indicates that EBET is negative. Debt ratio is total debt over total assets. Volatility is the coefficient of variation of EBET over the last 5-year period. Foreign (Institutional/ Corporate/ Bank/ Insiders) is the fraction of equity owned by foreign investors (domestic institutions/ nonfinancial firms/ Japanese banks/ management). Forecast bias is initial forecast of EBET less realized EBET, scaled by total assets. Absolute forecast error is the absolute value of forecast bias. Earnings surprise is realized EBET less the last forecast of EBET, scaled by total assets. Timely revision indicates that the firm has made a revision (update involving a change in EBET) during the fiscal year. Voluntary revision indicates the (timely) revision is within the 30% threshold that would otherwise require a mandatory revision. Last-minute revision indicates that the firm has made a revision between the end of fiscal year and the announcement of its annual results. Mandatory last-minute revision indicates that the last-minute revision involves a change that exceeds the 30% threshold that makes a revision mandatory.

Table 2. Forecast bias and earnings surprises

	Earnings surprise < 0		Earnings surprise ≥ 0		Total	
	N	%	N	%	N	%
Forecast bias < 0	1,309	5.1%	12,021	46.6%	13,330	51.7%
Forecast bias ≥ 0	5,366	20.8%	7,087	27.5%	12,453	48.3%
Total	6,675	25.9%	19,108	74.1%	25,783	100.0%

Notes: Forecast bias is initial forecast of EBET less realized EBET, scaled by total assets. Earnings surprise is realized EBET less the last forecast of EBET, scaled by total assets.

Table 3. Forecasts bias and forecasts revisions

	Forecast bias < 0	Forecast bias ≥ 0	Difference	z-value	
Proportion of firms with:					
Timely revisions	65.5%	74.6%	-9.1%	-15.88	***
Voluntary revisions	50.4%	41.6%	8.8%	14.22	***
---------- upward revisions	45.3%	7.7%	37.6%	67.87	***
---------- downward revisions	8.2%	36.7%	-28.6%	-55.38	***
Last-minute revisions	27.8%	37.8%	-10.0%	-17.11	***
Mandatory last-minute revisions	12.1%	19.4%	-7.3%	-16.04	***
---------- upward revisions	12.0%	6.6%	5.4%	14.85	***
---------- downward revisions	0.1%	12.8%	-12.6%	-41.91	***

Notes: Timely revision indicates that the firm has made a revision (update involving a change in EBET) during the fiscal year. Voluntary revision indicates the (timely) revision is within the 30% threshold that would otherwise require a mandatory revision. Last-minute revision indicates that the firm has made a revision between the end of fiscal year and the announcement of its annual results. Mandatory last-minute revision indicates that the last-minute revision involves a change that exceeds the 30% threshold that makes a revision mandatory. ***, **, * indicates significance at the 1%, 5% and 10% level respectively.

Table 4. Comparison of forecasts and revisions by ownership level

	Ownership				
	High	Low	Difference	t/z -value	
Foreign ownership (t-1)					
Forecast bias	0.0003	0.0077	-0.0074	-4.44	***
Absolute forecast error	0.0200	0.0222	-0.0022	-3.10	***
Earnings surprise	0.0017	0.0004	0.0013	5.53	***
Voluntary revision (dummy)	0.5486	0.3742	0.1744	19.11	***
Mandatory last-minute revision (dummy)	0.1024	0.2094	-0.1069	-17.16	***
Institutional ownership (t-1)					
Forecast bias	0.0007	0.0073	-0.0066	-8.45	***
Absolute forecast error	0.0160	0.0262	-0.0103	-12.97	***
Earnings surprise	0.0014	0.0007	0.0008	3.65	***
Voluntary revision (dummy)	0.4870	0.4355	0.0515	5.58	**
Mandatory last-minute revision (dummy)	0.1520	0.1601	-0.0081	-1.28	
Corporate ownership (t-1)					
Forecast bias	0.0026	0.0055	-0.0029	-4.15	***
Absolute forecast error	0.0192	0.0230	-0.0038	-5.24	***
Earnings surprise	0.0011	0.0010	0.0002	1.06	
Voluntary revision (dummy)	0.4478	0.4747	-0.0268	-2.77	***
Mandatory last-minute revision (dummy)	0.1626	0.1494	0.0132	2.01	**
Bank ownership (t-1)					
Forecast bias	0.0008	0.0073	-0.0065	-8.25	***
Absolute forecast error	0.0160	0.0262	-0.0103	-12.70	***
Earnings surprise	0.0014	0.0007	0.0008	3.60	***
Voluntary revision (dummy)	0.4926	0.4298	0.0628	6.47	***
Mandatory last-minute revision (dummy)	0.1534	0.1587	-0.0052	-0.79	

Notes: Foreign (Institutional/ Corporate/ Bank) ownership is the fraction of equity owned by foreign investors (domestic institutions/ nonfinancial firms/ Japanese banks). Forecast bias is initial forecast of EBET less realized EBET, scaled by total assets. Absolute forecast error is the absolute value of forecast bias. Earnings surprise is realized EBET less the last forecast of EBET, scaled by total assets. Voluntary revision indicates the (timely) revision is within the 30% threshold that would otherwise require a mandatory revision. Mandatory last-minute revision indicates that the firm has made a revision between the end of fiscal year and the announcement of its annual results involving a change that exceeds the 30% threshold that makes a revision mandatory. ***, **, * indicates significance at the 1%, 5% and 10% level respectively.

Table 5. Correlation between ownership and firm characteristics

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Firm size	[1]	1									
Debt ratio	[2]	0.1778*	1								
ROA	[3]	0.0834*	-0.2780*	1							
Loss	[4]	-0.1772*	0.0781*	-0.4956*	1						
Volatility	[5]	-0.3050*	-0.0861*	-0.1934*	0.3595*	1					
Insiders	[6]	-0.4161*	-0.0758*	0.1087*	0.0290*	0.1808*	1				
Foreign	[7]	0.5571*	-0.1689*	0.1928*	-0.0962*	0.0154	-0.1774*	1			
Institutional	[8]	0.2205*	0.1915*	-0.0669*	-0.0772*	-0.2418*	-0.2965*	-0.2655*	1		
Corporate	[9]	-0.1119*	0.0775*	-0.0335*	-0.0199*	-0.0800*	-0.2694*	-0.3204*	-0.1702*	1	
Bank	[10]	0.1940*	0.1240*	-0.0597*	-0.0644*	-0.2149*	-0.2770*	-0.0704*	0.6226*	-0.1398*	1

Notes: All the variables are measured at the beginning of the period (or, in the case of a flow variable, over the previous period). Firm size is the natural log of total assets. Debt ratio is total debt over total assets. ROA is EBET scaled by total assets. Loss indicates that EBET is negative. Volatility is the coefficient of variation of EBET over the last 5-year period. * indicates significance at 1% level.

Table 6. Regressions of initial forecast characteristics on ownership variables

	Bias	Bias ≥ 0	Bias < 0	Optimism	Absolute error
	(1)	(2)	(3)	(4)	(5)
Foreign (t-1)	0.0007	0.0040	-0.0059 **	-0.2495	0.0078 ***
	(0.18)	(0.86)	(-2.16)	(-1.17)	(2.60)
Institutional (t-1)	-0.0091 ***	-0.0134 ***	-0.0042 *	-0.4708 **	-0.0060 ***
	(-3.36)	(-3.54)	(-1.86)	(-2.28)	(-2.85)
Corporate (t-1)	-0.0074 ***	-0.0104 ***	-0.0040 ***	-0.3974 ***	-0.0042 ***
	(-4.31)	(-4.74)	(-2.96)	(-3.62)	(-3.14)
Bank (t-1)	-0.0091 **	-0.0213 ***	0.0048	-0.4188	-0.0204 ***
	(-2.17)	(-3.41)	(1.19)	(-1.11)	(-6.07)
Insiders (t-1)	0.0011	0.0053	-0.0034	0.1025	0.0069 **
	(0.29)	(1.22)	(-1.28)	(0.53)	(2.36)
Firm size (t-1)	-0.0012 ***	-0.0030 ***	0.0003 *	-0.0809 ***	-0.0023 ***
	(-4.93)	(-9.69)	(1.77)	(-5.77)	(-11.27)
Debt ratio (t-1)	0.0053 ***	0.0073 ***	0.0041 ***	0.3491 ***	0.0015
	(4.09)	(4.60)	(4.18)	(4.48)	(1.40)
ROA (t-1)	0.0011	0.0346 ***	-0.0207 ***	0.6483 *	0.0407 ***
	(0.15)	(4.01)	(-4.09)	(1.82)	(6.57)
ROA x Loss (t-1)	-0.0641 ***	-0.0862 ***	-0.0030	-2.0992 ***	-0.0841 ***
	(-4.12)	(-5.60)	(-0.30)	(-2.85)	(-7.16)
Volatility (t-1)	0.0933 ***	0.2046 ***	-0.0703 ***	2.0777 ***	0.2175 ***
	(5.51)	(11.76)	(-7.04)	(3.24)	(16.63)
Optimism (t-1)	0.0108 ***	0.0165 ***	0.0096 ***	0.8952 ***	0.0028 ***
	(26.34)	(28.25)	(26.42)	(29.45)	(9.58)
Intercept	0.0068 **	0.0123 ***	-0.0011	0.4290 **	0.0305 ***
	(2.40)	(3.19)	(-0.52)	(2.38)	(12.43)
F value | Wald chi^2	104.69 ***	55.38 ***	41.22 ***	2529.67 ***	67.90 ***
N observations	25,783	25,783	25,783	25,783	25,783

Notes: Bias is initial forecast of EBET less realized EBET, scaled by total assets. Absolute error is the absolute value of forecast bias. Optimism indicates that the initial forecast is positive. Foreign (Institutional/ Corporate/ Bank/ Insiders) is the fraction of equity owned by foreign investors (domestic institutions/ nonfinancial firms/ Japanese banks/ management). Firm size is the natural log of total assets. Debt ratio is total debt over total assets. ROA is EBET scaled by total assets. Loss indicates that EBET is negative. Volatility is the coefficient of variation of EBET over the last 5-year period. Optimism (t-1) indicates that the initial forecast bias (in the previous period) was positive. Model 1 is estimated using OLS regression. Model 2, 3, and 5 are estimated using tobit regression with lower (or upper) bound at 0. Model 4 is estimated using logistic regression. T-ratios (or z-ratios) between brackets are adjusted for clustering at the firm level. ***, **, * indicate significance at the 1%, 5% and 10% level respectively.

Table 7. Regressions of number of forecast revisions on ownership variables

	Voluntary revisions during fiscal year (months 1-12)			Mandatory revisions after fiscal year (months > 12)		
	All	Upward	Downward	All	Upward	Downward
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign (t-1)	0.6136 ***	0.4022 *	0.2973	-1.9044 ***	-1.9045 ***	-2.6157 ***
	(3.54)	(1.90)	(1.27)	(-4.53)	(-3.45)	(-4.27)
Institutional (t-1)	0.3991 ***	0.3045 *	0.4504 **	-0.5377 *	-0.1303	-1.3606 ***
	(2.74)	(1.67)	(2.12)	(-1.89)	(-0.36)	(-3.05)
Corporate (t-1)	0.1571 *	0.1434	0.0940	-0.1794	-0.3976 **	0.1102
	(1.79)	(1.32)	(0.77)	(-1.39)	(-2.25)	(0.58)
Bank (t-1)	-0.0166	0.1134	0.4138	1.2688 ***	1.4358 **	1.9732 **
	(-0.06)	(0.33)	(1.08)	(2.75)	(2.57)	(2.47)
Insiders (t-1)	-0.1260	-0.3764 *	-0.4279 *	-0.6218 **	-1.3147 ***	0.0101
	(-0.74)	(-1.72)	(-1.84)	(-2.59)	(-3.96)	(0.03)
Firm size (t-1)	0.1523 ***	0.1929 ***	0.1458 ***	-0.1915 ***	-0.1871 ***	-0.1289 ***
	(13.95)	(14.14)	(9.31)	(-8.05)	(-6.12)	(-3.68)
Debt ratio (t-1)	-0.5033 ***	-0.2935 ***	-0.6513 ***	0.5157 ***	0.4784 ***	0.6485 ***
	(-7.73)	(-3.64)	(-7.10)	(5.41)	(3.62)	(4.57)
Volatility (t-1)	-0.3164	-3.2981 ***	-5.8902 ***	-0.6341	0.0184	-6.1259 ***
	(-0.60)	(-4.94)	(-7.15)	(-0.96)	(0.02)	(-5.72)
Loss (t)	-0.3780 ***	-0.2777 ***	-0.8442 ***	0.9262 ***	0.6804 ***	1.2297 ***
	(-10.91)	(-5.19)	(-15.56)	(22.86)	(12.06)	(16.82)
Initial bias (t)	-6.1137 ***	-28.0871 ***	17.4293 ***	-0.8152	-15.7000 ***	14.4602 ***
	(-15.70)	(-45.58)	(33.64)	(-1.47)	(-20.06)	(17.94)
Intercept	-1.9748 ***	-3.3222 ***	-2.3152 ***	-0.1899	-1.0482 ***	-1.5428 ***
	(-14.21)	(-18.39)	(-12.22)	(-0.72)	(-3.08)	(-4.01)
Tests of difference (chi^2)						
Foreign - Institutional	3.70 *	0.44	0.78	12.97 ***	13.17 ***	4.76 *
Wald chi2 | F value	2862.84 ***	4086.77 ***	2807.58 ***	2127.73 ***	1649.35 ***	3083.87 ***
N observations	25,783	25,783	25,783	25,783	25,783	25,783

Notes: The dependent variables are the number of voluntary revisions during the fiscal year (columns 1-3) or a dummy indicating that a mandatory last-minute revision has been made after the fiscal year-end (columns 4-6). Foreign (Institutional/ Corporate/ Bank/ Insiders) is the fraction of equity owned by foreign investors (domestic institutions/ nonfinancial firms/ Japanese banks/ management). Firm size is the natural log of total assets. Debt ratio is total debt over total assets. Volatility is the coefficient of variation of EBET over the last 5-year period. Loss indicates that EBET (in the current period) is negative. Initial bias is initial forecast of EBET less realized EBET, scaled by total assets. Models 1-3 are estimated using Poisson regression. Models 4-6 are estimated using logistic regression. Z-ratios between brackets are adjusted for clustering at the firm level. ***, **, * indicate significance at the 1%, 5% and 10% level respectively.

Table 8. Marginal effects of explanatory variables

	Voluntary revision during fiscal year (months 1-12)			Mandatory revision after fiscal year (months > 12)		
	All	Upward	Down	All	Upward	Down
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign (t-1)	0.0290 ***	0.0169 ***	0.0061	-0.0301 ***	-0.0198 ***	-0.0165 ***
Institutional (t-1)	0.0123 *	0.0042	0.0066	-0.0098 **	-0.0018	-0.0093 ***
Corporate (t-1)	0.0071	0.0067	0.0034	-0.0054	-0.0071 **	0.0007
Bank (t-1)	-0.0016	0.0000	0.0056	0.0094 **	0.0065 **	0.0050 **
Insiders (t-1)	-0.0012	-0.0045	-0.0046	-0.0100 ***	-0.0124 ***	-0.0009
Firm size (t-1)	0.0898 ***	0.0657 ***	0.0446 ***	-0.0475 ***	-0.0277 ***	-0.0139 ***
Debt ratio (t-1)	-0.0357 ***	-0.0151 ***	-0.0265 ***	0.0180 ***	0.0094 ***	0.0091 ***
Volatility (t-1)	-0.0059	-0.0157 ***	-0.0311 ***	-0.0019	0.0010	-0.0111 ***
Loss (t)	-0.1296 ***	-0.0302 ***	-0.1695 ***	0.1512 ***	0.0671 ***	0.0676 ***
Initial bias (t)	-0.0486 ***	-0.2109 ***	0.1134 ***	-0.0029	-0.0461 ***	0.0312 ***
Tests of difference						
Foreign - Institutional	6.87 ***	7.44 ***	0.01	11.28 ***	13.40 ***	3.72 *
Foreign - Bank	11.33 ***	5.89 **	0.01	24.55 ***	16.83 ***	19.43 ***
Institutional - Bank	1.89	0.31	0.02	6.62 **	2.13	9.63 ***

Notes: The dependent variables are two dummy variables indicating either the occurrence of a voluntary revision during the fiscal year or the occurrence of a mandatory last-minute revision after the fiscal year-end. All the explanatory variables, except loss, are standardized by demeaning and scaling by their standard deviations. Foreign (Institutional/ Corporate/ Bank/ Insiders) is the fraction of equity owned by foreign investors (domestic institutions/ nonfinancial firms/ Japanese banks/ Management). Firm size is the natural log of total assets. Debt ratio is total debt over total assets. Volatility is the coefficient of variation of EBET over the last 5-year period. Loss indicates that EBET (in the current period) is negative. Initial bias is initial forecast of EBET less realized EBET, scaled by total assets. The models are estimated using logistic regression. Standard errors are adjusted for clustering at the firm level. ***, **, * indicate significance at the 1%, 5% and 10% level respectively.