

The role of banks in Japan: Information-sharing or information-monopolizing?

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October 2004

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Abstract

In this paper, we examine the issue of whether the Japanese bank system is the information-sharing mechanism with the capital market or the information-monopolizing mechanism. We argue that main banks emphasize the information-sharing role from large shareholders' viewpoint while other banks stress the information-monopolizing role. Consistent with these conjectures, this study presents evidence that analyst forecast error is low when large shareholder ownership, main bank ownership, and main bank loan are high while analyst forecast error is high when other bank loan is high. In addition, analyst following is negatively associated with other bank loan and large shareholder ownership but positively related to main bank loan and foreign equity ownership. We interpret these results to mean that Japanese main banks are information-sharing mechanism while other banks are information monopolizing. Consequently, security analysts follow firms with high main bank loan and high foreign equity ownership while they shun away from firms with high other bank loan and high ownership of other institutions.

Keywords; main bank; information production; analyst following; forecast error

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1. Introduction

The central aim of this paper is to examine whether the Japanese bank system is the information-sharing mechanism with the capital market or the information-monopolizing mechanism. While the information production is important in price formation, empirical evidence on this issue for banks is rare. We address this issue by concurrently scrutinizing the information providing role of banks and security analysts. We believe that an analysis of factors that drive analyst activity can be useful to investigate the impact of bank information production on the capital market given the established links between capital market development and the overall development of economies (Levine and Zevos, 1998; Rajan and Zingales, 1998).¹

The Japanese bank literature generally suggests that banks resolve incentive problems between borrowers and lenders, provide monitoring service, and reduce information asymmetry (Hoshi, Kashyap, and Scharfstein, 1990a & 1991; Kang and Shivdasani, 1996; Kang and Stulz, 2000). While the bank-client firm side is extensively documented, the bank-capital market side, i.e., the impact of bank information production on Japanese capital market, is largely unexplored.

Recent financial crises in Asia and other emerging markets have highlighted the critical role of other information providers such as security analysts play in the functioning of capital markets. The literature on security analysts suggest that analysts play an important role as information intermediaries between the firm and the market (Chung and Jo, 1996; Wormack, 1996; Lang, Lins, and Miller, 2003). However, security analysis is a costly activity whose social benefits and costs remain less understood in Japan.

¹Thousands of security analysts from investment companies and independent research services follow a large population of firms. Analysts routinely collect and process an enormous amount of information from corporate insiders/managers and, subsequently, disseminate this information to current and prospective investors. Indeed, many investors, both individual and institutional, rely on the information (e.g., corporate earnings forecasts and industry analysis) provided by financial analysts when making their investment decisions.

Banks reduce the cost of monitoring and resolve incentive problems between borrowers and lenders (Diamond, 1984 & 1991). According to this traditional view, the close bank-firm relationship is important because their ties help monitor firm performance and enhance information production, which in turn improve firm access to capital and investment potential. However, if banks extract economic rents from the client firms through information monopolizing, they reduce firms' incentive to pursue new and profitable projects (Rajan, 1992; Weinstein and Yafeh, 1998). In addition, if banks are entrenched with the client firm, banks can impede economic growth (Kang and Stulz, 2000; Matsuura, Pollitt, Takada, and Tanaka, 2003). Butler (2004) suggests that if banks focus too much on loan repayment, then they will favor conservative investments and may forego riskier, possibly positive-NPV projects.

In Japan, bank system provides a unique institutional arrangement. In particular, Japanese main banks provide both bank loans and equity and also have close long-term working relationship with the client firms through bank loans, bank equity holding, and some bank-appointed personnel. There is a long tradition of regarding the close bank-firm relationship in Japan as a means of resolving information asymmetry between lenders and borrowers as well as of mitigating agency problems of managerial behavior (Hoshi, Kashyap, and Scharfstein, 1990a & 1990b; Prowse, 1990 & 1992; Aoki, Patrick, and Sheard, 1994; Hoshi, Kashyap, and Loveman, 1994; Kang, Shivdasani, and Yamada, 2000).

Others cast some doubt on the magnitude of the benefits from close ties between finance and industry largely because main banks are able to extract economic rents from their client firms so as to offset any benefits they may have over other firms (Weinstein and Yafeh, 1998; Kang and Stulz, 2000; Matsuura, Pollitt, Takada, and Tanaka, 2003). In particular, the prolonged economic difficulties in Japan have led some researchers to conclude that the information-generating role of main banks is unusually susceptible to economic shocks (Kang and Stulz, 2000). Similarly, Gibson (1995) and Bae, Kang, and Lim (2002) indicate that when a bank suffers from a decreased ability to lend to a borrower, the client firm is adversely affected.

To determine the relative importance between the two competing views, information sharing vs. information monopolizing, we examine the relationship between forecast accuracy and analyst following.

Our empirical results indicate that analyst forecast error is negatively (positively) related to main bank loan (other bank loan) while analyst forecast error is negatively associated with bank ownership and institutional ownership. The negative relation between institutional ownership and forecast error is consistent with the finding of Ajinkya, Bhojraj, and Sengupta (2003) and Igan and Pinheiro (2004) for U.S. firms. Contrary to the finding of Ajinkya, Bhojraj, and Sengupta (2003) for U.S. firms, we find larger forecast error is associated with higher analyst following. However, the positive relationship between forecast error and analyst following disappears when we measure firm size with total assets instead of market value of equity. This is primarily because analyst following is significantly and positively related with the market value of equity.

Our results suggest that the number of analysts following the firm is negatively associated with institutional ownership while analyst following is positively (negatively) related to main bank loan (other bank loan). Evidence suggests that security analysts tend to follow firms with high main bank loan, but do not follow firms with high other bank loan. We interpret this evidence to mean that the main bank system is an information sharing device while other banks do monopolize their information. It seems that bank loans of main banks along with concentrated ownership enhance information channeling between the inner circles of main banks and capital markets.

This paper is different from previous literature in two perspectives. First, we attempt to shed lights on the main bank-capital market side of information costs. To our knowledge, this is the first study that addresses the relationship between the information production role of banks and the role of security analysts. This paper contributes to the banking literature by providing an additional dimension to the array of bank's role of information production. Second, we aim to determine the relative importance between the two competing views of information-sharing vs. information-monopolizing role in Japanese banks that provide an exceptionally ideal laboratory due to their institutional arrangement of main bank system.

The paper is organized as follows. Section 2 describes our predictions on the relationship between forecast accuracy and analyst following. Section 3 describes the data and measurement. Section 4 presents the empirical results and Section 5 concludes.

2. The information production role of Japanese banks

2.1. Bank system and information production

The information sharing is particularly important in Japan because the audit and analyst functions are relatively weak (McKinnon, 1988; Mande and Kwak, 1996). The main banks have a relative advantage in accessing inside information on the firm because they offer bank loans and are shareholders, and therefore, have better access to high quality information. In general, superior information is available to the main bank that is not easily available to general investors and the capital market other than at high costs (Takagi, 1993). This information-accessing advantage of the main bank system comes from the close information-sharing relationship that exists between the bank and the firm. Thus, the bank system can be viewed as a complement to information production agencies such as security analysts. To the extent that this information-sharing relationship penetrates into capital markets through security analysts, main banks can be viewed as an information-sharing channel.

Alternatively, the bank system can be viewed as a substitute for information-generating and monitoring agencies such as security analysts as well as bond-rating institutions (Sheard, 1989). In particular, the information production is implemented only through information clubs in which such clubs serve the information needs of insiders but exclude outsiders (Cooke, 1996). The information exchange is based on trust in which cooperation is achieved by a coalition of self-interested individuals under implicit threats of expulsion (Berglof and Perotti, 1996). If information is only disseminated within closely tied club members but specifically exclude others, banks can be viewed as an information-monopolizing mechanism. This view is consistent with Ball, Kothari, and Robin (1998) who argue that when ownership

is concentrated, information is likely to be communicated through private channels, decreasing the role of security analysts.

2.2. Analyst forecast error and the information-generating role of main banks

Previous literature generally documents three types of benefits associated with close working ties with main banks. Because of their informational advantage over financial markets, the benefits from close working ties can provide implications toward information generation process. First, main banks have often been described as a mechanism of monitoring managers and a solution to principal-agent problems (Sheard, 1989; Prowse, 1992; Kang and Shivdasani, 1995 & 1996; Kang and Stulz, 2000). For many firms in Japan, bank loans have long been an important source of financing based upon close bank-firm ties. It is well known that a debt contract is monitored by banks while bank loan provides a delegated monitoring role to alleviate moral hazard (Diamond, 1984 & 1991). In addition, regarding the monitoring role of bank ownership, Kang and Shivdasani (1995) indicate that the monitoring role of main banks with concentrated ownership has a positive effect on a company's performance and value. Kang and Shivdasani (1996) suggest that the main bank takes the initiative in replacing the management of poorly performing keiretsu members. Turnover in the ranks of the firm's top executive tends to be greater in bank-dominated keiretsu than in keiretsu that do not include a main bank. Announcements of top executive turnover often increase share price, particularly when turnover is forced because of a performance decline or when the successor is appointed from outside the firm.

These findings suggest that main banks play an important role for a corporate governance system to successfully deal with nonperforming managers and to resolve the agency problems that exist between managers and other stakeholders in the firm. Kang and Stulz (2000) find that capital markets react more positively to mergers by firms that are affiliated with industrial groups and have close working ties with the group banks than mergers by independent firms as the markets expect better monitoring by main banks. This literature suggests that main banks assume the role of monitoring firms to which banks provide capital through their bank loans as well as concentrated ownership.

Second type of benefits comes from the role of main banks that mitigates problems of asymmetric information between lenders and borrowers, and thus facilitates access to capital for firms with close ties to a bank. Hoshi, Kashyap, and Scharfstein (1990a, 1991) show that firms with a close ties to a main bank are less liquidity constrained than other firms in their investment decisions. Jacobson and Aaker (1993) argue that the banks with a close ties with the firms reduce information asymmetry between lenders and borrowers. Similarly, Peterson and Rajan (1994) demonstrate that close ties increase the availability of capital but do not significantly reduce its cost.

Third type of benefits is from the role of main banks when client firms are in financial distress. Miyashita and Russell (1994) find that when a firm gets into financial difficulties, the main bank accepts the risk of bankruptcy and bails out the ailing corporation. Hoshi, Kashyap, and Scharfstein (1990b) and Kaplan and Minton (1994) find that those with a main bank have been protected and been able to recover their earnings better than non-main bank companies. From their dual role as creditors and shareholders, main banks are able to gather valuable information through their close monitoring, reduced information asymmetry, and reduced costs of financial distress. If main banks share superior information obtained from the client firms with outside security analysts, then we expect to observe the negative relationship between forecast error and main bank loans and/or ownership because analysts analyze and provide accurate forecasts based upon superior information.

However, previous literature also documents two types of costs associated with close working ties with main banks. First type of costs is from the rent-seeking behavior of main banks. Weinstein and Yafeh (1998) argue that banks are able to extract rents from their client firms so as to offset any gains they may have over other firms. This suggests that most of the benefits from the close ties are appropriated by the banks, yielding the higher cost of capital of firms with close bank ties than that of their peers.

Second type of costs is from a myopic behavior of main bank due to their bank loans. Morck and Nakamura (1999) find that Japanese banks act primarily in the short term interests of creditors when dealing with firms outside bank groups. Kaplan (1994) provides evidence that Japanese managers may

also be strongly motivated to improve the short-term performance of the firms they manage. Kang and Shivdasani (1995) suggest that the board of a typical large firm listed on the Tokyo Stock Exchange has 23 board members but only one outsider. It is rare for a member of the supervisory board to come from a group other than management, the main bank, or a closely affiliated firm. An inner circle of inside managers, their bankers, and their major business partners thus dominate governance of large Japanese corporations. To the extent that main banks monopolize information within the inner circle and exclude outside security analysts because of their incentive to be shortsighted in order to protect their bank loans, we expect to observe a positive relationship between forecast error and bank loans because main banks do not provide superior information to outside security analysts.

While bank's information sharing through enhanced monitoring, reduced information asymmetry and reduced costs of financial distress predicts the negative relationship between analyst forecast error and bank loan and/or ownership, bank's rent extraction from information monopoly and short term myopic behavior predicts the positive relationship between analyst forecast error and bank loan or bank ownership. Hence, we expect that if information sharing (monopolizing) dominates information monopolizing (sharing), then we will observe a negative (positive) relationship between analyst forecast error and bank loan or bank ownership.

On the other hand, close bank-firm ties can create conflicts of interest because creditors' interests often differ from those of shareholders (Morck, Nakamura, and Shivdasani, 2000). As banks' stakes as creditors are typically substantial, banks have a natural objective to protect their loans and take the short-term myopic behavior to monopolize relevant information. As a result, banks will not share superior information to outside security analysts if information sharing increases the probability of loan default.

In addition, if banks become too entrenched with the client firm, banks can impede economic growth. If banks extract economic rents from the client firms through information monopolizing, they reduce the incentive for firms to pursue new and profitable projects. Butler (2004) suggests that if banks focus too much on loan repayment, then they will favor conservative investments and may forego riskier, possibly positive-NPV projects. Thus, conflicts of interest exist even within banks to determine whether

to share information or to monopolize information depending upon their focus on equity vs. loan. In this environment, we predict a positive relationship between bank loan and forecast error.

2.3. Analyst following, analyst forecast error, and the role of main banks

The other side of the empirical relationship is the association between analyst following, forecast error, and bank related variables. We use the number of analyst following a firm (NAF) to proxy the information available to the capital market. The first issue is the relationship between NAF and forecast accuracy. Security analysts can affect firm value from two significant roles they play. The first is to reduce the information asymmetries between managers and investors by increasing investor cognizance or attention of a firm's securities (Brennan and Hughes, 1991; Chung and Jo, 1996; Wormack, 1996). The activities of analysts that relate to the quality and amount of information available about a firm can affect the nature of information asymmetry between the firm's managers and shareholders. The second is to serve as an external monitor of managerial activity (Chung and Jo, 1996). Because security analysts have access to specialized resources and knowledge for analyzing corporate earnings and financial data, they have a comparative advantage in monitoring. The analysts' monitoring role can mitigate the level of agency conflicts between the firm's management and investors. If information intermediaries such as security analysts are effective in performing the above two functions, greater analyst following will induce lower forecast error.

If bank shares superior information with analysts based upon the view that analysts are complementary in information production with banks, then we expect a negative relation between analyst forecast error and NAF. However, if bank is monopolizing information based upon the view that security analysts are competing against banks in terms of information production and monitoring firm performance, we expect a positive relationship between forecast error and NAF.

The next issue is the relationship between bank loan and NAF. If bank is sharing the relevant information with security analysts, then we expect a positive relationship between bank loan and NAF.

However, if bank is monopolizing information for the rent extraction, then we expect a negative relationship between bank loan and NAF.

The last issue is the relationship between bank ownership and NAF. We can infer the relevant relationship based upon the extant literature of large shareholders. According to Shleifer and Vishny (1986), large shareholders have an incentive to monitor the current management because they receive a part of the improved value. If analyst's information production complements factors that monitor the management, then higher bank ownership will induce higher analyst following. Conversely, if analyst following substitutes for the monitoring activities, then higher bank ownership will bring lower analyst following.

3. Data and measurement

3.1. Sample selection and description

The sample of Japanese companies comes from the database compiled by the Pacific-Basin Capital (PACAP) Markets Research Center at the University of Rhode Island. We choose the sample period of 1988-1999. We delete financial institutions and public utilities from the sample to avoid the confounding effects of regulation. In addition, we require that the firm be included on the international Institutional Brokers Estimate System (*I/B/E/S*) tape so that the number of analysts who follow a particular firm can be obtained. We also take the market value of equity, share price, and leverage variables from the PACAP database. We obtain data on ownership structure and bank loan from annual issues of *Kigyō Keiretsu Soran* and the *Daiwa Analyst Guide*. Data on keiretsu membership is obtained from the 2000 edition of *Industrial Groupings in Japan*.

We obtain analyst activity data from the *I/B/E/S* database. We use the data in the eleventh month of the fiscal year-end, since this is when analyst following tends to level off (O'Brien and Bhusan, 1990). From these data, we calculate the number of analysts following a firm, which we use as our measure of the extent of analyst activity. Analyst forecast error is measured by the absolute value of the difference between actual

earnings per share and mean forecast earnings per share divided by the price at the beginning of the fiscal period. We restrict our sample to non-financial and non-utility companies because the nature of analyst activity for financial and utility firms differs from industrial firms.

3.2. *Descriptive statistics*

We begin our analysis with descriptive statistics of analyst activity for Japanese firms. Table 1 report the sample statistics and data characteristics for these firms: the average market capitalization of the sample firms, average number of analysts following the firm, average forecast error, average dispersion of analysts' forecasts defined as standard deviation of forecast divided by absolute value of mean forecast (*coeffvar*), average bank loan (including average main bank loan and other bank loan), equity ownership by the 10 largest shareholders (top 10 ownership) including main bank ownership and non-main bank ownership, equity ownership by foreign investors (*for*), debt ratio of total debt divided by total assets (*leverage*), fixed asset ratio defined as fixed assets divided by total assets (*fassetratio*), total number of shares traded in the past twelve months ending the month indicated by fiscal year divided by total shares outstanding (*turnover*), and the number of firms sampled.

For each variable, we provide the mean, standard deviation, and selected percentile values during the study period. The table shows that, on average, our sample of firms is followed by 4.3 analysts. The average number of analyst following in Japan seems substantially smaller than that of U.S. firms because Chung and Jo (1996) report the average number of analyst following is 16.8 during their sample period of 1984-1987 and Ajinkya, Bhojraj, and Sengupta (2003) suggest the average NAF is 9.5 during the period of 1997-2000.² The median NAF in Japan is 3 while the median NAF in U.S. is 15 and 8 in Chung and Jo and Ajinkya, Bhojraj, and Sengupta, respectively.

² However, the dispersion of analysts' forecast is not much different between Japan (0.48 in our sample) and U.S. (0.43 in Chung and Jo, 1996).

4. Empirical results

4.1. Bivariate relations

We first consider the bivariate relationship between analyst forecast error and analyst following. The bivariate correlation coefficients between analyst forecast error and analyst following reported in Table 2 are generally significant and negative. The negative relationship between analyst forecast error and analyst following does not change with correlation coefficients based upon either Pearson or Spearman correlation. These findings are consistent with the information sharing explanation. In addition, similar to the U.S. case of Chung and Jo (1996), we find a significantly positive relationship between the number of analysts following and firm size measured by the market value of equity.

4.2. Regression results of analyst forecast error

First, we employ the ordinary least squares (OLS) regression to estimate the forecast model as follows.

$$\begin{aligned} \text{Absdiff} = & a + b_1 * \text{NAF} + b_2 * \text{mainbankloan} + b_3 * \text{otherbankloan} + b_4 * \text{mainbankownership} + \\ & b_5 * \text{nonmainbankownership} + b_6 * \text{foreignownership} + b_7 * \text{leverage} + b_8 * \text{logmv} + \\ & b_9 * \text{kdum} + b_{10} * \text{fassetratio} + b_{11} * \text{beta} + b_{12} * \text{stdresid} + b_{13} * \text{turnover} + e, \end{aligned} \quad (1)$$

where Absdiff is an absolute value of the difference between actual earnings per share (EPS) and mean forecast earnings per share divided by beginning price and other variables are defined in Appendix 1.

Table 3 presents the results of OLS regressions. The regression results show that the included variables account around 7-10% of variation in analyst forecast error. As anticipated by the information monopolizing explanation, there is a significant and positive relationship between analyst forecast error and bank loan. The results show that main bank loan yields a significant, positive impact on forecast error. However, when we decompose bank loan into main bank loan and other bank loan, we find an insignificant relationship between the coefficient of main bank loan and analyst forecast error and positive

relationship between the coefficient of other bank loan and analyst forecast error. The results indicate that a positive relationship between bank loan and forecast error is mostly due to other banks rather than main banks. Other banks tend to monopolize information regarding their loan while main banks do not monopolize their information with security analysts like other banks. Thus, conflicts of interest problem is more serious in other banks than in main banks.

Regarding the impact of large shareholders on firm value, previous literature emphasizes their role of monitoring. Shleifer and Vishny (1986) suggest that the large shareholders have an incentive to monitor the current management because they receive a part of the improved value and enjoy greater voting power that makes it easier to take corrected actions when deemed necessary. Hartzell and Starks (2003) also indicate that institutional investors perform a monitoring function. Similarly, concentrated ownership of large shareholders provides a strong incentive to monitor managerial performance. Corporate management is easily monitored by large shareholders in Japan than by a dispersed ownership as in the U.S. As concentrated stockholders, large shareholders have a goal to facilitate the increase of firm value in the long term by sharing information with capital markets. As a result, large shareholders make banks share inside information with financial analysts if information sharing helps build the equity value of the client firms. In such a case, we predict the negative relationship between large shareholder ownership and forecast error.

As expected by the information sharing prediction, however, regardless of various model specifications, the coefficients of main bank ownership, other bank ownership, and non-bank large shareholder ownership are significantly negative in the regression of analyst forecast error. Results suggest that banks provide superior information to security analysts such that analyst forecast error is low when bank ownership is high. A negative relationship between forecast error and bank (and large shareholder) ownership is also consistent with the view that banks and large shareholder are effective monitors of top management, and accordingly, the client firms provide valuable information of economic earnings. The presence of a credible monitoring mechanism by institutions and banks and their

continuous oversight of the management have a favorable impact on the accuracy of forecasts issued. This evidence supports the monitoring argument of Shleifer and Vishny (1986) and Hartzell and Starks (2003).

Our results reveal that in spite of a significantly negative correlation between analyst forecast error and the number of analysts following the firm, the relationship between forecast error and analyst following is significantly positive after controlling for other confounding factors. The results indicate that the higher the number of analysts following the firm, the greater the forecast error. This finding is in sharp contrast with the negative relationship between NAF and forecast error in U.S. (Ajinkya, Bhojraj, and Sengupta, 2003) and insignificant relationship between the two for 47 countries on average (Chang, Khanna, and Palepu, 2000). We should be cautious in interpreting the results. The results may be either due to a relatively small number of analysts following the firm in Japan or slower earnings forecast adjustment of analysts. Alternatively, it is also possible that Japanese banks simply do not share superior information with security analysts. In addition, previous studies regarding Japanese analysts' earnings forecasts suggest that they display an optimistic bias. Mande and Kwak (1996) show that Japanese analysts make more optimistic forecasts relative to U.S. analysts following the same Japanese firms. Together, it is plausible that Japanese analysts yield imperfect or optimistic earnings forecasts.

Our results reveal that the empirical association between analyst forecast error and firm size is significantly negative. This result supports the premise of Bhushan (1989) that analysts may not always be well informed regarding economic earnings for small firms. Results are also consistent with the premise of Anthony and Ramesh (1992) that small firms tend to be less stable and reside in less mature industries, making their earnings more difficult to predict.

4.3. Regression results of analyst following

While previous literature document that analyst following is positively related to firm size, it is an open empirical question regarding what the relationship among analyst following, bank loan, and bank ownership would be when firm size and other variables are controlled for. We measure analyst following

using the number of analysts following the firm (NAF) and employ OLS regression of analyst following as follows.

$$\begin{aligned} \text{NAF} = & a + b_1 * \text{Absdiff} + b_2 * \text{mainbankloan} + b_3 * \text{otherbankloan} + b_4 * \text{mainbankownership} \\ & + b_5 * \text{nonmainbankownership} + b_6 * \text{foignownership} + b_7 * \text{leverage} + b_8 * \text{logmv} + \\ & b_9 * \text{k dum} + b_{10} * \text{fassetratio} + b_9 * \text{Tobinsq} + b_{10} * \text{turnover} + e \end{aligned} \quad (2)$$

where NAF is the number of analysts following the firm and other variables are defined as in Appendix 1.

Regression results are reported in Table 4. The regression results show that the included variables account around 61-63% of variation in analyst following. Results suggest that bank loan and large shareholder ownership are negatively associated with NAF. However, when we decompose bank loan into main bank loan and other bank loan, main bank loan is positively related to NAF while other bank loan is negatively associated with NAF. Analysts avoid to analyze firms with high other bank loan. Presumably, security analysts tend to rely upon firms with more main bank loan. The coefficients of main bank ownership, other bank ownership, and non-bank ownership are significantly negative in the regression of analyst following. The results suggest that because both main banks and non-bank large shareholders are able to monitor the top management effectively, security analysts do not need to provide additional monitoring, and therefore, shun away from main banks and non-bank large shareholders. In this situation, security analysts are closer to a substitute of information production rather than a complement for information generation.

4.4. *Two-stage least square estimation of analyst forecast error and analyst following*

To examine the relationship between the accuracy of analyst activity and analyst following, we also consider their potential endogenous nature. O'Brien (1999) suggests that security analysts make decisions about which firms to follow based on the accuracy of information available for various firms while forecast accuracy depends on the amount of information produced about the firm, and the two are not cleanly distinguishable. Alford and Berger (1999) and Chang, Khanna, and Palepu (2000) suggest that

forecast accuracy and analysts following are determined simultaneously, with greater accuracy associated with higher analyst following.

In general, we expect that higher analyst following increase transparency and investor awareness. Analyst forecast error is likely to be lower for firms with more analysts following because larger number of security analysts tends to provide more accurate analyst earnings forecasts. While previous discussion suggests that greater analyst following reduces the potential of forecast error, it is also possible that larger forecast error induces lower analyst following. Indeed financial analysts are likely to determine earnings forecast and stock recommendation simultaneously.

However, as recent accounting scandals indicate, these intermediaries face their own conflicts of interest and questionable performance. In particular, Lin and McNichols (1998) and Dechow, Hutton, and Sloan (2000) suggest that analysts affiliated with investment banks underwriting equity issues tend to make higher growth forecasts than do unaffiliated analysts, and subsequently have larger forecast errors. When security analysts are employed in brokerage houses or in investment banks that have a long-term relationship with main banks, they tend to recommend the stocks for marketing purposes rather than based upon valuation analysis (Chung and Jo, 1996). As a result, analyst forecast error may increase if more analysts emphasize their marketing role as opposed to their monitoring role.

Table 5 reports the results of association between analyst forecast error and analyst following based on the estimation of the two stage least squares (2SLS) regressions. The 2SLS regression results show that the included variables jointly account for about 6% and 62% of variation in analyst forecast error and analyst following respectively. As observed in the OLS regression results, there is a significant and positive relationship between analyst forecast error and bank debt. The results show that bank loan yields a significant, positive impact on forecast error. However, the positive relationship between the two stems largely from the other bank loan. When we decompose total bank loan into main bank loan and the other bank loan, we find a significant and negative association between forecast error and main bank loan while the positive relationship between forecast error and the other bank loan still remains. The main bank results provide empirical support for our

prediction of the information sharing explanation for main banks while the results of the other banks provide support for the information monopoly explanation.

Consistent with the OLS regression results, we find a negative association between analyst following and bank debt, a positive relationship between analyst following and main bank loan, and a negative relationship between analyst following and the other bank loan. These results support the complementary monitoring argument that financial analysts follow the firms with more main bank loans because main bank can monitor more effectively the firms in which they extend their loans. However, the opposite results for the other bank loans imply that the other banks do monopolize information such that security analysts are not confident to analyze the firms with high other bank loans due to the lack of relevant information. Similar to the OLS regression results, we find a significant, positive relationship between analyst following and equity ownership by foreign ownership. The results suggest that foreign investors are effective monitors of firm performance, supporting the earlier finding of Kang and Stulz (2000).

Consistent with previous studies, we also find that analyst following and size, i.e., market value of equity, are strongly and positively correlated (Bhushan, 1989; Brennan and Hughes, 1991; Chung and Jo, 1996). However, the rationale offered for the relationship between size and analyst following is incomplete, which suggests that size may proxy for other variables. Bhushan (1989) suggests that size proxies for liquidity. He notes that a trade, which might be considered as a liquidity-motivated trade if it consists of shares of a large company, could be identified as information-motivated if it consists of an equal dollar amount of shares of a small company. However, size is hardly the best proxy for liquidity; the bid-ask spread, volume of trades, or the volume of trades relative to shares outstanding are all better choices.

We clearly do not have a complete understanding of the positive relationship between analyst following and firm size. We propose that the market value of equity (MVE) could be related to analyst following because more information is available in larger firms, and therefore, it is easier for analysts to collect and analyze larger firms. Although previous studies offer the "cost of information acquisition" or "liquidity issues" as possible explanations for high correlations between analyst following and firm size,

we offer an alternative behavioral interpretation of the results. Consider a capital market in which information is neither costless nor spontaneously available to all market participants. Merton (1987) suggests that, in such a capital market, an investor is likely to use a security in constructing her optimal portfolio only if the investor knows about the security. Merton invokes this behavioral assumption based on the observation that the portfolios held by actual investors (both individual and institutional) contain only a small fraction of the thousands of traded securities available.

In a similar line of reasoning, Odean (1999) and Barber and Odean (2002) examine the idea that buying decisions of individual investors are driven by attention more than are selling decisions because investors typically buy only a few numbers of stocks that have trapped their attention. Barber and Odean (2002) create portfolios of attention grabbing stocks using a number of criteria: stocks with abnormally high trading volume, stocks with abnormally high or low returns, and stocks with news announcements. They find that regardless of criteria, individual investors are more likely to be buyers of these high-attention stocks than sellers.

Given such an investor behavior, it would be reasonable to expect that brokers' jobs are easier when they promote stocks that have a broader investor cognizance or a high level of attention. Since the breadth of investor cognizance or the magnitude of attention are likely to be greater for stocks of larger companies, we would expect that analysts help marketing efforts of brokers by following large companies. Viewed from this perspective, the positive correlation between analyst following and firm size can be understood in the context of behavioral argument of analyst.

4.5. *Which is more important? Bank loan vs. bank ownership*

This section examines whether bank loan is more important than the bank ownership in determining analyst forecast error or the activities of analysts. Table 6 presents the results of a dummy variable approach. When we investigate the impact of other bank (main bank) debt on forecast error with other bank (main bank) equity ownership is less than the median level of equity ownership, we find a significant, positive (insignificant) effect of other bank (main bank) loan on forecast error. When we control for the bank loan side, the influence of

bank equity ownership is insignificant. These results suggest that the effect of bank loan is almost the same with that of bank equity ownership except that of other bank loan. The positive significance of other bank loan suggests an information-monopoly role of other banks.

Table 7 presents the results of the same approach for analyst following. The results suggest that the coefficients of main bank loans and other bank loans controlling for bank ownership, and equity ownership of main banks and other banks controlling for bank loans are all significant and their signs are positive, negative, positive, and positive, suggesting that both bank loans and bank equity ownership are equally important in explaining the activities of analyst following.

4.6. *Is it due to the measurement of firm size?*

Due to the significantly positive relationship between firm size measured by market value of equity and analyst following, we conduct additional analyses reporting the results based on firm size measured by total assets as well as market value of equity and number of analysts is at least two. The results presented in Table 8 suggest that when firm size is measured by the log of total assets, there is a significantly negative relationship between size and forecast error. Since the positive relationship between forecast error and NAF disappears, we claim the positive relationship is largely due to the measurement of firm size. Once we control firm size using the log of total assets, we find the higher the number of analysts following, the lower the analyst forecast error, which is consistent with the U.S. finding of Ajinkya, Bhojraj, and Sengupta (2003). In addition, if firms are belonged to a keiretsu, then forecast error reduces.

Table 9 presents the results of the regressions of NAF on firm characteristics. When firms are belonged to keiretsu, analysts tend to follow more. Regardless of the different measurement choice of firm size, analysts follow large firms. As before, analysts tend to follow firms with higher main bank loan, but are inclined not to follow firms with higher other bank loan. This evidence is consistent with our earlier finding that main banks are information-sharing mechanism while other banks rather monopolize information within their inner-circle without disseminating their information to security analysts. Analysts also follow firms with higher equity ownership by foreign investors while they avoid firms with high equity ownership by other institutions.

4. Conclusion

We empirically examine the relationship between analyst forecast error and analyst following to determine whether Japanese banks share information or monopolize information when they extend bank loans and hold equity at the same time. Our findings support the premise that Japanese main banks are an information sharing channel while the other banks tend to monopolize relevant information. Consistent with the interpretation of information sharing (monopolizing) main (other) bank, we find when the other banks provide bank loans, analyst forecast error tends to increase while forecast error does not increase with main bank loans. In addition, we find analyst forecast decreases when main bank equity ownership or foreign equity ownership increases. Because both main banks and foreign investors are effective monitors of the top management to increase the firm's equity value, a negative relationship between analyst forecast error and main bank equity ownership or foreign equity ownership is not surprising. The former results support the information sharing explanation of main banks as in the main bank loan case.

While the theory of banks and security analysts has been perhaps one of the most important areas in the study of banking and financial markets, direct empirical evidence on this issue is scarce. In particular, there are only a few studies that examine the information production dimension of Japanese banks and security analysts. We find that main (other) bank loan is positively (negatively) related to analyst following while other bank loan is positively associated with analyst forecast error, but main bank loan is insignificantly related with forecast error. Our empirical results also reveal that analysts typically follow firms with high foreign equity ownership and large keiretsu firms presumably due to their better monitoring along with easier marketability. Overall, the direction of this relationship is consistent with the common intuition that main banks monitor the client firm and share information with analysts to enhance transparency of their lending and financial status of client firms. However, other remaining banks seem to monopolize their information, indicating an existence of heterogeneity that different types of banks systematically manage and disseminate information differently.

There are several issues for future research. First, because bank loan and bank ownership are endogenously determined in the capital market, incorporating the endogeneity of bank variables will enhance

our understanding of the information production role of banks. Second, it might be useful to know the details about policies, procedures, standards, and controls main (other) banks impose in order to arrive at their information sharing (monopolizing) decision. Finally, undertaking a behavioral finance perspective may provide insight into the various aspects of information production role of banks.

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Table 1
Descriptive Statistics

	Mean	Standard deviation	Median
Forecast error	0.048	0.226	0.011
Forecast dispersion	0.481	3.403	0.141
Number of analysts follow	4.274	3.493	3.000
Market value of equity (in billion yen)	346.405	754.973	136.916
Fixed assets / total assets (percent)	26.824	14.612	24.827
Tobin's q	1.525	0.668	1.356
Beta	1.032	0.494	1.020
Market model residual	0.021	0.007	0.020
Standard deviation of previous 5-year EBIT (in million yen)	65.764	847.753	11.695
Turnover	430,659	477,728	301,245
Total debt / total assets (percent)	57.788	19.396	58.298
Bank debt / total debt (percent)	24.270	21.377	20.140
Main bank debt / total debt (percent)	4.914	5.515	3.560
Other bank debt / total debt (percent)	19.356	17.661	15.480
Equity ownership by top 10 shareholders (percent)	43.191	12.494	39.580
Equity ownership by banks among top 10 shareholders (percent)	16.984	6.710	16.930
Equity ownership by main banks among top 10 shareholders (percent)	2.905	2.106	3.770
Equity ownership by other banks among top 10 shareholders (percent)	14.051	6.640	13.730
Equity ownership by other institutions among top 10 shareholders (percent)	26.207	15.961	21.700
Equity ownership by foreign investors (percent)	8.021	8.328	5.647
Fraction of firms belonging to keiretsu (percent)	42.018	-	-

Table 2
Spearman Correlation: P-value in parentheses

	Forecast error	Number of analysts following	Log (market value of equity)	Tobin's q	Beta	Turnover	Total debt / total assets	Bank debt / total debt	Main Bank debt / total debt	Ownership by banks among top 10 shareholders	Ownership by main banks among top 10 shareholders	Ownership by foreign investors	Keiretsu dummy
Forecast error	1.00 (0.00)												
Number of analysts follow	-0.14 (0.00)	1.00 (0.00)											
Log (market value of equity)	-0.35 (0.00)	0.69 (0.00)	1.00 (0.00)										
Tobin's q	-0.47 (0.00)	0.24 (0.00)	0.52 (0.00)	1.00 (0.00)									
Beta	0.11 (0.00)	-0.08 (0.00)	-0.01 (0.40)	-0.05 (0.00)	1.00 (0.00)								
Turnover	-0.08 (0.00)	0.11 (0.00)	0.19 (0.00)	0.32 (0.00)	0.37 (0.00)	1.00 (0.00)							
Total debt / total assets	0.13 (0.00)	-0.07 (0.00)	0.08 (0.00)	-0.11 (0.00)	0.33 (0.00)	0.08 (0.00)	1.00 (0.00)						
Bank debt / total debt	0.19 (0.00)	-0.21 (0.00)	-0.14 (0.00)	-0.21 (0.00)	0.34 (0.00)	0.05 (0.00)	0.64 (0.00)	1.00 (0.00)					
Main bank debt / total debt	0.22 (0.00)	-0.32 (0.00)	-0.34 (0.00)	-0.22 (0.00)	0.30 (0.00)	0.06 (0.00)	0.47 (0.00)	0.86 (0.00)	1.00 (0.00)				
Ownership by banks among top 10 shareholders	0.01 (0.32)	-0.24 (0.00)	-0.30 (0.00)	0.02 (0.18)	-0.21 (0.00)	-0.24 (0.00)	-0.18 (0.00)	-0.13 (0.00)	-0.03 (0.00)	1.00 (0.00)			
Ownership by main banks among top 10 shareholders	0.11 (0.00)	-0.09 (0.00)	-0.10 (0.00)	-0.14 (0.00)	0.26 (0.00)	0.06 (0.00)	0.35 (0.00)	0.48 (0.00)	0.54 (0.00)	-0.20 (0.00)	1.00 (0.00)		
Equity ownership by foreign investors	-0.08 (0.00)	0.48 (0.00)	0.34 (0.00)	0.09 (0.00)	-0.18 (0.00)	0.08 (0.00)	-0.26 (0.00)	-0.26 (0.00)	-0.29 (0.00)	-0.11 (0.00)	-0.12 (0.00)	1.00 (0.00)	
Keiretsu dummy	-0.02 (0.08)	0.12 (0.00)	0.14 (0.00)	0.02 (0.06)	0.20 (0.00)	0.14 (0.00)	0.22 (0.00)	0.15 (0.00)	0.10 (0.00)	-0.05 (0.00)	0.24 (0.00)	0.03 (0.03)	1.00 (0.00)

Table 3
Regression of Forecast Error on Firm Characteristics: t-statistics in parentheses

Independent variables	(1)	(2)	(3)	(4)	(5)
Intercept	0.214*** (4.23)	0.295*** (5.45)	0.272*** (5.01)	-0.001 (-0.01)	-0.005 (-0.08)
<i>Number of analysts</i>	0.006*** (4.47)	0.005*** (3.97)	0.006*** (4.37)	0.005*** (3.85)	0.005*** (3.76)
<i>Firms belong to a keiretsu (dummy)</i>	-0.015*** (-2.67)	-0.013** (-2.34)	-0.014*** (-2.47)	-0.013** (-2.17)	-0.013** (-2.14)
<i>Log of market value of equity</i>	-0.025*** (-7.05)	-0.027*** (-7.46)	-0.025*** (-6.97)	-0.013*** (-3.25)	-0.012*** (-3.12)
Turnover	0.000* (1.88)	0.000** (2.21)	0.000* (1.74)	-0.000** (-1.97)	-0.000* (-1.89)
Total debt / total assets	0.100*** (5.14)	0.143*** (8.85)	0.088*** (4.41)	0.082*** (4.02)	0.084*** (4.02)
<i>Bank debt / total debt</i>	0.084*** (4.85)		0.084*** (4.83)		
<i>Main bank debt / total debt</i>				-0.046 (-0.66)	-0.046 (-0.67)
<i>Other bank debt / total debt</i>				0.090*** (3.67)	0.090*** (3.63)
<i>Equity ownership by banks among top 10 shareholders</i>		-0.196*** (-3.46)	-0.181*** (-3.19)		
<i>Equity ownership by main banks among top 10 shareholders</i>				-0.587*** (-3.59)	-0.579*** (-3.46)
<i>Equity ownership by other banks among top 10 shareholders</i>				-0.131** (-2.31)	-0.128** (-2.20)
<i>Equity ownership by other institutions among top 10 shareholders</i>		-0.074*** (-3.06)	-0.065*** (-2.68)	-0.095*** (-3.79)	-0.095*** (-3.70)
<i>Equity ownership by foreign investors</i>		-0.020 (-0.54)	-0.023 (-0.62)	-0.056 (-1.50)	-0.056 (-1.47)
<i>Fixed assets / total assets</i>				-0.030 (-1.33)	-0.032 (-1.38)
Beta				0.013** (2.17)	0.013** (2.10)
Market model residual				6.817*** (10.98)	6.947*** (10.96)
Standard deviation of previous 5-year EBIT					-0.000 (-0.06)
<i>Year dummies</i>	Yes	Yes	Yes	Yes	Yes
<i>Industry dummies</i>	Yes	Yes	Yes	Yes	Yes
Test (coefficient on main bank debt / total debt = coefficient on other bank debt / total debt)				F=2.68*	F=2.66*
Test (coefficient on equity ownership by main banks among top 10 shareholder = coefficient on equity ownership by other banks among top 10 shareholders)				F=8.21***	F=7.71***
Adjusted R^2	7.21	7.07	7.38	9.50	9.49
F-value	22.47***	20.31***	20.48***	22.60***	21.50***
No. of observations	6,633	6,605	6,603	6,585	6,450

Table 4
Regression of Number of Analysts on Firm Characteristics: t-statistics in parentheses

Independent variables	(1)	(2)	(3)	(4)
Intercept	-24.350*** (-59.80)	-22.568*** (-50.16)	-22.089*** (-48.66)	-22.471*** (-48.55)
<i>Firms belong to a keiretsu (dummy)</i>	0.252*** (4.43)	0.208*** (3.71)	0.217*** (3.87)	0.230*** (4.08)
<i>Log of market value of equity</i>	2.161*** (88.51)	2.004*** (76.47)	1.965*** (73.62)	2.026*** (72.63)
Tobin's q (market value of equity plus book value of debt / book value of total assets)	-0.178*** (-3.51)	-0.138*** (-2.61)	-0.133** (-2.52)	-0.162*** (-3.07)
Turnover	-0.000 (-0.08)	-0.000* (-1.83)	-0.000 (-1.16)	-0.000** (-1.97)
Total debt / total assets	-1.291*** (-6.57)	-1.661*** (-10.38)	-0.879*** (-4.48)	-0.775*** (-3.86)
<i>Bank debt / total debt</i>	-1.084*** (-6.32)		-1.152*** (-6.82)	
<i>Main bank debt / total debt</i>				2.406*** (3.59)
<i>Other bank debt / total debt</i>				-1.782*** (-7.51)
<i>Equity ownership by banks among top 10 shareholders</i>		-0.815 (-1.47)	-1.020* (-1.84)	
<i>Equity ownership by main banks among top 10 shareholders</i>				-2.535 (-1.58)
<i>Equity ownership by other banks among top 10 shareholders</i>				-0.915* (-1.65)
<i>Equity ownership by other institutions among top 10 shareholders</i>		-1.914*** (-7.98)	-2.025*** (-8.45)	-1.948*** (-8.01)
<i>Equity ownership by foreign investors</i>		5.336*** (14.84)	5.370*** (14.95)	5.246*** (14.64)
<i>Fixed assets / total assets</i>				-1.582*** (-7.14)
<i>Year dummies</i>	Yes	Yes	Yes	Yes
<i>Industry dummies</i>	Yes	Yes	Yes	Yes
Test (coefficient on main bank debt / total debt = coefficient on other bank debt / total debt)				F=26.82***
Test (coefficient on equity ownership by main banks among top 10 shareholder = coefficient on equity ownership by other banks among top 10 shareholders)				F=1.08
Adjusted R^2	61.04	62.54	62.81	63.24
F-value	433.97***	425.05***	413.91***	379.67***
No. of observations	6,633	6,605	6,603	6,603

Table 5
2 SLS Regression: t-statistics in parentheses

Independent variables	Forecast error		Number of analysts follow	
	(1)	(2)	(1)	(2)
Intercept	1.773** (2.27)	1.904** (2.18)	-22.997*** (-46.52)	-23.192*** (-46.11)
<i>Forecast error</i>			2.649*** (3.27)	2.841*** (3.50)
<i>Number of analysts</i>	0.081** (2.43)	0.086** (2.32)		
<i>Firms belong to a keiretsu (dummy)</i>	-0.032*** (-2.87)	-0.033*** (-2.76)	0.260*** (4.46)	0.260*** (4.38)
<i>Log of market value of equity</i>	-0.168*** (-2.46)	-0.180** (-2.35)	2.067*** (67.69)	2.080*** (66.62)
Tobin's q (market value of equity plus book value of debt / book value of total assets)			-0.137*** (-2.49)	-0.121** (-2.12)
Turnover	0.000 (0.03)	-0.000 (-0.11)	-0.000** (-2.28)	-0.000* (-1.89)
Total debt / total assets	0.129*** (3.95)	0.137*** (3.81)	-0.987*** (-4.56)	-1.053*** (-4.77)
<i>Main bank debt / total debt</i>	-0.198* (-1.82)	-0.209* (-1.81)	2.209*** (3.20)	2.204*** (3.15)
<i>Other bank debt / total debt</i>	0.221*** (3.40)	0.230*** (3.23)	-2.057*** (-7.96)	-2.088*** (-7.96)
<i>Equity ownership by main banks among top 10 shareholders</i>	-0.396* (-1.80)	-0.396* (-1.73)	-0.886 (-0.52)	-0.512 (-0.29)
<i>Equity ownership by other banks among top 10 shareholders</i>	-0.063 (-0.81)	-0.054 (-0.67)	-0.407 (-0.69)	-0.447 (-0.75)
<i>Equity ownership by other institutions among top 10 shareholders</i>	0.078 (0.95)	0.081 (0.94)	-1.724 (-6.70)	-1.673 (-6.38)
<i>Equity ownership by foreign investors</i>	-0.435*** (-2.53)	-0.449** (-2.42)	5.237*** (14.28)	5.147*** (13.85)
<i>Fixed assets / total assets</i>	0.094 (1.53)	0.103 (1.51)	-1.466*** (-6.34)	-1.496*** (-6.37)
Beta	0.035*** (2.87)	0.036*** (2.74)		
Market model residual	4.650*** (3.80)	4.506*** (3.28)		
Standard deviation of previous 5-year EBIT		0.000 (0.83)		
Test (coefficient on main bank debt / total debt = coefficient on other bank debt / total debt)	F=6.75***	F=6.35***	F=26.27***	F=25.96***
Test (coefficient on equity ownership by main banks among top 10 shareholder = coefficient on equity ownership by other banks among top 10 shareholders)	F=2.64*	F=2.57	F=0.09	F=0.00
Adjusted R^2	6.14	5.88	62.25	62.21
F-value	14.45***	13.21***	351.17***	340.82***
No. of observations	6,585	6,450	6,585	6,450

Table 6
Regression of Forecast Error on Interaction Variables between Bank Debt and Equity Ownership by Banks:
t-statistics in parentheses

Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	-0.079 (-1.36)	-0.026 (-0.41)	-0.034 (-0.56)	-0.085 (-1.44)	-0.012 (-0.19)	-0.032 (-0.52)
<i>Number of analysts</i>	0.005*** (3.98)	0.005*** (3.80)	0.005*** (3.74)	0.005*** (3.83)	0.005*** (3.73)	0.004*** (3.47)
<i>Firms belong to a keiretsu (dummy)</i>	-0.015*** (-2.62)	-0.016*** (-2.74)	-0.015*** (-2.53)	-0.016*** (-2.76)	-0.012** (-2.11)	-0.012** (-2.08)
<i>Log of market value of equity</i>	-0.009** (-2.39)	-0.012*** (-2.98)	-0.012*** (-3.02)	-0.010*** (-2.60)	-0.012*** (-3.04)	-0.011*** (-2.82)
Turnover	-0.000 (-1.39)	-0.000* (-1.85)	-0.000* (-1.80)	-0.000 (-1.38)	-0.000* (-1.91)	-0.000* (-1.79)
Total debt / total assets	0.081*** (4.05)	0.073*** (3.52)	0.074*** (3.66)	0.120*** (6.56)	0.084*** (4.02)	0.127*** (6.66)
<i>Bank debt / total debt</i>	0.032 (1.56)					
<i>Bank debt / total debt if equity ownership by banks among top 10 shareholders < sample median (zero otherwise)</i>	0.043*** (2.48)					
<i>Main bank debt / total debt</i>		-0.102 (-1.43)	-0.106 (-1.50)			
<i>Main bank debt / total debt if equity ownership by main banks among top 10 shareholders < sample median (zero otherwise)</i>		0.030 (0.35)	0.023 (0.27)			
<i>Other bank debt / total debt</i>		0.088*** (3.46)	0.048* (1.74)		0.084*** (3.52)	
<i>Other bank debt / total debt if equity ownership by other banks among top 10 shareholders < sample median (zero otherwise)</i>			0.072*** (3.17)			
<i>Equity ownership by banks among top 10 shareholders</i>				-0.015 (-0.32)		
<i>Equity ownership by banks among top 10 shareholders if bank debt / total debt < sample median (zero otherwise)</i>				0.010 (0.28)		
<i>Equity ownership by main banks among top 10 shareholders</i>					-0.612*** (-3.28)	-0.374** (-1.99)
<i>Equity ownership by main banks among top 10 shareholders if main bank debt / total debt < sample median (zero otherwise)</i>					0.021 (0.11)	-0.260 (-1.41)
<i>Equity ownership by other banks among top 10 shareholders</i>		-0.079 (-1.40)			-0.123** (-2.15)	-0.150** (-2.34)
<i>Equity ownership by other banks among top 10 shareholders if other bank debt / total debt < sample median (zero otherwise)</i>						0.041 (0.87)
<i>Equity ownership by other institutions among top 10 shareholders</i>		-0.062*** (-2.54)	-0.062*** (-2.98)		-0.095*** (-3.70)	-0.097*** (-3.80)
<i>Equity ownership by foreign investors</i>	-0.061* (-1.64)	-0.057 (-1.51)	-0.058 (-1.54)	-0.061* (-1.63)	-0.055 (-1.46)	-0.048 (-1.26)
<i>Fixed assets / total assets</i>	-0.037 (-1.60)	-0.033 (-1.42)	-0.034 (-1.45)	-0.021 (-0.92)	-0.032 (-1.37)	-0.019 (-0.80)

Beta	0.017*** (2.74)	0.013** (2.09)	0.014** (2.18)	0.017*** (2.83)	0.013** (2.09)	0.015** (2.36)
Market model residual	6.385*** (10.27)	6.968*** (10.98)	6.886*** (10.85)	6.915*** (11.04)	6.919*** (10.94)	7.159*** (11.36)
Standard deviation of previous 5-year EBIT	-0.000 (-0.38)	0.000 (0.04)	0.000 (0.12)	-0.000 (-0.32)	-0.000 (-0.06)	0.000 (0.01)
<i>Year dummies</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Industry dummies</i>	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	9.24	9.33	9.44	9.08	9.49	9.32
F-value	22.91***	21.10***	21.37***	22.48***	21.48***	21.09***
No. of observations	6,461	6,450	6,450	6,450	6,450	6,452

Table 7

Regression of Number of Analysts on Interaction Variables between Bank Debt and Equity Ownership by Banks: t-statistics in parentheses

Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	-23.454*** (-58.09)	-22.467*** (-48.99)	-22.615*** (-52.56)	-23.885*** (-59.26)	-21.789*** (-47.90)	-21.949 (-48.09)
<i>Firms belong to a keiretsu (dummy)</i>	0.215*** (3.84)	0.243*** (4.35)	0.251*** (4.49)	0.210*** (3.75)	0.224*** (3.97)	0.234** (4.15)
<i>Log of market value of equity</i>	2.066*** (80.99)	2.023*** (72.78)	2.024*** (73.02)	2.059*** (81.23)	1.967*** (71.67)	1.972*** (71.78)
Tobin's q (market value of equity plus book value of debt / book value of total assets)	-0.225*** (-4.50)	-0.158*** (-3.00)	-0.163*** (-3.10)	-0.214*** (-4.11)	-0.130*** (-2.46)	-0.132*** (-2.49)
Turnover	-0.000 (-0.61)	-0.000** (-2.01)	-0.000** (-1.98)	-0.000 (-1.22)	-0.000* (-1.65)	-0.000* (-1.88)
Total debt / total assets	-0.942*** (-4.82)	-0.827*** (-4.17)	-0.799*** (-4.09)	-0.980*** (-5.56)	-0.837*** (-4.16)	-1.080*** (-5.90)
<i>Bank debt / total debt</i>	-0.959*** (-4.93)					
<i>Bank debt / total debt if equity ownership by banks among top 10 shareholders < sample median (zero otherwise)</i>	0.222 (1.33)					
<i>Main bank debt / total debt</i>		1.289* (1.87)	1.318** (1.94)			
<i>Main bank debt / total debt if equity ownership by main banks among top 10 shareholders < sample median (zero otherwise)</i>		3.585*** (4.39)	3.491*** (4.29)			
<i>Other bank debt / total debt</i>		-1.883*** (-7.92)	-2.187*** (-8.30)		-1.066*** (-4.73)	
<i>Other bank debt / total debt if equity ownership by other banks among top 10 shareholders < sample median (zero otherwise)</i>			0.569*** (2.61)			
<i>Equity ownership by banks among top 10 shareholders</i>				0.619 (1.35)		
<i>Equity ownership by banks among top 10 shareholders if bank debt / total debt < sample median (zero otherwise)</i>				2.033*** (5.88)		
<i>Equity ownership by main banks among top 10 shareholders</i>					-4.779*** (-2.68)	-4.950*** (-2.75)
<i>Equity ownership by main banks among top 10 shareholders if main bank debt / total debt < sample median (zero otherwise)</i>					7.015*** (3.96)	7.639*** (4.35)
<i>Equity ownership by other banks among top 10 shareholders</i>		-0.870 (-1.62)			-1.210** (-2.19)	-2.266*** (-3.68)
<i>Equity ownership by other banks among top 10 shareholders if other bank debt / total debt < sample median (zero otherwise)</i>						1.820*** (4.07)
<i>Equity ownership by other institutions among top 10 shareholders</i>		-2.056*** (-8.94)	-1.989*** (-10.23)		-1.999*** (-8.21)	-1.988*** (-8.17)
<i>Equity ownership by foreign investors</i>	4.969*** (13.82)	5.188*** (14.49)	5.165*** (14.45)	4.861*** (13.58)	5.141*** (14.34)	5.072*** (14.19)
<i>Fixed assets / total assets</i>	-1.825*** (-8.22)	-1.608*** (-7.27)	-1.605*** (-7.27)	-1.671*** (-7.51)	-1.535*** (-6.92)	-1.550*** (-6.98)
<i>Year dummies</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Industry dummies</i>	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	62.63	63.34	63.36	62.78	63.26	63.22
F-value	411.46***	381.20***	381.58***	413.62***	379.92***	379.36***
No. of observations	6,614	6,603	6,603	6,605	6,603	6,605

Table 8
Additional Tests: Regression of Forecast Error on Firm Characteristics: t-statistics in parentheses

Independent variables	Number of analysts is at least two		Firm size		Lagged variable
	(1)	(2)	(3)	(4)	(4)
Intercept	-0.043 (-0.55)	-0.455*** (-7.73)	-0.376*** (-6.11)		0.015 (0.11)
<i>Forecast error in the previous period</i>					0.404*** (25.61)
<i>Number of analysts</i>	0.005*** (3.57)	-0.002** (-2.05)	-0.001 (-1.13)		0.003** (2.30)
<i>Firms belong to a keiretsu (dummy)</i>	-0.018*** (-2.51)	-0.014** (-2.40)	-0.014** (-2.33)		-0.008 (-1.28)
<i>Log of market value of equity</i>	-0.015*** (-2.99)				-0.011** (-2.35)
<i>Log of total assets</i>		0.025*** (6.35)			
<i>Log of firm vale (market vale of equity + book value of debt)</i>			0.018*** (4.32)		
Turnover	-0.000 (-1.58)	-0.000** (-2.14)	-0.000** (-2.40)		-0.000 (-1.05)
Total debt / total assets	0.084*** (3.22)	0.022 (1.00)	0.041* (1.85)		0.046** (1.99)
<i>Main bank debt / total debt</i>	0.012 (0.12)	0.096 (1.38)	0.064 (0.91)		-0.109 (-1.37)
<i>Other bank debt / total debt</i>	0.079*** (2.49)	0.055** (2.20)	0.066*** (2.64)		0.089*** (3.22)
<i>Equity ownership by main banks among top 10 shareholders</i>	-0.682*** (-3.35)	-0.469*** (-2.81)	-0.499*** (-2.98)		-0.408*** (-2.21)
<i>Equity ownership by other banks among top 10 shareholders</i>	-0.123* (-1.76)	-0.078 (-1.34)	-0.093 (-1.61)		-0.075 (-1.18)
<i>Equity ownership by other institutions among top 10 shareholders</i>	-0.107*** (-3.43)	-0.059** (-2.26)	-0.073*** (-2.82)		-0.056** (-1.99)
<i>Equity ownership by foreign investors</i>	-0.096** (-2.15)	-0.090** (-2.42)	-0.092** (-2.45)		-0.043 (-1.04)
<i>Fixed assets / total assets</i>	-0.024 (-0.84)	-0.047** (-2.05)	-0.047** (-2.03)		-0.023 (-0.90)
Beta	0.007 (0.95)	0.007 (1.19)	0.009 (1.46)		0.009 (1.40)
Market model residual	9.685*** (11.61)	8.501*** (13.73)	8.239*** (13.24)		5.044*** (7.15)
Standard deviation of previous 5-year EBIT	0.000 (0.05)	-0.000 (-1.16)	-0.000 (-0.91)		0.000 (0.07)
<i>Year dummies</i>	Yes	Yes	Yes		Yes
<i>Industry dummies</i>	Yes	Yes	Yes		Yes
Adjusted R^2	10.45	9.92	9.62		19.71
F-value	18.41***	22.52***	21.80***		40.71***
No. of observations	4,927	6,450	6,450		5,500

Table 9
Additional Tests: Regression of Number of Analysts on Firm Characteristics: t-statistics in parentheses

Independent variables	Number of analysts is at least two		Firm size		Lagged variable
	(1)	(2)	(3)	(4)	(4)
Intercept	-22.214*** (-38.00)	-23.356*** (-47.77)	-22.878*** (-48.32)	-10.651*** (-10.00)	0.626*** (59.92)
<i>Number of analysts in the previous period</i>					
<i>Firms belong to a keiretsu (dummy)</i>	0.170*** (2.58)	0.253*** (4.38)	0.234*** (4.11)	0.064 (1.32)	0.845*** (26.18)
<i>Log of market value of equity</i>	2.024*** (59.05)				
<i>Log of total assets</i>		2.000*** (68.78)			
<i>Log of firm vale (market vale of equity + book value of debt)</i>			2.024*** (71.08)		
Tobin's q (market value of equity plus book value of debt / book value of total assets)	-0.147** (-2.43)	1.190*** (23.35)	0.248*** (4.79)	0.124*** (2.54)	
Turnover	0.000 (0.47)	0.000 (0.18)	-0.000 (-0.43)	0.000*** (2.85)	
Total debt / total assets	-1.078*** (-4.41)	-3.421*** (-15.89)	-3.624*** (-17.03)	-0.392** (-2.22)	
<i>Main bank debt / total debt</i>	2.015** (2.27)	1.668** (2.43)	1.973*** (2.92)	1.514*** (2.51)	
<i>Other bank debt / total debt</i>	-1.772*** (-6.07)	-2.621*** (-10.75)	-2.467*** (-10.27)	-0.786*** (-3.77)	
<i>Equity ownership by main banks among top 10 shareholders</i>	-2.388 (-1.26)	0.064 (0.04)	0.403 (0.25)	-0.115 (-0.08)	
<i>Equity ownership by other banks among top 10 shareholders</i>	-1.434** (-2.21)	-0.518 (-0.91)	-0.634 (-1.13)	-0.135 (-0.28)	
<i>Equity ownership by other institutions among top 10 shareholders</i>	-2.617*** (-9.10)	-1.816*** (-7.26)	-1.736*** (-7.03)	-0.548*** (-2.56)	
<i>Equity ownership by foreign investors</i>	5.331*** (12.99)	6.141*** (16.87)	5.748*** (15.96)	2.160*** (6.92)	
<i>Fixed assets / total assets</i>	-1.880*** (-7.13)	-0.837*** (-3.70)	-0.908*** (-4.07)	-0.307 (-1.58)	
<i>Year dummies</i>	Yes	Yes	Yes	Yes	
<i>Industry dummies</i>	Yes	Yes	Yes	Yes	
Adjusted R^2	59.59	61.47	62.54	77.82	
F-value	248.40***	352.12***	368.38***	637.08***	
No. of observations	5,035	6,603	6,603	5,622	