Investor Biases in Japan: Another Pathology of *Keiretsu*

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Abstract

We examine how *keiretsu*-related institutional investors behave in the Japanese stock market relative to other investor categories for the period from 1985-1998. Based on the agency problem hypothesis for the general bias of institutional investors and the relational distance hypothesis for the unusual bias of *keiretsu*-affiliated money managers, this paper finds that *keiretsu*-affiliated money managers over-invest not only in large firms, but also in *imprudent* firms. The group affiliation of Japanese domestic money managers may drive their portfolio decisions towards financially weak group member firms at the expense of their client investors. Identifying the conditions for this rescue type of investment, we illustrate a rather weak corporate governance foundation of institutional money management in Japan.

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1. Introduction

This paper investigates an interesting question: Under what condition do *keiretsu*-affiliated domestic institutional money management agents change their investment style? The possible spectrum of their investment ranges from the style of a purely prudent money manager like a foreign portfolio investor to that of a corporate cross-holding shareholder. We first compare the behavior of Japanese money managers with that of foreign investors using the market portfolio as an unbiased benchmark. Next, similar to the study by Bennet, Sias, and Starks (2003) for U.S. institutions, we break down the domestic institutional investor group into three sub-categories: pension funds, investment trust (mutual) funds, and others.[1] The third sub-category represents the least transparent out of the three. The Japanese institutional management practice may be different internationally because of the existence of *keiretsu*-affiliated money managers and because of less transparent funds managed by them. We also compare investment bias among the three sub-categories and identify any condition in which *keiretsu*-affiliated agents change from a prudent manager to a cross-holding shareholder.

The ownership percentage of the domestic institutional investor group ranged between 23 percent and 31 percent, peaking in 1989 (Table 1) during the bubble and the post-bubble period in Japan. The total percentage ownership of more professionally managed groups (i.e., pension and mutual funds) was relatively small in Japan, at 2.4 percent in 1985 and 7.2 percent in 1999. The remaining "others" consist of the special trust accounts managed by trust banks, mostly with a Japanese brand. Our analysis focuses on corporate governance of institutional money management and finds that the others sub-category over-invests in *keiretsu*-affiliated firms in trouble.

[Table 1 about here]

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[1] Bennet, Sias and Starks (2003) differently classify the U.S. institutional investor group into five sub-categories.

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While the behavior of foreign investors is interesting to study, we mainly use it as the most prudent benchmark against which the investment bias of the domestic institutional investor categories is compared. Foreign investors have substantially increased their presence in Japan.[2] The group was the third largest consisting mostly of large global investors with full money management capacities in their home countries (Froot, O'Connell, and Seasholes, 2001).[3]

Bennet, Sias and Starks (2003) and Sias, Starks and Titman (2006), among many, investigate the relationship between institutional ownership and stock returns. In an international context, Kamesaka, Nofsinger and Kawakita (2003) find that foreign investors use information-based positive feedback trading for higher returns than other classes of investors in Japan. Kim and Nofsinger (2005) document that Japanese institutional investors herd less than the U.S. counterpart does, but the impact of institutional herding is much stronger on stock prices than found in the U.S., especially for *keiretsu*-affiliated firms. Karolyi (2002) find evidence of positive-feedback trading by foreign investors in Japan, while domestic institutional investors were aggressive contrarians during the Asian financial crisis. These institutional herding patterns are also supported by Iihara, Kato and Tokunaga (2001) for other periods than the crisis. Thus, there is some evidence that Japanese institutional investors increase their investment when firms decrease the market value. Unfortunately, these previous studies on Japanese institutions do not distinguish flows caused by relational investments and those caused by pure portfolio reformation, with much limited use of firm characteristics for herding. As a result, few corporate governance implications are drawn from their results.

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[2] In 1999, for example, the group traded 102.9 trillion yen (38.6 percent) of the total transaction of 266.6 trillion yen on the major stock exchanges in Japan. Their ownership share is the third largest at 18.6 percent, which is higher than that of the individual investor group, at 18.0 percent in1999.

[3] The data reveal that, within the class of foreign investors in Japan, institutional investors accounted for 99.5 percent (vs. 0.5 percent individuals) of equity transactions in 1999 on the TSE (http://www.tes.or.jp/ as of December 31, 2000). These global investors usually employ global custodian banks, such as State Street Bank & Trust, for their international equity transactions.

The behavior of institutional investors in a (U.S.) domestic context is well studied, including Gompers and Metrick (2001), Falkenstein (1996), and Del Guercio (1996). Kang and Stulz (1997) document that foreign investors in Japan prefer large firms with greater international exposure and a low risk profile. These studies show that U.S. institutional investors prefer large and prudent firms at home as well as overseas.[4] Using Swedish data, Dahlquist and Robertson (2001) show that foreign investors, mostly from the U.S., prefer local firms with large capitalization, low dividend yield, and low risk characteristics. They also suggest that some of foreign investors' preferences, e.g., large-size orientation, get subsumed under a common institutional investor bias. More recently, Dahlquist, Pinkowitz, Stulz, and Williamson (2003) empirically show that the prevalence of closely held firms with poor corporate governance explains part of the home bias of U.S. investors.

The foreign investors, especially in Japan, face unique corporate governance problems. The view provided by Prowse (1990, 1992) and Jacobson and Aaker (1993) is positive, with institutional investments in equity shares of *keiretsu* firms mitigating the agency problems and enhancing the pricing efficiency of equity in the market. According to Dahlquist et al. (2003), however, foreign investors under-invest in firms interlocked by cross-shareholdings. Weinstein and Yafeh (1998), Morck, Nakamura, and Shivdasani (2000), and Hiraki, Inoue, Ito, Kuroki, and Masuda (2003) all document that such institutional shareholdings do not reduce, but aggravate, the agency costs. Kim and Lee (2003) explain the relative poor performance of chaebol firms to that of non-chaebol firms in Korea by using a weaker corporate governance argument applied to the former during the same Asian economic crisis period. Choe, Kho and Stulz (1999) find that domestic institutions behave like foreign investors around the 1997 Asian economic crisis in Korea. In Korea, institutional money management seems enhancing corporate governance at least in more recent years. This never happens in the Japanese market where foreign investors and domestic institutions differently herd.

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[4] However, Bennet, Sias and Starks (2003) show that the preferences of sub-classified institutional investors in the U.S. change over time.

We indeed find that domestic institutional investors over-invest in imprudent firms. The imprudent investment of domestic institutional investors is a strong contrast with the international evidence that institutional investors basically over-invest in firms with more prudent characteristics (Del Guercio, 1996 and Falkenstein, 1996). With the *keiretsu* and main bank guards extended through money management, some of zombie firms can still survive at the expense of client investors in Japan. We thus intend to illustrate another pathological issue of *keiretsu*.

The paper is organized as follows. In Section 2, we discuss the possible influences of investor familiarity and agency issues in money management and the effect of relational distance between money managers and firms in a Japanese corporate governance context. Section 3 describes the data and methodology. Section 4 documents the ownership cross-section of foreign as well as Japanese domestic investors. Section 5 addresses corporate (mis)governance by relating various measurements of a *keiretsu*-affiliated manager's distance from firms to their investment bias. Section 6 concludes.

2. Hypotheses

2.1. Information and Agency Problems

The first set of hypotheses in this paper relies on a feature of money management common to both foreign and domestic institutional investors: the principal–agent problem between money managers and their client investors. Under information asymmetries, money managers do not fully optimize their portfolios of stocks. Their typical bias is to invest more in the familiar (Huberman, 2001).[5] We assume that the prevailing principal–agent structure in money management does not prevent the bias of client investors from spilling over to the investments made by a money manager. Over-investing in the familiar to their clients protects managers from poor performance since it is not viewed as lacking expertise. Based on this, we hypothesize that a money manager is biased towards

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[5] Huberman (2001) relies on Heath and Tversky's (1991) "competence hypothesis" to explain individual investor local bias.

firms that are familiar to her client investors (the agency-familiarity hypothesis). We measure investor familiarity with a firm by two variables: the total equity capitalization and the export ratio (export sales divided by total sales). Both of these firm variables are used in Kang and Stulz (1997) and Dahlquist and Robertson (2001). We are, however, cautious about the use of the export ratio because it may capture the difference in the composition of familiar firms between foreign and domestic investors.

It is known that money managers bias their portfolios for "window dressing" (Lakonishok, Shleifer, Thaler, and Vishny, 1991). They hedge the risk of receiving penalties such as losing contracts by investing in *nice-looking* firms. For example, Del Guercio (1996) documents that U.S. mutual funds and banks significantly over-invest in prudent firm stocks with the prudence measured by firm's asset growth, profitability, and leverage. Further safeguards can be obtained through catering to the needs of the client investors in terms of particular investment styles, such as growth, value, or technology (Berberis and Shleifer, 2003). The book-to-market ratio represents a standard value-growth investment style of firms' stocks.

We use these prudence and investment style measures along with familiarity variables to test the relative preference of domestic institutional investors under the agency-familiarity hypothesis.

2.2. Relational Distance Effect

Coval and Moskowitz (1999), Grinblatt and Keloharju (2001), and Huberman (2001) provide evidence that relative distance from the location of firms is important in money managers' portfolio selection. Coval and Moskowitz (1999) assume that local money mangers are more informed than non-local counterparts on local firm activities. If there is another concept of distance in Japan, it should be a relational one. As discussed above, the closest possible institutional equity holdings in Japan are found in cross-shareholdings, on which the *keiretsu* and the main bank systems are built.

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Japanese pension funds and investment trust (mutual) funds are more professionally managed due to the competition for fees, similar to other parts of the world. On the other hand, the others sub-category mostly lacks transparency, consisting of funds entrusted by governments, endowments, employees' saving plans, corporations, and wealthy individuals.[6] The important fact is that the managers of the others funds—mainly trust banks—are at the same time significant lenders in each major financial *keiretsu*. A *keiretsu* main bank usually coordinates a financial rescue as a part of implicit contracts in the main bank system (Aoki, Patric, and Sheard, 1994). This may include share price support of a troubled member through money managers affiliated with the same *keiretsu*. Then, financially weak, otherwise failed member firms in the *keiretsu* may survive. We can identify that all zombies still surviving on the TSE1 were in financial *keiretsu*, where both banks' refusal to call loans and money managers' additional shareholdings helped their stock prices to be maintained above 50 yen (standard par price for many firms).[7] Hoshi and Kashyap (2001) demonstrate how the main bank arranges such a rescue involving other lending institutions. We focus on a different aspect of the rescue: if related through a financial *keiretsu*, money managers join the rescue by increasing their investment in troubled member firms. This represents the most essential part of "relational money management."[8] The relative over-investment by domestic institutional investors can be related to the distance (i.e., strength) of the relationship. However, a *keiretsu* relationship alone does not fully explain the over-investment in firms in the same *keiretsu*. We hypothesize that money managers' over-investment in related firms is conditioned on both the strength of rescue demand and the *keiretsu* ties. If these conditions are met, money managers in the same *keiretsu* increase their investment in the

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[6] See, for example, Asano (1996).

[7] For example, the foreign media *Forbes* (October 2002) acknowledges "In Japan, commonly used method to identify a zombie is to look for companies with a stock price worth less than 100 yen (about $1)." We identify all zombies surviving on the TSE1 were in financial *keiretsu*, where both banks' refusal to call loans and money managers' additional shareholdings helped their stock prices be maintained above 50 yen (standard par price for many firms).

[8] The relational distance hypothesis is different from the local-investor-relation (LIR) hypothesis proposed by Hong, Kubik and Stein (2005), in which inside information is likely provided if managers are local. Its impact on corporate governance is limited in the LIR hypothesis.

related firms in trouble, using funds in the others sub-category. One consequence of such relational money management is corporate (mis)governance.

Notice that trust banks in Japan directly manage *monetary fund trusts*, and indirectly manage *special monetary trusts* in more discretionary trust accounts. They also administer investment trust (mutual) funds as custodian trustees and manage pension funds directly (as managers) or indirectly (as trustees of funds managed by other managers). In all of these cases, trust banks were typically registered shareholders on behalf of their client investors during our sample period. In this study, we separate out monetary fund trusts, special monetary and other less transparent trust funds from the remaining transparent funds: investment trusts and pension funds. The less transparent part of licensed money management was long monopolized by the seven trust banks and one city bank. As of March 31, 1990, for example, monetary fund trusts managed directly by these eight licensed domestic institutions accounted for 85.6 percent out of 30,453 billion yen in total assets under management.[9] Out of the eight domestic trust bank managers, the five largest (Mitsui, Mitsubishi, Sumitomo, Yasuda, and Toyo Trust Bank) on a one-to-one basis correspond to five (Mitsui, Mitsubishi, Sumitomo, Fuyo, and Sanwa Group) of the six (most narrowly defined) financial *keiretsu* groups. The three smallest are also important members of other smaller *keiretsu* groups.[10] Thus, the relational distance hypothesis should be reasonably well binding on the others sub-category of domestic institutional investors during our sample period without excessive increase in non-performing bank loans.[11]

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[9] *Shintaku (Trusts),* August 1990 (No. 163), Trust Bank Association of Japan. The monopoly situation has been much liberalized during our sample period, however.

[10] They are Chuo Trust (later merged with Mitsui Trust), Nippon Trust (later acquired by Mitsubishi (Tokyo-Mitsubishi) Bank), and Daiwa Bank (whose trust division was renamed to Resona Trust Bank) with a strong tie with Nomura in securities and investment advisory businesses. Only, the Dai-ichi Kangyo group had no clearly affiliated trust bank throughout our sample period. These trust banks are also trustees, as in the case of special monetary trusts, entrusted by investment advisory companies in *keiretsu* directly managing their client assets.

[11] Non-performing loans (NPLs) of banks became serious towards the end of our sample period. However, actual write-offs and collections of theses loans effectively started by forming the Resolution and Collection Corporation (RCC) in April 1999 and the transfers of problematic loans started by establishing the Industrial Revitalization Corporation of Japan (IRCJ) in April 2003.

The direct test of the relational hypothesis is not possible without detailed asset composition data in each institutional fund. Since such data are unavailable, we first use the bank loan–to–total asset ratio of each firm as a reasonable proxy for the interaction between relational distance and the firm's need for share price support by *keiretsu* money managers. The bank loan–to–total asset ratio should increase as financial conditions of a *keiretsu*-affiliated firm deteriorate. The effectiveness of this variable should not be lost even with the public debt markets developed during the 1990s as an alternative means of debt financing to bank borrowing. Default risk premiums and flotation costs are prohibitively high in the corporate bond market for even a *keiretsu*-affiliated firm to issue bonds (Hiraki, Ito and Kuroki, 2004). Notice that main banks in Japan have suffered from lowered credit ratings and increased credit default risk in their loan portfolios throughout the 1990s. Given this, the main bank may be the only buffer available for a firm against a possible default. Thus, financially weakened *keiretsu* firms can still survive while non-*keiretsu* troubled firms can not. This experimentally required condition is largely met throughout our sample period. We also use a few other alternative proxy variables for the bank loan ratio. First, the *keiretsu* dummy interacted with ROA or with the net worth ratio may be a reasonable proxy for the magnitude of rescue demand. Second, the percentage ownership of corporate (cross-shareholding or main bank) investors may serve the same purpose.

3. Data and Methodology

3.1. Data

Our sample initially covered all firms on the TSE1 except for banks and other financial institutions, for the period from April 1985 to March 1999 (fiscal years 1985 to 1998).[12] All investors not belonging to individual, foreign, or government categories are divided into the two groups: i)

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[12] Because of the regulatory change effective on April 1, 1999, the ownership information between 0.2 and one percent became publicly unavailable from the fiscal year 1999 on. Thus, we use the sample period through the end of fiscal year 1998 (March 31, 1999). Notice the most precise data are required to accurately decompose the entire ownership held by each institution into the two components: portfolio investment and cross-shareholding portions.

corporate investors, including all cross-shareholdings and one-way shareholdings of financial institutions, and ii) domestic institutional investors. We remove the possible influence of foreign direct investments from our analysis by excluding those firms in which at least one identifiable foreign investor invests more than 15 percent of outstanding shares.[13] We further exclude regulated firms (i.e., broadcasting and transportation) with the upper limit applied to foreign ownership. Those firms involved in M&A transactions are also excluded from the sample for the event year. Lastly, we exclude those controlled more than 50 percent by the majority shareholders, i.e., the parents. This is because the floating portion of subsidiary firm's shares is significantly reduced relative to ordinary firms on the TSE1.[14] Appendix I.A shows breakdowns of firm ownership by investor category. Because of the major disclosure rule change in Japan (see footnote 13), it is not possible to construct these (highly purified) ownership data beyond March 31, 1999, and the sample period in our study is therefore through the end of fiscal year 1998.

Our sample size (N = 938 on average and 1,013 in 1998) is smaller than that in Kang and Stulz (1997) (N = 1,439 in 1991) without firms on the TSE second section ("TSE2"). Our sample is truncated at zero percent and highly skewed right in foreign ownership distribution, even without smaller TSE2 firms which were basically ignored by foreign investors during our sample period (see partial evidence in Table 2). On the other hand, the ownership distribution for the other investor groups is closer to normal. Without TSE2 firms, our sample of firms might be subject to selection bias. When we reject the null hypothesis that the foreign investor group is unbiased in firm size, our significant finding of positive size bias for foreign investors is interpreted as conservative.

Our initial dataset consisting of firm characteristic variables on an annual basis for all firms listed on the TSE1 for 1985-1998 is drawn from various sources: financial statements and stock price

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[13] This identification represents non-trivial work with an initial screening of all shareholder names in *katakana* (not exclusively, but always applied to foreigners) with more than 0.2 percent ownership interest in each firm in each year in our sample. The fifteen percent cut off criterion works perfectly in excluding foreign direct investors and not wrongly excluding foreign money managers from our sample.

[14] The ratio of the firms excluded for this reason to the total sample before any exclusion (except for banking firms) ranges from 2.0 to 2.4 percent throughout the sample period (see Appendix II.B).

data of individual companies are from the Nikkei Needs Database; data on bank loans are from the Toyo Keizai and Nikkei Needs Databases. Ownership information for each sample firm is further refined through annual financial reports and formal attachments to the actual balance sheets of all exchange-listed firms in Japan. These attachments include detailed information on minority ownership interests with shareholder names and their percentage ownership. This information is particularly helpful for distinguishing foreign portfolio investments from foreign direct investments under foreign names.

3.2. Methodologies

We define the ownership bias (dependent) variable for the foreign investor group as follows:

$$Y_{Fit} = \frac{V_{it}^F}{V_{Jt}^F} / \frac{V_{it}}{V_{Jt}} - 1 \tag{1}$$

where Y_{Fit} is foreign investors' deviation from the benchmark for firm i in year t, V_{it}^F is the market value of firm i's equity held by the foreign investors, V_{Jt}^F is the market value of Japanese firms held by all foreign investors in our sample, V_{it} is the market value of firm i's equity, and V_{Jt} is the total market value of all Japanese firms included in our sample. A positive (negative) value for Y_{Fit} implies that foreign investors invest in firm i more (less) than the benchmark suggests. For the other groups of investors (i.e., individual, corporate, and institutional), we similarly define each group's ownership deviation in firm i from the benchmark. We also compute the ownership deviation for each of the three sub-categories (mutual funds, pension funds, and others) of the entire domestic institutional investor group.

We then introduce the ownership difference measure of the foreign investor group from each of the variously classified domestic investor groups. For example, the ownership difference between

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foreign investors and domestic institutional investors in firm i at year t, $Y_{F\text{-}Inst,\,it}$, is given by $Y_{F\text{-}Inst,\,it} = Y_{Fit} - Y_{Inst\,it}$, where $Y_{Inst\,it}$ is institutional investors' ownership deviation from the benchmark with respect to firm i. The use of these ownership differences as a dependent variable enables us to investigate ownership bias of the foreign investor group relative to the other domestic investor groups, and vice versa.

Our typical regression specification is expressed as:

$$Y_{kit} = c_k + \sum b_{lk} X_{lit} + d_{Bk} D_{Bit} + \sum_{j=1}^{2} d_{ijk} D_{ijt} + e_{it} \tag{2}$$

$k = 1$ for foreign investors

$k = 2$ for individual investors

$k = 3$ for corporate shareholders

$k = 4$ for institutional investors

$k = 4.1$ for mutual funds

$k = 4.2$ for pension fund

$k = 4.3$ for others funds

$k = 5$ for (foreign investors – individual investors)

$k = 6$ for (foreign investors – corporate shareholders)

$k = 7$ for (foreign investors – institutional investors)

$k = 7.1$ for (foreign investors – mutual funds)

$k = 7.2$ for (foreign investors – pension funds)

$k = 7.3$ for (foreign investors – others funds)

where:

Y_{kit} = ownership deviation from the benchmark for the k-th group (for $k = 5$ through 7, it represents the difference between foreign and each of the other investor groups) for firm i in year t;[15]

X_{lit} = the l-th characteristic variable for firm i in year t;

D_{Bit} = the main bank dummy variable for firm i in year t (equal to one if firm i has a main bank relationship and 0 otherwise);

D_{ijt} = the j-th industrial sector dummy variable for firm i (equal to one if firm i operates in the j-th industrial sector, and zero otherwise); and

$j = 1$ for the materials sector and $j = 2$ for the processed goods sector.

As for the firm characteristic variables, we use the log market value of firm's total equity shares outstanding and the export ratio (export sales divided by total sales) to measure the investor familiarity. The average annual asset growth rate over the past three years, ROA (net profit divided by total assets), and the net worth ratio (net worth divided by total assets) are used to capture firm's prudence. We use the book-to-market ratio of firm's equity as a measure of the popular value-growth investment style and the main bank dummy as a corporate governance index. Finally, the annual turnover ratio of stocks (annual transaction volume divided by the number of total shares outstanding) is used as a liquidity proxy of firm's stocks. We use three major sector classifications: the material goods sector, processed goods sector, and services sector. Thus, we apply two sector dummy variables corresponding to the materials and the processed goods sector. Table 2 shows the descriptive statistics of these characteristic variables.

[Table 2 about here]

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We apply a pooled regression analysis to the unbalanced multiple-year data with fixed-effect yearly dummy variables.[16] The regression models are estimated for various combinations of the explanatory variables and for both the entire and the two equally divided sub-periods. Although this selection of two sub-periods does not exactly match with the timing of the Tokyo market bubble crash at the end of 1989, it is sufficient to see the change of behavioral patterns of each investor group over time. Notice that domestic investors are continuously optimistic well beyond the crash in the Tokyo market (Shiller, Kon-ya, and Tsutsui, 1996).[17]

4. Empirical Results

4.1. Preliminary Analysis of Investor Bias

Table 3 shows how foreign investors rapidly increased their equity market share in Japan. The size orientation ratio used in the table is defined as the value-weighted average relative to the arithmetic average of percent ownership for each investor group. Foreign investors are clearly more size oriented than domestic institutions, especially in more recent years. Reported at the bottom, both mutual and pension funds show a lower degree of large-firm orientation than foreign investors' except that in 1985.

[Tables 3, 4 and 5 about here]

Table 4 shows the correlation structure of the firm characteristic variables used in this study. Each correlation in the table represents the average cross-sectional correlation over the entire sample period. The firm size is positively correlated with all variables other than the main bank dummy and

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[15] For example, $Y_{5i} = Y_{1i} - Y_{2i}$.

[16] We alternatively attempted various panel analysis methodologies, including the time-series cross-section regression (Fuller-Battes method) that Kang and Stulz (1997) partially relied on. These alternatives do not change our main conclusions.

[17] The conclusions of this paper are insensitive to the selection of sub-periods between the two alternatives.

the book-to-market ratio. Its highest correlation is with ROA at 0.28, while the correlation with the export ratio is modest at 0.17. The firm performance represented by asset growth or ROA is strongly correlated with the net worth ratio and the main bank dummy variable. The correlations between ROA and the net worth ratio and between the net worth ratio and the main bank dummy are 0.32 and -0.46, respectively. The rest of correlations are relatively low. Overall, large, low-leveraged firms tend to operationally and financially outperform small firms that borrow more.

Table 5 shows how institutional investor bias relates to each prudence characteristic in 1985 (panel A) and 1998 (panel B). Foreign investors consistently prefer prudent firms with high asset growth, ROA, and net worth ratios, across the panel. On the other hand, domestic institutional investors exhibit significant preference towards low ROA and high leverage characteristics in 1985. In 1998, their preference changes and becomes similar to that of foreign investors in all three prudence measures.

4.2. Regression Analysis

Bias Analysis for Each Investor Group

Various combinations of the independent variables were tested first for the foreign investor group to determine the baseline regression model. The baseline model selected includes all variables listed in Table 2 in addition to the yearly and industry dummy variables. Table 6 documents the baseline regression results for each of the four major groups of investors.

[Table 6 about here]

The foreign investor group ($k = 1$) significantly and persistently over-invests in large-capitalization firms. This group also significantly over-invests in export-oriented firms and does so more in the second sub-period. The positive effect of all prudence and turnover variables is also statistically significant. In addition, there is evidence that foreign investors under-invest in firms

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with a main bank feature. Overall, the regression results for foreign investors are consistent with the Japanese evidence reported by Kang and Stulz (1997).

The individual investor group ($k = 2$) does not show much bias except for their strong small-firm orientation across the sample period. Their significant and negative response to the firm size is somewhat puzzling in an information context. Not surprisingly, the ownership responses of the corporate investors ($k = 3$) to all size, liquidity, and prudence variables are negative and mostly significant across the panel.

The domestic institutional investor group ($k = 4$), as a whole, consistently over-invests in larger firms, similar to the foreign investor group. This group also over-invests in high-turnover firms, especially in the first sub-period. Their overall under-investment in export-oriented firms is caused by a combination of the positive but insignificant response in the first sub-period and the negative and significant response in the second sub-period. Their ownership responses to the prudence variables are most interesting. Domestic institutional investors indeed do not invest in prudent firms at all, significantly over-investing in low ROA and in highly leveraged firms during the first sub- period. In fact, domestic institutional investors are more similar to corporate investors than to foreign investors, especially during the first sub-period. They were likely rescuing financially weak "large" firms.

In the second sub-period, domestic institutional investors seems to have changed to prudent investors, as shown in their significant and positive responses to the asset growth and net worth ratios. This may be attributed, first, to a series of deregulations in the 1990s, second, to the decrease in client investors' tolerance for poor performance,[18] and, third, to the investor's deferred formation of pessimism in the later 1990s (Shiller et al., 1996).

The response to the main bank dummy variable shows an overall insignificant justification for extra share holdings of the foreign and other investor classes, except for those of the corporate

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[18] The Japanese equity mutual funds have consistently and dramatically under-performed any risk-adjusted benchmarks (see Cai, Chan and Yamada, 1997, for combined reasons; and Brown, Goetzmann, Hiraki, Otsuki, and Shiraishi, 2001, for a tax reason). This may indicate that there exists a required structure (i.e., a very high level of investor tolerance to poor performance) for imprudent investment by money managers in Japan. Brown, Goetzmann, Hiraki, and Shiraishi (2003), however, reveal that there is some performance improvement among the same domestic equity mutual fund managers

investor group. The result is consistent with the more recent view on the main bank system provided by Weinstein and Yafeh (1998), Kang and Shivdasani (1999), and Hiraki et al. (2003). Notice that banks are included in the corporate investor group in our study.

Export Ratio Sensitivity of Money Managers

Table 7 shows the ownership response to the export ratio for the foreign (panel A) and domestic (panel B) institutional investor groups, estimated by dividing the sample into different industry sectors. The pervasive export orientation of foreign investors, more significant in the second sub-period, is contributed to not only by the machinery/processed goods sector, but also by the materials and services sectors, as shown in panel A.

[Table 7 about here]

The time-varying response pattern of domestic institutional investors to the export ratio is shown in panel B. Their significant and negative response in the second sub-period represents the net effect of the significant positive effect in the processed goods sector and the continuously significant and negative effect in the materials sector. It is interesting to note that domestic institutional investors are export-oriented even in the sector(s) more populated by export-oriented firms. The export ratio is a common preference attribute of the firm in the processed goods sector for both foreign and domestic institutional investors.

Breaking Down Domestic Institutional Investor Group

Table 8 shows the results for the three sub-categorized domestic institutional investor groups: mutual funds ($k = 4.1$), pension funds ($k = 4.2$), and others ($k = 4.3$). The third sub-category of domestic institutional investors is particularly focused in this study. It includes the funds entrusted by

towards the end of the 1990s.

the government with price-keeping operations (PKOs), popular during the early 1990s. As the term

PKO indicates, public money was used to maintain the stock price of certain groups of private firms,

mostly, in trouble. It also includes the funds entrusted by corporations (*zai-tech*), endowments, and

other organizations in the form of the special monetary *(tokkin)* or monetary fund trusts *(fan-tora)*.[19]

The others sub-category significantly over-invests in less prudent firms during the first sub-period,

while mutual funds and pension funds over-invest in prudent firms in each of the two sub-periods.

The imprudence of the others sub-category in the net worth ratio disappears and this sub-group

becomes a prudent investor overall during the second sub-period.

[Tables 8 & 9 about here]

In Table 9, the relative ownership responses to the foreign investor group are provided for

the domestic institutional investor group (k = 7) and for each of the three sub-category groups: mutual

funds (k = 7.1), pension funds (k = 7.2), and the others (k = 7.3).[20] Again, we observe that the others

sub-category is much more deviated from the foreign investor group than mutual and pension funds

in prudence. A similar result holds for the entire domestic institutional investor group. The overall

result in Table 9 suggests that foreign and domestic institutional investors do not much converge into

a single category of money managers in Japan, and that the relative imprudence differs between the

more transparent (pension and investment trust) funds and the less transparent (others) funds within

the domestic institutional investor group.

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[19] For corporate *zai-tech* (or *tokkin* and *fan-tora*) and government PKO investments, see Asano (1996). Although *tokkin* funds need to be entrusted to trust banks, their portfolio decisions usually belong to advisory firms more related to major brokerage houses, which are in turn related to financial *keiretsu*.

[20] The results for the relative ownership for the individual and corporate investor groups (*k*=5 and 6) are not included in the table for brevity. These results are available upon request.

5. Tests of the Relational Effect

Table 10, panel A, shows the result when the bank loan–to–total-asset ratio is included as an additional explanatory variable in the baseline regression for domestic institutional investors ($k = 4$). Its coefficient is positive and statistically significant across the sample period. Thus, the result is consistent with the relational distance hypothesis. Further, the coefficient of the net worth ratio changes from the insignificant and negative (in Table 6) to the significant and positive value over the sub-periods (in Table 10). With respect to firms' financial risk, domestic institutional investors prefer prudence after controlling for the relational distance interacted with the firm need for stock price protection. However, statistically significant imprudence still remains with respect to ROA during the first-half sample at the five-percent level.

[Tables 10 & 11 about here]

Table 10, panel B, shows the result when the two interaction variables, ROA*(*Keiretsu*) and ROA*(1-*Keiretsu*), are added to the baseline model without the non-interactive ROA variable for the domestic institutional investors ($k = 4$). The dummy variable *Keiretsu* takes one if the firm belongs to one of the six major (financial) *keiretsu* groups, and zero otherwise. The slope difference in the coefficient estimate of ROA between a *keiretsu* and non-*keiretsu* firm is tested with the *t*-statistic. The result shows that domestic institutional investors increase the magnitude of over-investment in *keiretsu* members with low ROA. The slope difference is statistically significant for the second sub-period, as well as the entire period at the one-percent level. The coefficient of ROA is negative and statistically significant at the five-percent level even for the non-*keiretsu* firms during the first sub-period. Domestic institutional investors are not imprudent investors during the second sub-period. Virtually the same results are obtained in panel C with the use of the net-worth interaction variables: Networth*(*Keiretsu)* and Networth*(1-*Keiretsu*). Domestic institutional investors do not over-invest

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in imprudent firms any more during the second sub-period, unless they are related and demand the rescue strongly.

Table 11 shows the effect of relational distance by altering the dependent variable. The ownership variable was re-computed based only on the floating part of outstanding shares in each firm (Dahlquist et al., 2003). The new ownership dependent variable for the domestic institutional investors reflects the total number of potentially tradable shares after removing the shares held by all corporate investors in each firm. As a proxy variable for relational distance, we use the original measures of the percent equity ownership of corporate investors (panel A), the cross-shareholding investors (panel B), and the main bank (panel C). The coefficients of these relational distance proxy variables are positive and statistically significant at the one-percent level across the panel and the sample period. Furthermore, except for the case of corporate investors in panel A, the domestic institutional investors are not biased with respect to firms' prudence characteristics during the second sub-period, after controlling for price support extended to related but troubled firms.

We conducted the same analyses for the others sub-category ($k = 4.3$) of domestic institutional investors. The result is the most significant and consistent with our relational distance hypothesis.[21] The relational distance hypothesis is empirically validated for domestic institutional investors, especially for the others sub-category of domestic institutional investors. However, their over-investment in unrelated imprudent firms is also found to be positive and significant during the first sub-period. In the case of government PKOs, mainly implemented in the first sub-period, domestic money managers are not much restricted by their *keiretsu* membership, but still restricted by their relations with the government.

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[21] The results for k=4.3 are available upon request.

6. Conclusions

Overall, our findings on institutional investor behavior are consistent with each of the proposed hypotheses. The strong preference of both foreign and domestic institutional investors for large capitalization firms is consistent with the agency-familiarity hypothesis. The common institutional investor bias proposed by Dahlquist and Robertson (2001) is only partially supported by the Japanese data. The most important difference exists in an asymmetric ownership response to the firm prudence variables. The over-investment in financially weak *keiretsu* member firms is only found for the domestic institutional investor group. The relational investment by domestic institutional investors is similar to rescue loans provided by a *keiretsu* main bank. The previous studies, including Weinstein and Yafeh (1998), Kang and Shivdasani (1999), and Hiraki et al. (2003), have focused on the central role of main banks in *keiretsu* and found that the system is rather inefficient. This study, on the other hand, focuses on the role played by *keiretsu*-affiliated money management as another source of weak corporate governance in Japan.

The relational equity investment may distort portfolio selection of domestic institutional investors. As suggested by Brown, Goetzmann, Hiraki, and Shiraishi (2003), we do not believe that Japanese domestic money managers are incompetent in comparison to foreign-affiliated domestic money managers. But, investment performance clearly differs between these two groups (see also Kamesaka, Nofsinger, and Kawakita, 2003). The constraints faced by domestic institutional investors might be at least a partial cause of their overall poorer performance. Iihara, Kato, and Tokunaga (2002) show negative herding of Japanese domestic institutional investors with foreign investors across all size categories. They also show that domestic institutions are contrarians to increase their portfolio portion of firms that fall in value. We additionally document that generally imprudent domestic institutions later change to prudent investors, except for rescuing *keiretsu* members in trouble. We also provide one possible reason why Japanese institutional investors look like extreme contrarians, especially, during our first sub-sample period. We think that this is mostly due to their

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keiretsu constraint. The others sub-category of domestic institutional investors seems to function as a life-prolonging device for zombie member firms.

In our future work, we will use more detailed data on asset compositions in each institutional account to more directly test whether aggregate imprudent investments are indeed closely related to the over-investment by each specific money manager affiliated with a particular financial *keiretsu*.

APPENDIX I

A. Definitions of Equity Investor Groups:

Corporate Investors = (Reciprocal Corporate and Financial Institutions) + (One-way Financial Institutions)*

Domestic Institutional Investors

= (All Investors) – [(Individual investors) + (Foreign Investors) + (Corporate Investors)]

= (Pension Funds in Trusts) + (Mutual Funds) + [(Foundations/Organizations) + (Other Funds in

Trusts)** + (One-way Corporate) + (Private Businesses)]

= (Pension Funds) + (Mutual Funds) + (Others)

*Financial institutions consisting of banks and life and casualty insurance companies (excluding trust banks)

**Other funds consisting of special monetary trusts (*tokkin*), fund trusts (*fan-tora*), and government PKOs

B. Excluded TSE1 Firms

The firms excluded are tabulated below. In addition to these firms, all banks are excluded from the sample in this study.

Industry/ Group	Year 1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
N (before excl.	932	942	954	987	1003	1026	1050	1080	1085	1086	1091	1117	1136	1163
1. Financial (Nonbanks)	7	7	8	8	10	10	10	10	12	11	12	11	15	15
2 Insolvent Frims	1	4	2	2	0	0	0	1	1	0	1	2	4	3
3. Subsidiary Firms	42	45	45	45	44	48	46	54	56	51	49	54	64	71
4. M&A Trasacted	11	13	9	7	23	12	26	17	20	15	19	13	2	25
5. Regulated Indutrials	11	11	12	12	10	10	10	11	10	12	11	12	12	11
6. Foreign- Controled	17	20	19	18	19	19	19	17	18	21	21	22	24	25
Total	**89**	**100**	**95**	**92**	**106**	**99**	**111**	**110**	**117**	**110**	**113**	**114**	**121**	**150**
N (after excl.)	843	842	859	895	897	927	939	970	968	976	978	1003	1015	1013

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Table 1

Total Market Value of All Listed-Firms on the Organized Exchanges and Percentage Ownership of Four Investor Classes and Three Sub-categorized Institutional Investor Classes in Japan: Fiscal Year 1985 (April 1, 1985)–1999 (March 31, 2000)

Figures are initially obtained for individuals, foreigners, financial institutions, (non-financial) corporations, and others from various issues of *Annual Securities Statistics*, Tokyo Stock Exchange. The portion for cross-shareholdings by financial institutions is included in the stable holding group together with corporate ownerships based on annual reports of all firms. Each fiscal year starts from April 1 of the stated year and ends on March 31 of the following year at which all figures are measured. The market values are in trillion yen. "Individual" represents domestic individual investors; "Foreign" consists mostly of foreign institutional investors; "Corporate" includes those held by (non-financial) corporations and financial institutions for cross-share holdings; "Institutional" shows institutional holdings in the trust accounts; and "the Rest" mainly consists of various governmental holdings. (Mutual) is a component of "Institutional' and represents investment trusts, i.e., mutual funds. (Pension) is also a component of "Institutional" and represents pension funds. Notice that "Market Value" shows the capitalization value of all stocks listed on all organized exchanges in Japan.

Fiscal Year	Market Value	Individual	Foreign	Corpoprate	Institutional	(Mutual)	(Pension)	Rest
1985	236.1	22.26%	7.01%	46.67%	23.72%	1.67%	0.77%	0.34%
1986	354.5	20.10%	5.29%	46.67%	27.07%	1.93%	1.02%	0.87%
1987	431.9	20.36%	4.12%	45.81%	29.22%	2.57%	1.06%	0.49%
1988	516.2	19.90%	4.33%	45.70%	29.69%	3.10%	1.03%	0.38%
1989	496.9	20.49%	4.19%	44.84%	30.23%	3.68%	0.91%	0.25%
1990	449.4	20.36%	4.69%	45.58%	29.12%	3.74%	0.91%	0.25%
1991	326.0	20.31%	6.04%	45.51%	27.87%	3.39%	1.03%	0.27%
1992	327.9	20.72%	6.32%	45.69%	26.96%	3.19%	1.17%	0.31%
1993	366.4	20.04%	7.72%	45.20%	26.76%	2.94%	1.41%	0.27%
1994	311.2	19.90%	8.11%	44.88%	26.76%	2.61%	1.64%	0.35%
1995	389.4	19.51%	10.51%	43.36%	26.32%	2.16%	1.82%	0.30%
1996	335.5	19.39%	11.94%	42.01%	26.45%	2.05%	2.41%	0.21%
1997	308.1	19.00%	13.35%	40.42%	27.01%	1.62%	3.84%	0.22%
1998	330.9	18.88%	14.08%	39.90%	26.94%	1.35%	4.74%	0.20%
1999	461.9	17.97%	18.60%	37.87%	25.44%	2.21%	5.02%	0.12%

Table 2

Ownership and Characteristic Variables: Definitions and Their Descriptive Statistics for the Period 1985–1998

Definitions:

Ownership

        Foreign: Ownership by Foreign Investors

        Individual: Ownership by Individual Investors

        Corporate: Ownership by Cross-Shareholding Investors including Corporations, Banks and Insurance

                Companies

        Institutional: Ownership by Domestic Money Managers for Investors

                Mutual: Ownership by Investment Trusts (Mutual Funds and Unit Investment Trusts)

                Pension: Ownership by Pension Funds in Trusts

                Others: Rest of Institutional Ownership

Firm Characteristics (measured annually at the end of fiscal year, March 31)

        Turnover: Annual Turnover Ratio of Stocks

        Log (MV): Log of Market Value (100 million yen) of Firm's Stocks Outstanding

        Export ratio: Export Sales/Total Sales (on an unconsolidated basis)

        Asset growth: Average Annual Total Asset Growth over the Past Three Years

        ROA: Return on Assets

        Net worth ratio: Net Worth /Total Assets

        B/M ratio: Book-to-Market Ratio

        Main bank: Main Bank Dummy (equal to one for firms having a main bank)

Table 2 (continued)

Panel A: Entire (Unbalanced) Sample: 1985-1998

	N=Obs.	13,125		
	Mean	25th percentile	Median	75th percentile
Ownership (Four Major Groups)				
Foreign	0.05	0.01	0.03	0.08
Individual	0.26	0.17	0.24	0.33
Corporate	0.32	0.23	0.32	0.41
Institutional	0.35	0.27	0.34	0.42
(Mutual)	0.03	0.01	0.02	0.05
(Pension)	0.02	0.00	0.01	0.02
("Others")	0.30	0.23	0.29	0.36
Firm Characteristics (in Baseline Model)				
Turnover	0.510	0.181	0.328	0.619
Log (MV)	6.790	5.888	6.647	7.578
Export ratio	0.100	0.000	0.033	0.141
Asset growth	0.042	-0.021	0.025	0.087
ROA	0.038	0.018	0.036	0.057
Net worth ratio	0.382	0.231	0.366	0.517
B/M ratio	0.540	0.279	0.445	0.671
Main bank	0.834	1.000	1.000	1.000

Panel B: Mean and median of variables for 1985, 1990, 1994, and 1998

	1985		1990		1995		1998	
	N=843		N=927		N=978		N=1013	
Variables	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Ownership (Four Major Groups)								
Foreign	0.05	0.03	0.04	0.02	0.07	0.05	0.06	0.04
Individual	0.29	0.27	0.23	0.22	0.25	0.24	0.30	0.29
Corporate	0.33	0.32	0.33	0.33	0.32	0.31	0.30	0.29
Institutional	0.31	0.30	0.38	0.37	0.34	0.33	0.33	0.32
(Mutual)	0.01	0.00	0.05	0.04	0.03	0.02	0.02	0.01
(Pension)	0.01	0.00	0.01	0.01	0.02	0.02	0.03	0.02
("Others")	0.29	0.28	0.32	0.31	0.29	0.28	0.28	0.26
Firm Characteristics (in Baseline Model)								
Turnover	0.714	0.530	0.480	0.369	0.427	0.278	0.297	0.209
Log (MV)	6.535	6.394	7.228	7.059	6.893	6.697	6.136	5.859
Export ratio	0.115	0.046	0.091	0.029	0.097	0.029	0.112	0.033
Asset growth	0.037	0.024	0.096	0.073	0.023	0.016	-0.023	-0.022
ROA	0.051	0.048	0.050	0.046	0.030	0.029	0.024	0.022
Net worth ratio	0.320	0.294	0.374	0.360	0.404	0.393	0.425	0.420
B-M ratio	0.378	0.347	0.338	0.329	0.504	0.487	1.105	0.953
Main bank	0.845	1.000	0.818	1.000	0.840	1.000	0.832	1.000

Table 3

Equal-weighted, Value-Weighted Average, and Size Orientation for Each of the Four Investor Groups: 1985, 1990, 1995, and 1998

	Year (N=Obs.)			
Investor Group	1985 (N=843)	1990 (N=927)	1995 (N=978)	1998 (N=1013)
A. Equal-weighted Ave. Ownership				
Foreign	0.0523	0.0366	0.0706	0.0606
Individual	0.2899	0.2345	0.2514	0.3042
Corporate	0.3307	0.3316	0.3208	0.2958
Institutional	0.3106	0.3832	0.3436	0.3272
(Pension + Mutual)	0.0191	0.0588	0.0489	0.0496
B. Value-weighted Ave. Ownership				
Foreign	0.0856	0.0520	0.1154	0.1473
Individual	0.2547	0.2232	0.2108	0.2079
Corporate	0.3173	0.3136	0.3048	0.2627
Institutional	0.3230	0.3957	0.3548	0.3686
(Pension + Mutual)	0.0322	0.0619	0.0481	0.0704
C. V/E Ratio[a]				
Foreign	1.64	1.42	1.63	2.43
Individual	0.88	0.95	0.84	0.68
Corporate	0.96	0.95	0.95	0.89
Institutional	1.04	1.03	1.03	1.13
(Pension + Mutual)	1.68	1.05	0.98	1.42

[a] C = B/A = (value-weight ownership)/(equal-weighted ownership) = Size orientation ratio

Table 4

Average Correlations of Firm Variables over Sample Period: 1985–1998

Variable	Turnover	Log (MV)	Export ratio	Asset growth ratio	ROA	Net worth ratio	B/M ratio	Main bank
Turnover	1.000							
Log (MV)	0.018	1.000						
Export ratio	0.110	0.168	1.000					
Asset growth ratio	0.008	0.120	-0.034	1.000				
ROA	-0.027	0.278	-0.077	0.292	1.000			
Net worth ratio	-0.084	0.120	0.140	0.035	0.322	1.000		
B/M ratio	-0.165	-0.165	0.077	-0.076	0.148	0.358	1.000	
Main bank	0.050	-0.108	-0.044	-0.076	-0.202	-0.461	-0.1203	1.000

Table 5

Firm Prudence Attributes for Foreign and Domestic Institutional Ownership: Quintile Analysis for 1985 and 1998

The average ownership fraction measured in raw ownership fraction of the firms is shown by investor type with the average characteristic in each quintile. ** (*) Significant at the one (five) percent level.

Panel Year			A. 1985			B. 1998			
Variable	Qntl	N 843	Mean	Foreign $k=1$	Institutional $k=4$	N 1013	Mean	Foreign $k=1$	Institutional $k=4$
Asset growth (lowest)	1	168	-0.0864	0.0262	0.3189	202	-0.1337	0.0450	0.2911
ratio	2	169	-0.0090	0.0484	0.3113	203	-0.0526	0.0575	0.3139
	3	169	0.0250	0.0563	0.3074	203	-0.0212	0.0564	0.3318
	4	169	0.0710	0.0595	0.3013	203	0.0116	0.0740	0.3383
(highest)	5	168	0.1840	0.0711	0.3140	203	0.0822	0.0700	0.3608
			F-value	11.96**	0.58			6.11**	10.59**
ROA (lowest)	1	168	0.0018	0.0239	0.3143	202	-0.0236	0.0417	0.2795
	2	169	0.0322	0.0369	0.3109	203	0.0100	0.0525	0.3143
	3	169	0.0483	0.0467	0.3241	203	0.0220	0.0448	0.3288
	4	169	0.0657	0.0654	0.3099	203	0.0369	0.0668	0.3446
(highest)	5	168	0.1080	0.0887	0.2935	203	0.0737	0.0971	0.3688
			F-value	29.68**	1.58			24.86**	17.70**
Net worth (lowest)	1	168	0.0907	0.0216	0.3516	202	0.1330	0.0331	0.2990
ratio	2	169	0.1900	0.0354	0.3179	203	0.2911	0.0442	0.3277
	3	169	0.2952	0.0533	0.3065	203	0.4168	0.0532	0.3217
	4	169	0.4297	0.0641	0.2957	203	0.5445	0.0622	0.3333
(highest)	5	168	0.6037	0.0872	0.2811	203	0.7387	0.1103	0.3542
			F-value	29.92**	9.56**			46.58**	6.01**

Table 6

Pooled Regressions for k = 1 (Foreign Investors), 2 (Individual Investors), 3 (Corporate Investors) and 4 (Domestic Institutional Investors)

The estimates for the constant and sector dummy variables are not reported. White's (1980) correction for heteroscedasticity is used for t-values. **(*) Statistically significant at the one (five) percent level.

Investor Group	A. Entire Period (1985-1998: N=13125)				B. First Sub-period (1985-1991: N=6202)				C. Second Sub-period (1992-1998: N=6923)			
	k=1	k=2	k=3	k=4	k=1	k=2	k=3	k=4	k=1	k=2	k=3	k=4
Adj. R-square	0.294	0.181	0.074	0.106	0.219	0.117	0.081	0.147	0.416	0.232	0.071	0.103
F-statistic	238.98 **	127.04 **	46.91 **	69.00 **	109.45 **	52.57 **	35.27 **	67.98 **	308.77 **	131.88 **	33.90 **	50.46 **
Turnover	0.075	0.034	-0.117	0.068	0.092	-0.006	-0.111	0.085	0.055	0.119	-0.120	0.016
(t-value)	(7.09) **	(4.18) **	(-12.90) **	(10.52) **	(6.25) **	(-0.70)	(-13.00) **	(12.65) **	(3.86) **	(6.35) **	(-5.55) **	(1.61)
Log (MV)	0.193	-0.149	-0.019	0.053	0.181	-0.110	-0.014	0.048	0.207	-0.175	-0.023	0.053
(t-value)	(41.44) **	(-35.54) **	(-5.83) **	(23.87) **	(22.36) **	(-20.80) **	(-3.11) **	(14.93) **	(40.94) **	(-28.50) **	(-5.09) **	(17.42) **
Export ratio	0.386	0.047	-0.106	-0.040	0.196	0.030	-0.117	0.054	0.543	0.018	-0.114	-0.065
(t-value)	(9.41) **	(1.23)	(-3.48) **	(-2.16) *	(2.60) **	(0.62)	(-2.61) **	(1.69)	(12.00) **	(0.34)	(-2.68) **	(-2.89) **
Asset growth ratio	0.424	-0.046	-0.068	0.016	0.553	-0.066	-0.033	-0.016	0.171	-0.043	-0.151	0.115
(t-value)	(6.34) **	(-0.80)	(-1.60)	(0.57)	(5.68) **	(-1.38)	(-0.69)	(-0.49)	(2.64) **	(-0.33)	(-1.94)	(2.21) *
ROA	1.916	-0.054	-0.312	-0.072	2.836	0.043	-0.177	-0.352	0.876	-0.231	-0.262	0.112
(t-value)	(9.19) **	(-0.35)	(-2.34) *	(-0.75)	(8.00) **	(0.25)	(-0.98)	(-2.43) *	(4.28) **	(-0.88)	(-1.30)	(0.84)
Net worth ratio	0.691	0.127	-0.429	0.036	0.742	0.476	-0.522	-0.049	0.667	-0.132	-0.402	0.149
(t-value)	(20.13) **	(3.77) **	(-16.53) **	(1.84)	(11.19) **	(10.72) **	(-12.81) **	(-1.54)	(18.22) **	(-2.82) **	(-11.66) **	(5.73) **
B/M ratio	0.055	0.043	-0.001	-0.012	0.020	0.104	0.127 **	-0.169	0.054	0.017	-0.015	0.002
(t-value)	(3.49) **	(1.74)	(-0.09)	(-1.03)	(0.36)	(2.50) *	(3.28)	(-5.69) **	(3.72) **	(0.59)	(-1.36)	(0.13)
Main bank	-0.061	-0.019	0.020	0.007	-0.057	-0.003	0.021	-0.014	-0.068	-0.046	0.019	0.029
(t-value)	(-3.43) **	(-1.40)	(1.81)	(0.92)	(-1.91)	(-0.17)	(1.39)	(-1.35)	(-3.48) **	(-2.28) *	(1.19)	(2.74) **

Table 7

Pooled Regressions of Ownership Responses to Firm Export Ratios by Industrial Sector for $k = 1$ (Foreign Investors) and $k = 4$ (Institutional Investors): Entire Period (1985-1998) and Sub-periods (1885-1991 and 1992-1998)

Each regression is run with yearly dummy variables. The "Machinery" sector is newly added in this table to the existing "Material Goods," "Processed Goods" and "Services." The most part of high-tech industries are in the "Machinery" sector, which is also included in the "Processed Goods" sector. Only the estimates of export ratios are reported. White's (1980) correction for heteroscedasticity is used to calculate t values parenthesized. ** (*) Significant at the one (five) percent level.

A. Foreign Investors (k=1)

Secter	A.1 Materials Sector			A.2 Processed Product Sector			A.3 Services Sector			A.4 Machinery Sector		
Period	1985-1998	1985-1991	1992-1998	1985-1998	1985-1991	1992-1998	1985-1998	1985-1991	1992-1998	1985-1998	1985-1991	1992-1998
N obs.	4217	2042	2175	4611	2133	2478	4297	2027	2270	3454	1609	1845
Adj. R-square	0.278	0.212	0.410	0.319	0.214	0.467	0.287	0.235	0.378	0.357	0.258	0.495
F-statistic	78.24 **	40.23 **	108.96 **	103.75 **	42.39 **	156.12 **	83.19 **	45.52 **	99.69 **	92.20 **	41.03 **	130.28 **
Export ratio	0.080	-0.163	0.278	0.410	0.262	0.578	0.371	0.035	0.467	0.390	0.244	0.577
(t-value)	(1.08)	(-1.30)	(3.28) **	(8.00) **	(2.79) **	(10.22) **	(2.92) **	(0.12)	(4.29) **	(7.06) **	(2.51) *	(9.09) **

B. Domestic Institutional Investors (k=4)

Secter	B.1 Materials Sector			B.2 Processed Product Sector			B.3 Services Sector			B.4 Machinery Sector		
Period	1985-1998	1985-1991	1992-1998	1985-1998	1985-1991	1992-1998	1985-1998	1985-1991	1992-1998	1985-1998	1985-1991	1992-1998
N obs.	4217	2042	2175	4611	2133	2478	4297	2027	2270	3454	1609	1845
Adj. R-square	0.097	0.145	0.097	0.126	0.190	0.103	0.075	0.083	0.085	0.167	0.229	0.146
F-statistic	22.62 **	25.77 **	17.73 **	32.70 **	36.79 **	21.43 **	17.59 **	14.09 **	16.07 **	34.07 **	35.06 **	23.56 **
Export ratio	-0.379	-0.266	-0.455	0.036	0.120	0.036	-0.018	0.120	-0.056	0.126	0.180	0.127
(t-value)	(-8.91) **	(-4.34) **	(-7.78) **	(1.53)	(2.86) **	(1.33)	(-0.39)	(1.50)	(-1.01)	(4.68) **	(3.56) **	(4.22) **

Table 8

Pooled Regressions for k = 4.1 (Mutual Funds), 4.2 (Pension Funds), and 4.3 (Others)

The estimates for the constant and sector dummy variables are not reported. White's (1980) correction for heteroscedasticity is used for t-values. **(*) Statistically significant at the one (five) percent level.

	A. Entire Period (1985-1998: N=13125)			B. First Sub-period (1985-1991: N=6202)			C. Second Sub-period (1992-1998: N=6923)		
Investor Group	k=4.1	k=4.2	k=4.3	k=4.1	k=4.2	k=4.3	k=4.1	k=4.2	k=4.3
Adj. R-square	0.145	0.211	0.063	0.245	0.212	0.106	0.091	0.208	0.062
F-statistic	97.96 **	153.31 **	39.35 **	126.79 **	105.03 **	47.17 **	44.34 **	114.47 **	29.40 **
Turnover	0.251	0.056	0.049	0.211	0.114	0.067	0.336	-0.058	-0.010
(t-value)	(11.33) **	(3.58) **	(7.78) **	(10.52) **	(6.61) **	(9.33) **	(5.37) **	(-2.85) **	(-1.17)
Log (MV)	0.142	0.192	0.035	0.198	0.241	0.025	0.106	0.147	0.038
(t-value)	(24.52) **	(32.25) **	(13.75) **	(25.86) **	(29.25) **	(6.52) **	(13.11) **	(20.30) **	(11.23) **
Export ratio	0.374	0.093	-0.089	0.324	0.034	0.029	0.393	0.146	-0.124
(t-value)	(6.20) **	(1.97) *	(-3.99) **	(4.06) **	(0.40)	(0.74)	(4.42) **	(2.67) **	(-4.76) **
Asset growth ratio	0.419	0.154	-0.026	0.336	0.198	-0.059	0.473	0.093	0.086
(t-value)	(5.40) **	(2.53) *	(-0.82)	(3.98) **	(2.47) *	(-1.50)	(2.96) **	(1.00)	(1.46)
ROA	1.755	1.863	-0.388	2.623	2.088	-0.780	0.753	1.972	-0.120
(t-value)	(6.71) **	(7.37) **	(-3.44) **	(7.37) **	(6.78) **	(-4.61) **	(1.91)	(6.38) **	(-0.77)
Net worth ratio	0.289	0.657	-0.035	0.532	0.480	-0.123	0.156	0.716	0.089
(t-value)	(5.58) **	(9.81) **	(-1.55)	(7.55) **	(6.40) **	(-3.19) **	(2.18) *	(10.08) **	(3.00) **
B/M ratio	0.038	0.198	-0.024	0.042	0.469	-0.222	-0.013	0.146	-0.002
(t-value)	(0.96)	(2.41) *	(-2.52) *	(0.71)	(7.63) **	(-6.25) **	(-0.37)	(2.21) *	(-0.17)
Main bank	0.101	0.001	0.002	0.002	0.026	-0.014	0.182	-0.030	0.021
(t-value)	(5.01) **	(0.04)	(0.29)	(0.06)	(0.84)	(-1.11)	(6.42) *	(-1.02)	(1.74)

Table 9

Pooled Regressions for Foreign Investors' Relative to Domestic Institutional Investors ($k = 7$), Mutual Funds (k = 7.1), Pension Funds (k = 7.2) and Others (k = 7.3)

The estimates for the constant and sector dummy variables are not reported. White's (1980) correction for heteroscedasticity is used for t-values. **(*) Statistically significant at the one (five) percent level.

Investor Group	A. Entire Period (1985-1998: N=13125)				B. First Sub-period (1985-1991: N=6202)				C. Second Sub-period (1992-1998: N=6923)			
	k=7	*k=7.1*	*k=7.2*	*k=7.3*	*k=7*	*k=7.1*	*k=7.2*	*k=7.3*	*k=7*	*k=7.1*	*k=7.2*	*k=7.3*
Adj. R-square	0.215	0.128	0.078	0.221	0.191	0.080	0.063	0.203	0.266	0.118	0.047	0.269
F-statistic	157.23 **	84.58 **	49.14 **	162.85 **	92.33 **	34.91 **	27.00 **	99.84 **	158.16 **	58.95 **	22.30 **	160.27 **
Turnover	0.007	-0.176	0.020	0.027	0.007	-0.119	-0.022	0.025	0.040	-0.281	0.114	0.066
(t-value)	(0.70)	(-9.87) **	(1.34)	(2.26) *	(0.47)	(-7.14) **	(-1.27)	(1.50)	(3.03) **	(-5.28) **	(5.64) **	(3.99) **
Log (MV)	0.140	0.051	0.001	0.158	0.132	-0.018	-0.061	0.156	0.155	0.101	0.060	0.169
(t-value)	(27.42) **	(8.53) **	(0.12)	(28.64) **	(15.05) **	(-2.08) *	(-6.53) **	(16.55) **	(27.33) **	(12.74) **	(8.43) **	(27.22) **
Export ratio	0.426	0.012	0.293	0.475	0.142	-0.128	0.162	0.167	0.607	0.150	0.397	0.667
(t-value)	(9.24) **	(0.19)	(5.30) **	(9.54) **	(1.65)	(-1.51)	(1.68)	(1.80)	(12.22) **	(1.68)	(6.10) **	(12.45) **
Asset growth	0.408	0.005	0.270	0.450	0.569	0.217	0.355	0.612	0.057	-0.301	0.079	0.085
ratio (t-value)	(6.03) **	(0.06)	(3.57) **	(6.24) **	(5.81) **	(2.06) *	(3.41) **	(5.92) **	(0.73)	(-1.92)	(0.85)	(1.00)
ROA	1.988	0.160	0.052	2.303	3.188	0.212	0.748	3.616	0.763	0.122	-1.097	0.996
(t-value)	(8.78) **	(0.59)	(0.20)	(9.40) **	(8.34) **	(0.58)	(2.11) *	(8.75) **	(3.22) **	(0.31)	(-3.42) **	(3.83) **
Net worth ratio	0.655	0.402	0.034	0.726	0.791	0.210	0.262	0.865	0.519	0.512	-0.048	0.579
(t-value)	(17.01) **	(7.91) **	(0.53)	(17.21) **	(10.52) **	(2.68) **	(3.05) **	(10.62) **	(12.35) **	(7.57) **	(-0.71)	(12.38) **
B/M ratio	0.068	0.018	-0.143	0.079	0.189	-0.023	-0.449	0.242	0.052	0.067	-0.091	0.056
(t-value)	(5.86) **	(0.64)	(-2.06) *	(5.51) **	(2.99) **	(-0.35)	(-6.55) **	(3.51) **	(5.05) **	(2.57) *	(-1.69)	(4.87) **
Main bank	-0.068	-0.163	-0.062	-0.064	-0.043	-0.058	-0.082	-0.043	-0.097	-0.250	-0.038	-0.089
(t-value)	(-3.52) **	(-7.22) **	(-2.53) *	(-3.09) **	(-1.36)	(-1.76)	(-2.27) *	(-1.29)	(-4.44) **	(-8.40)	(-1.23)	(-3.79) **

Table 10 Pooled Regression with the Loan to Total Asset Ratio, with ROA*Keiretsu Dummy or with Networth*Keiretsu Dummy Added to the Baseline Model for $k = 4$ (Domestic Institutional Investors). The sector and yearly dummy variables are not reported. White's (1980) correction for heteroscedasticity is used for t-values. **(*) Statistically significant at the one (five) percent level.

A. $k=4$ with Loan/TA Ratio

Dep. Var.	1985-1998	1985-1991	1992-1998
Period	1985-1998	1985-1991	1992-1998
N obs.	13125	6202	6923
Adj. R-square	0.112	0.162	0.104
F-statistic	70.11 **	71.61 **	48.22 **
Const.	-0.522	-0.366	-0.523
(t-value)	(-18.66) **	(-9.98) **	(-14.11) **
Turnover	0.065	0.083	0.014
(t-value)	(10.12) **	(12.40) **	(1.43)
Log (MV)	0.057	0.054	0.055
(t-value)	(25.01) **	(16.32) **	(17.44) **
Export ratio	-0.050	0.037	-0.070
(t-value)	(-2.68) **	(1.18)	(-3.11) **
Asset growth ratio	0.043	0.025	0.130
(t-value)	(1.54)	(0.74)	(2.47) *
ROA	-0.041	-0.297	0.130
(t-value)	(-0.42)	(-2.04) *	(0.97)
Net worth ratio	0.134	0.101	0.198
(t-value)	(5.96) **	(2.87) **	(6.65) **
B/M ratio	-0.008	-0.143	0.004
(t-value)	(-0.63)	(-4.84) **	(0.26)
Main bank	-0.008	-0.045	0.024
(t-value)	(-0.98)	(-4.13) **	(2.26) *
Loan/TA ratio	0.205	0.338	0.102
(t-value)	(8.24) **	(9.32) **	(3.04) **

B. $k=4$ with ROA*Keiretsu

Dep. Var.	985-1998	1985-1991	1992-1998
Period	985-1998	1985-1991	1992-1998
N obs.	13125	6202	6923
Adj. R-square	0.107	0.148	0.104
F-statistic	66.51 **	64.14 **	48.30 **
Const.	-0.437	-0.243	-0.490
(t-value)	(-17.17) **	(-7.18) **	(-14.69) **
Turnover	0.068	0.085	0.016
(t-value)	(10.54) **	(12.64) **	(1.63)
Log (MV)	0.055	0.050	0.056
(t-value)	(23.25) **	(14.24) **	(17.59) **
Export ratio	-0.041	0.053	-0.064
(t-value)	(-2.19) *	(1.66)	(-2.86) **
Asset grwoth ratio	0.014	-0.018	0.111
(t-value)	(0.50)	(-0.52)	(2.15) *
ROA*(1-Keiretsu)	-0.054	-0.342	0.156
(t-value)	(-0.56)	(-2.36) *	(1.16)
Networth ratio	0.031	-0.054	0.140
(t-value)	(1.55)	(-1.66)	(5.36) *
B/M ratio	-0.011	-0.168	0.003
(t-value)	(-0.921)	(-5.644) **	(0.202)
Main bank	0.007	-0.014	0.031
(t-value)	(1.00)	(-1.34)	(2.91) **
ROA*Keiretsu	-0.558	-0.671	-0.853
(t-value)	(-3.61) **	(-3.02) **	(-3.86) **
Slope Diff.	-0.504	-0.329	-1.009
(t-value)	(-3.71) **	(-1.82)	(-4.83) **

C. $k=4$ with Networth*Keiretsu

Dep. Var.	985-1998	1985-1991	1992-1998
Period	985-1998	1985-1991	1992-1998
Nob	13125	6202	6923
Adj. R-square	0.107	0.147	0.104
F-statistic	66.69 **	64.06 **	48.14 **
Const.	-0.442	-0.240	-0.492
(t-value)	(-17.25) **	(-7.05) **	(-14.55) **
Turnover	0.068	0.085	0.015
(t-value)	(10.51) **	(12.67) **	(1.58)
Log (MV)	0.056	0.050	0.057
(t-value)	(22.92) **	(13.92) **	(16.96) **
Export ratio	-0.041	0.054	-0.065
(t-value)	(-2.17) *	(1.67)	(-2.90) **
Asset grwoth ratio	0.014	-0.017	0.112
(t-value)	(0.53)	(-0.50)	(2.18) *
ROA	-0.101	-0.365	0.077
(t-value)	(-1.04)	(-2.50) *	(0.58)
Networth*(1-Keiretsu)	0.035	-0.050	0.145
(t-value)	(1.75)	(-1.54)	(5.59) **
B/M ratio	-0.011	-0.168	0.003
(t-value)	(-0.923)	(-5.660) **	(0.206)
Main bank	0.007	-0.014	0.030
(t-value)	(0.95)	(-1.35)	(2.81) **
Networth*Keiretsu	-0.044	-0.086	0.051
(t-value)	(-1.64)	(-2.17) *	(1.38)
Slope Diff.	-0.078	-0.036	-0.094
(t-value)	(-4.35) **	(-1.41)	(-3.75) **

Table 11 Pooled Regressions with Institutional Investor Ownership (k = 4) as Dependent Variable Excluding Corporate Investor Ownership: Entire Period (1985-1998) and Sub-periods (1985-1991 and 1992-1998)

The newly added relational proxy as an explanatory variable is Corporate = Ownership by Corporate Investors in panel A; Cross = Ownership by Mutual Shareholdings in panel B; and Main_share = Ownership by Main bank (largest lender) in panel C. The sector and yearly dummy variables are not reported. White's (1980) correction for heteroscedasticity is used for t-values. **(*) Statistically significant at the one (five) percent level.

Dep. Var.	A. k=4: Corporate Ownership Var.			Dep. Var.	B. k=4: Cross Ownership Var.			Dep. Var.	C. k=4: Main-bank Ownership Var.		
Period	1985-1998	1985-1991	1992-1998	Period	1985-1998	1985-1991	1992-1998	Period	1985-1998	1985-1991	1992-1998
N obs.	13125	6202	6923	Nob	13125	6202	6923	Nob	13125	6202	6923
Adj. R-square	0.116	0.178	0.104	Adj. R-square	0.118	0.174	0.112	Adj. R-square	0.113	0.173	0.101
F-statistic	72.89 **	79.80 **	48.04 **	F-statistic	74.07 **	77.81 **	52.47 **	F-statistic	70.35 **	77.07 **	46.53 **
Const.	-0.373	-0.226	-0.407	Const.	-0.350	-0.179	-0.409	Const.	-0.321	-0.164	-0.364
(t-value)	(-16.23) **	(-8.03) **	(-13.97) **	(t-value)	(-16.36) **	(-6.95) **	(-15.29) **	(t-value)	(-14.64) **	(-6.48) **	(-13.20) **
Turnover	0.021	0.038	-0.027	Turnover	0.018	0.034	-0.029	Turnover	0.016	0.032	-0.031
(t-value)	(4.74) **	(7.58) **	(-4.21) **	(t-value)	(4.22) **	(6.88) **	(-4.80) **	(t-value)	(3.78) **	(6.66) **	(-4.79) **
Log (MV)	0.050	0.047	0.050	Log (MV)	0.049	0.045	0.049	Log (MV)	0.050	0.046	0.049
(t-value)	(27.06) **	(17.93) **	(19.26) **	(t-value)	(27.02) **	(17.68) **	(19.64) **	(t-value)	(26.67) **	(17.78) **	(18.94) **
Export ratio	-0.068	0.017	-0.097	Export ratio	-0.072	0.012	-0.096	Export ratio	-0.072	0.011	-0.100
(t-value)	(-4.86) **	(0.78)	(-5.47) **	(t-value)	(-5.09) **	(0.54)	(-5.49) **	(t-value)	(-5.10) **	(0.47)	(-5.63) **
Asset grwoth ratio	-0.006	-0.030	0.070	Asset grwoth ratio	-0.011	-0.036	0.071	Asset grwoth ratio	-0.008	-0.031	0.065
(t-value)	(-0.31)	(-1.27)	(1.58)	(t-value)	(-0.53)	(-1.52)	(1.63)	(t-value)	(-0.39)	(-1.30)	(1.45)
ROA	-0.172	-0.371	-0.005	ROA	-0.147	-0.348	0.017	ROA	-0.174	-0.358	-0.010
(t-value)	(-2.42) *	(-3.74) **	(-0.05)	(t-value)	(-2.08) *	(-3.56) **	(0.16)	(t-value)	(-2.45) *	(-3.66) **	(-0.09)
Networth ratio	-0.120	-0.240	0.001	Networth ratio	-0.136	-0.266	-0.008	Networth ratio	-0.139	-0.270	-0.014
(t-value)	(-7.52) **	(-10.12) **	(0.04)	(t-value)	(-8.77) **	(-11.35) **	(-0.38)	(t-value)	(-8.83) **	(-11.53) **	(-0.67)
B/M ratio	-0.003	-0.105	0.005	B/M ratio	-0.006	-0.106	0.003	B/M ratio	-0.004	-0.096	0.005
(t-value)	(-0.28)	(-4.70) **	(0.42)	(t-value)	(-0.53)	(-4.73) **	(0.26)	(t-value)	(-0.30)	(-4.29) **	(0.36)
Main bank	0.010	-0.007	0.030	Main bank	0.006	-0.010	0.025	Main bank	-0.010	-0.034	0.018
(t-value)	(1.66)	(-0.84)	(3.33) **	(t-value)	(1.02)	(-1.15)	(2.75) **	(t-value)	(-1.31)	(-3.09) **	(1.66)
Corporate	0.139	0.170	0.114	Cross	0.219	0.156	0.302	Main_share	0.462	0.619	0.249
(t-value)	(7.65) **	(6.56) **	(4.64) **	t-value	(9.21) **	(4.82) **	(8.95) **	t-value	(4.50) **	(3.98) **	(1.90) **