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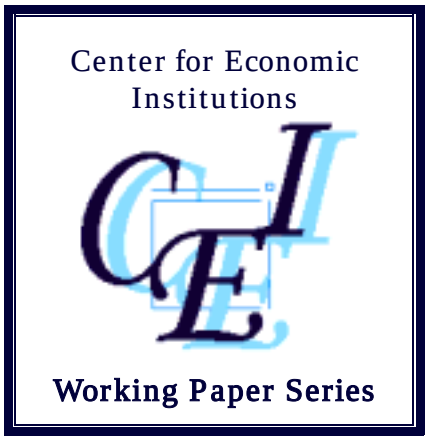

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FOREIGN OWNERSHIP AND FIRM VALUE IN JAPAN*

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FOREIGN OWNERSHIP AND FIRM VALUE IN JAPAN

Abstract

I examine the relation between Tobin's *Q* and the structure of foreign equity ownership for a sample of 945 industrial firms listed in the 1st Section of the Tokyo Stock Exchange. I find evidence of significant curvilinear relation between *Q* and the fraction of common stocks owned by foreigners in Japan. *Q* rises until foreign ownership reaches approximately 40% to 45 %, then falls back. It appears that, in Japan, foreign institutional investors are good monitors, and foreign industrial firms increase their stakes after firms showing poor operating performance. I also find that R&D intensity and foreign ownership have weaker but a similar pattern of concave nonlinear relationship in Japan. Future research will add variables like foreign CEO appointments and the fraction of foreign members serving in the board, and examine how these variables can affect firm value in Japan.

Key words: Foreign Ownership, Firm Value, Tobin's *Q*, Japan

JEL Classifications: G30; G32; K22

1. Introduction

Much research in recent years has showed the inefficiency in the ownership structure and corporate governance mechanism in Japan, which is contrary to the views documenting the success of bank-centered corporate governance system until the early 1990s.[1] Most recent empirical studies have criticized the poorly functioning main bank system. For example, Weinstein and Yafeh (1998) argue that, on average, cost of capital for Japanese firms, which have close ties with main banks, is higher than is for unaffiliated firms, suggesting a rent-extracting hypothesis of the main bank system. Kang and Stulz (2000) observe that during the period of economic downturn in the early 1990s, bank-dependent firms invest less and perform worse than firms, which are less dependent on banks. Morck and Nakamura (1999, 2000) further point out the practice of Japanese banks "propping up" weak bank group firms, and conclude that Japanese corporate governance system is not effective.

In this paper, I take an alternative approach in investigating the relation between ownership structure and firm value in Japan. I examine the relation between foreign ownership and firm value in Japan. Using Tobin's *Q* as a proxy for market valuation of the firm, I show how foreign ownership structure and firm value are related. This research is motivated partly by the emergence in the literature documenting poor Japanese corporate governance system and partly by the observation that economic and financial distress of the 1990s along with the deregulation has encouraged massive foreign investment in Japan. It has therefore clearly become an interesting empirical research issue to explore what firm

[1] Studies documenting the crucial role of the Japanese main bank system include the following, amongst others. Banks share useful information with firms in business group which reduces agency costs (Kester 1991), and can lower the indirect costs of bankruptcy by not discouraging investment in their financially distressed borrowing firms using the flexible governance system for easier debt renegotiations (Hoshi, Kashyap, and Scharstein 1990). In addition, banks as large shareholders of firms effectively monitor management and replace poorly performing executives (Kaplan and Minton 1994; Kang and Shivdasani 1995).

characteristics are affiliated with Japanese firms with large foreign ownership, and how well (or bad) those largely foreign owned firms are performing. Furthermore, firms with substantially large fraction of foreign ownership have less ownership by main banks or by other firms. Thus by examining largely foreign owned firms in Japan, we will be able to study an alternative governance system, which is not much dependent upon main banks or has large inter-corporate shareholdings among Japanese firms.

The fraction of foreign ownership in Japanese firms has significantly increased in recent years, although the domestic financial institutions are still the most important shareholders of Japanese firms. Figure 1 shows that the percentage of market value of firms listed in Tokyo Stock Exchange (TSE) owned by foreigners is only 4.2 percent in 1989, while the figure rises to 18.6 percent in 1999. Figure 1 also presents that the percentage of market value of firm ownership by Japanese financial institutions (banks) has gradually declined from 43.5 (15.7) percent to 36.5 (11.3) percent over the same period. The Anti-Monopoly Act of 1977 in Japan has required a bank to keep equity ownership position of a firm up to 5% by April 1st in 1987, and this regulation has effectively limited banks from owning larger firm equity ownership in recent years.[2]

[Insert Figure 1 about here]

Along with the increased foreign ownership, the influence of large foreign shareholders on managerial decisions has been receiving greater and friendlier attention by Japanese firms in recent years. As an example, note the following excerpt from the *Wall Street Journal* of September 11, 2000, when DaimlerChrysler has decided to acquire 34% of fourth-largest Japanese automobile manufacturer Mitsubishi Motors' shares and to assign Rolf Eckrodt as chief operating officer:

> (Mitsubishi Motors President) Mr. Kawasoe said he hoped Mr. Eckrodt--who will have sweeping responsibility for research and development, production, marketing and sales of cars--will be able to help improve Mitsubishi's quality control.

[2] For additional discussions of recent trends in foreign acquisitions in Japan, see "Barbarians at the Gate," *The Economist*, April 3rd, 1999 and "Beyond Japan's Lost Decade," *Wall Street Journal*, December 28th, 2000.

This example shows sharp contrast to the case of Japanese-style corporate governance for a Tokyo-based automobile part supplier named Koito Manufacturing Company discussed in Gerlach (1992) and Morck and Nakamura (1999). In 1990, a well-known Texan oilman and takeover entrepreneur T. Boone Pickens owned 26.3% of Koito, which is affiliated with Toyota group and make, on average, 40% of total sales to Toyota Motor every year. Pickens, however, was not successful in forcing management to give him any seats on the board. Management argued that Pickens was just a short-term investor and lacked expertise in the automobile industry.[3]

In fact, several examples of recent successful foreign acquisitions of firms in Japan are also accompanied by appointments of top executives and board members by large foreign investors. This shows that the negative Japanese view of foreign investors is changing. The existing literature on Japanese ownership structure, however, has largely focused on banks serving the dual role as shareholders and debt holders, and on the governance systems based on the different types of firms: independent firms and member firms of business group (*keiretsu*). Studies examining the role of foreign investors with regard to Japanese corporate finance have not been sufficiently documented until recently. Thus, examining the monitoring role of foreign shareholders in Japan and exploring the relation between foreign ownership, and corporate control and firm value has clearly become an interesting research topic.

[3]Until recently foreign investors in Japan have been viewed as most undesirable shareholders along with racketeer shareholders or *sokaiya*, who embarrass incumbent management by the operation of blackmails. *Sokaiya* are, in fact, not enhancing shareholder wealth as often times they shut up as they are paid off. See also Morck and Nakamura (1999) to read their translation of Japanese guidebook giving Japanese IPO firms warning against undesirable investors including foreigners. In this paper, however, I predict that the presence of large foreign shareholders is positively related to firm value up to a certain level.

Perhaps, constructing sufficient number of sample firms, where foreign investors are large shareholders with superior voting rights, has been a difficult task for detailed empirical work. The lack in the number of Japanese firms with large fraction of foreign ownership is mainly attributed to the fact that the deregulation of local equity markets permitting foreign ownership to a greater extent for a certain degree of corporate control has only been pronounced within the last two decades. For example, foreign investors were allowed to hold more than 25% of outstanding shares in a listed firm in Japan only after December 1980. The puzzle of "equity home bias," a phenomenon that investors hold too little of their wealth in foreign assets, and prefer to hold domestic assets can be used as another explanation for this lack of large foreign ownership in Japanese firms. A number of recent papers such as Kang and Stulz (1997), Lewis (1999), and Dahlquist and Robertsson (2000) focuses on examining the puzzle of "equity home bias." Kang and Stulz (1997) study the Japanese case and find that well-performing large manufacturing firms have greater foreign ownership. After controlling for size, they find that export-oriented small firms have higher level of foreign ownership.

I find strong evidence of a curvilinear relation between Tobin's *Q* and the fraction of common stocks owned by foreigners in Japan. *Q* rises until foreign ownership reaches approximately 40% to 45 %, then falls back. The analysis using earnings rate and the fraction of foreign ownership shows similar curvilinear relation. It appears that, in Japan, foreign institutional investors invest in well-performing firms and serve as good monitors. On the other hand, foreign industrial firms increase their equity holdings in poorly performing Japanese firms. These results are consistent with the analysis after using *yearly change* in Tobin's *Q* as a dependent variable and regressed on the change in foreign ownership at various categories. I also find that, in Japan, an increase in foreign ownership at substantial levels of foreign ownership (up to 40%) is correlated with a rise in the research and development (R&D) intensity, while concentrated foreign ownership is negatively associated with R&D intensity. This suggests that foreign institutional investors in Japan are concerned much for firms' long-run vitality contrary to the

notion that foreign investors are merely short-term speculators, and that at concentrated foreign ownership levels, there exists reduction in R&D expenditures due to cost sharing with foreign owners.

This paper is organized as follows. Section 2 presents the existing literature on firm value and equity ownership structure, and discusses hypothesized effects with foreign ownership. Section 3 describes the basic methodology, and how endogeneity problems of foreign ownership are considered in this paper. In Section 3, I also describe data used in this paper and present summary statistics of variables used in the empirical analysis. In Section 4, I show empirical evidence on the relation between firm value and foreign ownership. Finally, Section 5 presents concluding remarks.

2. Firm value, ownership structure, and hypothesized effects of foreign ownership

The literature documenting the relation between firm value and concentrated ownership structure by management or banks has been well established. As early as the examination of modern corporations by Berle and Means (1932), it has been noted that the potential conflicts of interests arising from dispersed ownership structure are frequently unraveled in favor of management, which does not necessarily maximize firm value. Jensen and Meckling (1976) and Demsetz (1983) argue that managerial equity ownership will provide managers incentives to maximize firm value. Stulz (1988), however, has provided a model of entrenched managers, where increased managerial ownership will allow managers to pursue non-value maximizing agendas. Using U.S. data, Morck, Shleifer, and Vishny (1988) have empirically showed a non-linear relation between firm value and managerial ownership: firm value increases up to a certain level of managerial ownership (i.e., 5%) and then decreases as management holdings further rise. Similar results are found in McConnell and Servaes (1990), Hermalin and Weisbach (1991), and Kole (1995) using U.S. data.

Morck, Nakamura, and Shivdasani (2000), however, find no evidence of non-linear relation between firm value and managerial ownership from their study on Japan. They find that firm value is positively related to managerial ownership in Japan consistent with the prediction by Jensen and Mecking

(1976), but an empirical finding in contrast to that from studies U.S. data. Morck et al. (2000) attribute the less pronounced entrenchment effect to the large inter-corporate shareholdings and bank ownership structure in Japan. They also find that at low to moderate levels of equity ownership by main banks, Tobin's *Q* falls as bank equity ownership rises, and at higher levels of bank ownership this relation is reversed at some specifications. Claessens, Djankov, Fan, and Lang (2000) further provide evidence that financial institution block-holders largely expropriate minority shareholders in Japan. The recent empirical evidence is contrary to the theoretical prediction by Admati and Pfleiderer (1994) and Mahrt-Smith (2000) where equity ownership by informed financial institutions are found to benefit firms as informed creditors mitigate the information asymmetry problems.

Morck et al. (2000), however, do not consider how Tobin's *Q* is affected when a firm is largely owned by foreign investors in Japan. It may be due to the minimal foreign ownership during their sample period of 1986 as can be seen in Figure 1. To my knowledge, the analysis by Khanna and Palepu (1999) is the only study to address the relation between foreign ownership and firm value. Using the early 1990s data from India and Tobin's *Q* as a proxy for firm value, Khanna and Palepu (1999) find that domestic financial institutions are poor monitors, while foreign institutional investors serve valuable monitoring functions. Tobin's *Q* is positively correlated with the presence of foreign institutional ownership and negatively correlated with the presence of domestic institutional ownership. They further point out that domestic financial institutions in India are less transparent and are more likely to engage in questionable practices, which are detrimental to minority shareholders.

It would thus be very useful to develop hypotheses to explore the effects of the presence of large foreign ownership and the marginal effects of the increase in foreign ownership on firm value in Japan. It is plausible to expect that there exists non-linear relation between firm value and foreign ownership in Japan. The insight behind this prediction is from the evidence given in Morck et al. (2000) which presents a *convex* relation between bank equity ownership and firm value in Japan. Their findings are consistent with the view that higher levels of bank equity ownership increase bank power, and hence are associated

with increased interest costs for firms dependent upon banks as documented by Weistein and Yafeh (1998). I predict that the level of minority shareholders expropriation is mitigated in Japanese firms with the significant presence of foreign ownership via favorable market valuation.

The view expressed in these empirical findings is also consistent with the theoretical framework by Rajan (1992) that explains how banks can extract rents from their borrowers using their informational advantage. An increase in the fraction of foreign ownership possibly indicates a general decline in equity ownership by main banks in Japan. Thus, we hypothesize a *concave* relation between foreign ownership and firm value. Up to a certain level of foreign ownership, we expect that as the fraction of foreign ownership rises, the influence by Japanese financial institutions will decrease, while the foreign investors' monitoring role increases, and thereby discouraging the practice of value-destroying policies by banks. Foreign institutional investors can be considered as major outside investors up to a certain level of ownership. This view is also consistent with the theoretical prediction by Shleifer and Vishny (1986) and the empirical evidence by Khanna and Palepu (1999). Shleifer and Vishny (1986) argue that large shareholders are expected to effectively monitor management using enough voting control as to reduce the agency problems, which are the conflicts of interests between shareholders and managers, arising from dispersed ownership.

On the other hand, at high levels of foreign ownership, we may consider a foreign management's entrenchment hypothesis, which can be an extension of the prediction by Stulz (1988). At very concentrated ownership levels, it is assumed that both ownership and managerial control are closely associated. It may therefore be possible to predict that significantly increased foreign ownership may allow foreign owner-managers to become entrenched and pursue non-value maximizing managerial behaviors. In fact, foreign names almost always appear among names listed for top executives when a foreign industrial firm acquires a Japanese firm in recent years.

Alternatively, we can consider a "rescue acquisition" hypothesis where poorly performing firms add more foreign investment at substantially high levels of foreign ownership rather than firms with high

foreign ownership show poor performance. Zeckhauser and Pound (1990) point out the issue of the "poor-performance-attracts-large-shareholders" phenomenon, and concern the understatement of contributions of large shareholders with their empirical findings of corporate performance improvement with the presence of large shareholders. The phenomenon of foreign acquisitions of poorly performing domestic firms has widely been observed in several emerging markets after Asian financial crisis in 1997. For example, United Nations Conference on Trade and Development (1999) report that, from 1997 to 1998, in Korea and Thailand, the value of cross-country mergers and acquisition has increased from 2.8 and 3.7 billion dollars to 5.1 and 7.0 billion dollars, respectively. It appears that economic and financially distressed (but significantly undervalued) Korean and Thai firms have substantially added foreign capital since the Asian financial crisis.

3. Methodology and data

A. Basic Methodology

I use Tobin's *Q*, which is the ratio of the market value of assets to the replacement cost of the capital stocks, as the primary dependent variable in this paper. Tobin's *Q* has been broadly used in the existing finance and economics literature as it provides useful information on the market valuation of firms.[4] My measure of Tobin's *Q* is similar to *Q* ratios computed in Hoshi and Kashyap (1990), Hoshi, Kashyap, and Scharfstein (1991), Hayashi and Inoue (1991), and Morck et al. (2000). Tobin's *Q* in those studies has been adjusted to account for various issues in studies on Japan. Hoshi and Kashyap (1990), and Morck et al. (2000) point out that this method of measuring Tobin's *Q* can effectively correct firm value due to inter-corporate shareholdings, land price appreciation (or depreciation), and taxes in Japanese firms, and suggest its use for Japanese firms. The numerator of *Q* is the market value of equity,

[4] See, among others, Morck et al (1988), McConnell and Servaes (1990), Hermalin and Weisbach (1991), Lang and Stulz (1994), and Yermack (1996) and recently by Khanna and Palepu (1999) for prior studies using Tobin's *Q*.

plus the book value of long- and short-term debt, minus the estimated market value of shares held in other firms. The estimated market value of shares held in other firms is obtained by dividing annual dividend receipts by Tokyo Stock Exchange (TSE) dividend-price ratio. The market value of equity is obtained using the product of the fiscal year end stock price data and total number of shares outstanding in TSE. Unlike studies using U.S. data, preferred stocks are not considered in calculating the numerator of *Q*.[5] The denominator of *Q* includes the following seven items: non-residential buildings, structures, machinery, transportation equipment, instruments and tools, land, and inventories.

To evaluate the foreign ownership and market valuation of Japanese firms, I regress *Q* on measures of ownership structures. To capture the marginal effects of additional foreign ownership and profitability, I follow Morck et al. (1988) and Hermalin and Weisbach (1991), and estimate a variety of piecewise linear regressions. I divide the foreign ownership levels into six categories: less than one percent, between one percent and five percent, between five percent and 10%, between 10% and 20%, between 20% and 40%, and greater than 40%. My division of foreign ownership structure is closer to the division of CEO ownership by Hermalin and Weisbach (1991) than to the division of board ownership by Morck et al. (1988). Hermalin and Weisbach (1991) also note that ownership by top management in U.S. is very low in their study. This is because many firms in Japan still have very low level of foreign ownership. The only difference between my division and that of Hermalin and Weisbach (1991) is such that I make another division at foreign ownership of 40% on the strength of my consideration for non-

[5] Preferred stock issues were virtually non-existent in Japan prior to 1990. There were only two companies that issued preferred stocks for the period from 1965 to 1990: Hitachi Zosen and Nippon Yakin Kogyo Corp. In April 1991, the Commercial Law was reformed and the issuing procedure of preferred stock has become much simpler. Until that time, a company could not issue preferred stocks unless it changes its articles in the annual general meetings. Despite the deregulation in issuing process preferred stocks have been recently issued only by a few banks which are in need to raise their BIS capital ratios requirements.

linear relationship between foreign ownership and firm value at beyond 20% of foreign ownership. In fact, the inflection point in plotting the curvilinear relationship between firm value and foreign ownership is found at over 40% of foreign ownership.

I use not only Tobin's *Q* as a dependent variable, but also earnings rate (*ERATE)* as a dependent variable in the quadratic and piecewise regression analyses. The *ERATE* is defined as the earnings before taxes and interest weighted by the estimate of the replacement value of assets. Firms in financial services, transportation, and wholesale and retail industries are excluded. By adopting earnings rate as another dependent variable, we have empirical results which are not sensitive to changes in capital structure and tax treatments, as pointed out by Hermalin and Weisbach (1991). Morck et al (1988) and McConnell and Servaes (1990) also examine accounting performance and ownership structure to form more general interpretation of firm value and equity ownership.

I employ several firm characteristics variables as explanatory variables including expenditures on advertising, research and development, directory salary, and firm size variable, which might affect the firm value. I regress *Q* and earnings rate on these variables along with variables for each the six regions in foreign ownership. Yafeh and Yosha (1996) find that large shareholders efficiently monitor firms in Japan by reducing activities with scope for managerial moral hazard such as advertising, R&D, and entertainment expenses. Morck and Nakamura (1999) further note that entertainment spending falls as cash flow falls among the non-bank group firms due to closer bank monitoring. They interpret entertainment expenses as lavish "perks" consumption rather than as investment in building networks. R&D intensity is also employed to measure long-run vitality of firms in the existing literature such as in Healy, Palepu, Ruback (1992).

B. Endogeneity in foreign ownership

Hermalin and Weisbach (1991; 1998; 2001) discuss the issue of simultaneity problems in the corporate governance literature and point out that caution should be taken in interpreting board

effectiveness and corporate performance. Hermalin and Weisbach (1991) find that after eliminating the potential endogeneity problem, firms performing poorly are adding outside directors rather than firms with outside directors are performing poorly. It is possible to predict that there exist simultaneity problems on our study of relating foreign ownership to firm value. For example, if an increase in foreign ownership is correlated with a decline in performance, we may incorrectly interpret as firms with large foreign ownership are performing poorly although poorly performing firms are actually adding more investments by foreigners. Concurrently, There also should be given a caution in interpreting with any causality when an increase in firm performance is correlated with an increase in foreign ownership. Therefore, in order to capture the endogeneity of foreign ownership, I employ 2 stage least squares (2SLS) estimation method using the lagged values of foreign ownership as instrument variables following the methodology by Hermalin and Weisbach (1991).

It may be argued that whether the lagged values of foreign ownership are really good instruments. For most firms, on a year-by-year basis, the percentage change in foreign ownership might be small, so using the previous year's foreign ownership may be just like using the current year's value of foreign ownership. In order to get around this potential simultaneity, I use *yearly changes* in Tobin's Q, not level, as the dependent variable in the regression analysis. The explanatory variables include industry controls and the change in foreign ownership interacted with dummy variables representing one of the six foreign ownership categories based on foreign ownership in the previous year. The estimation of the relation is made the following equation:

$$Q_t - Q_{t-1} = \sum_{i=1}^{20} \beta_i D_i + \sum_{j=1}^{6} \beta_j (fo_t - fo_{t-1}) D_{j,t-1} + \varepsilon_t \ , \qquad (1)$$

where Q_t is Tobin's Q and fo_t is the fraction of foreign ownership at year t. D_i are dummy variables taking a value of 1 for industry i and zero otherwise where there 20 different industries in our sample. $D_{j,\,t-1}$ are

dummy variables which are 1 for foreign ownership category *j* (e.g., between 1% and 5% foreign ownership, if *j* is equal to 2), and zero otherwise. Thus, the β_j coefficients would indicate if changes in foreign ownership starting from category j in the previous year lead to an increase or decrease in Tobin's *Q*.[6]

C. Data description

Nihon Keizai Simbun's NIKKEI Needs database is used in obtaining firm characteristics including R&D expenditures, advertising expenditures, and director salary. The remaining accounting data and all stock price data are retrieved from the Pacific Basin Capital Markets (PACAP) Research Center database for Japan at the University of Rhode Island. There are a total of 1593 firms, which are listed in Tokyo Stock Exchange (TSE) for the three consecutive fiscal years from 1995 to 1997 without having any missing data such as foreign ownership or R&D expenditures. Both NIKKEI Needs and PACAP databases effectively provide special codes for missing data, so that we can distinguish missing data from nil data values. It is important to study firms listed in an exchange since rigid listing requirements provide evidence that a firm was financially healthy before the sample period. The PACAP Research Center database structures files into industrial (non-financial) and financial companies (banking, insurance, securities, and trust). Our sample firms are collected from the non-financial company file.

The sample firms are limited to industrial firms listed in the 1st section of TSE for the fiscal year 1997. Except for a few number of firms, most firms' balance sheet data relate to fiscal year ending March 31st, 1998. Firms in the 1st section are larger and more actively traded, and have less concentrated ownership structure than firms in the 2nd section of TSE. Due to the difference in several listing conditions, foreigners mainly focus on investing in firms in the 1st section of TSE. I drop 397 sample firms in the 2nd section of TSE from the total 1593 TSE listed firms available in PACAP database. 1196 firms in the 1st section have equally-weighted foreign ownership of 7.73%, while 396 firms in the 2nd

[6] I would like to thank George Pennacchi for pointing out the issue and suggesting this method.

section have only 3.28% average foreign ownership. I then exclude 251 firms in services industries including real estate, transportation, warehousing, and wholesale and retail industries. The PACAP industrial company file also contains firms from other financial services such as credit card and finance companies, and firms in those fields are ruled out as well. Because R&D expenditures data employed in this study are not crucial as a proxy for long-run vitality for firms in these services industries, I exclude them from the final sample.

Finally, in my empirical analysis, I have 945 sample firms, which cover manufacturing sector, utilities sector, construction, and agriculture, forestry, fishery, and mining. Since PACAP Japan data provide three-digit industry codes for each sample firm, I also show the results adjusted for industry effects by having a dummy variable for each industry. There are 20 different industries in my sample firms. The fraction of the equally-weighted foreign ownership by the 945 sample firms is 7.70%. The fraction of foreign ownership by firms in manufacturing sector (7.93%) and that of agriculture, forestry, fishery, and mining (8.63%) are over-weighted by foreign investors, while the fraction of foreign ownership in construction (5.43%) and that of utilities sector (4.08%) is substantially under-weighted. This finding is consistent with the result by Kang and Stulz (1997) which observe the foreign ownership structure by industry for the 1975-1991 period.

D. Summary statistics

Descriptive statistics on firm characteristics of industrial firms, which are listed in 1st Section of TSE during 1997 fiscal year are given in Table 1. Tobin's *Q* and earnings rate *(ERATE*) are defined as previously. Panel A of Table 1 shows that the mean (median) values of Tobin's *Q* and *ERATE* are 2.71 (2.12) and 10.6(7.9) %, respectively. The mean (median) for total assets *(TA)* is 301.29 (92.81) billion yens. Tobin's *Q* in this paper is much greater than that observed in Morck et al. (2000), which use the sample year of 1986. It appears that the abnormally high Japanese equity market of the late 1980s within a bubble economy, as documented in French and Poterba (1991), has not sufficiently contributed in

inflating *Q* in Morck et al. (2000), while land price depreciation of the early 1990s has not significantly contributed in increasing *Q* in my study. Total assets in my study also show substantially larger figures than those of Morck et al. (2000). However, consistent with their findings, I find that the distribution of these figures is positively skewed. This indicates that few firms with exceptionally large *Q*s and firm size are driving this skewness.

[Insert Table 1 about here]

Table 1 also shows descriptive statistics on advertising intensity, R&D intensity, and executive compensation intensity. *ADV/RV, R&D/RV,* and *DIR/RV* are defined as expenditures on advertising, R&D, and directors' salary weighted by the estimate of the replacement value of assets, respectively in Table1. The mean (median) values of *ADV/RV, R&D/RV,* and *DIR/RV* are 2.6 (0.7) % and 3.7 (1.1) %, and 0.9 (0.7) %, which also have positively skewed distribution. *LRATIO* stands for the ratio of the sum of short-term and long-term bank loans to total assets, and mean (median) value is 18.6 (13.9). *LRATIO* is slightly lower than the loan ratio given in Morck et al. (2000). Again, the difference appears to be due to the different sample period. *PROF* represents the earnings before taxes and interest, and the mean (median) value is 11.41 (2.85) billion yens. In Table 1, Std. Error represents the standard error which is used to test the null hypothesis that the mean is zero, and we reject the null hypothesis for all variables.

Panel B of Table 1 shows the summary statistics by fraction of foreign ownership, and provides particularly interesting results. We can see that industrial firms at the 1st Section of TSE with substantial fraction of foreign ownership (20% to 40%) have remarkably high Tobin's *Q* of the mean (median) at 5.88 (5.55). Consistent with the findings by Kang and Stulz (1997), firms in this category are also very large, and show superior operating performance. Firms with foreign ownership of 20% to 40% have the mean (median) total assets size of 603.22 (400.86) billion yens and earnings rate at 24.2 (22.2) %. However, firms with minimal foreign ownership (ownership less than 1%) have the mean (median) total assets size of only 63.61 (41.32) billion yens and the earnings rate as low as 4.5 (4.8) %. Thus, we see that foreign investors prefer to invest in large firms with superior operating performance.

In Panel B of Table 1, I also find that firms with substantial foreign ownership (20% to 40%) have greater advertising and R&D intensity, while lower director compensation ratio than firms with minimal foreign ownership (ownership less than 1%). Firms with foreign ownership of 20% to 40% have mean (median) values of *ADV/RV, R&D/RV,* and *DIR/RV* for 5.0 (2.2) %, 10.0 (5.4) %, and 0.7 (0.4) %, respectively. However, firms with minimal foreign ownership (ownership less than 1%) have mean (median) values of *ADV/RV, R&D/RV,* and *DIR/RV* for 1.3 (0.5) %, 1.8 (0.7) %, and 1.4 (1.1) %, respectively.

Finally, I observe that there exists low leverage with firms with significant foreign ownership, consistent with the findings by Kang and Stulz (1997). Table 1 Panel B shows that firms with foreign ownership of 20% to 40% have mean (median) *LRATIO* at only 5.5 (3.4) %, while firms with minimal foreign ownership (ownership less than 1%) have the mean (median) *LRATIO* for as high as 30.5 (28.7) %. This finding is provocative and leads us to an interesting research question to explore in the future, which is a study of choice between bank debt and bonds with ownership structure focusing on foreign investments. There exists much similarity in the characteristics of firms with large foreign ownership between the findings of this paper and those of Kang and Stulz (1997), although the sample periods examined in the papers are different.

4. Empirical Results

A. Curvilinear Relation

I initially test the existence of a possible non-linear relation between Tobin's *Q* and the structure of foreign equity ownership. To do this analysis, I use an equation similar to McConnell and Servaes (1990), and regress Tobin's *Q* against foreign ownership (*forown*) and squared of foreign ownership ($forown^2$). I obtain the following results:

$$Q = 1.7714 + 15.38\ forown - 17.47\ forown^2, \quad (2)$$
$$(19.66)\ \ (11.44)\ \ \ \ (-6.12)$$

F-statistic = 103.34, R-squared = 0.18,

where figures in parentheses are t-statistics. It appears that there exists strong evidence of a curvilinear relation between Q and the fraction of common stocks owned by foreigners in Japan. The negative value (-17.47) for the coefficient of $forown^2$ suggests that this curvilinear relation has a *concave* shape. Figure 2 is charted based on the estimates of the equation (1). Q value first increases, then decreases, as ownership is concentrated among foreign investors. In Figure 2, we see that the inflection point where the value of Q reaches its maximum equals 44.0 percent of ownership by foreigners.

[Insert Figure 2 about here]

McConnell and Servaes (1990) have pointed out that arguments on the relation between firm value and equity ownership structure by Berle and Means (1932) and Jensen and Meckling (1976) can be more generally interpreted as arguments about corporate performance and equity ownership structure. Thus, I further examine whether there exists a consistent curvilinear relation on the relation between operating performance and foreign ownership. I use earnings rate (*ERATE)* as a proxy for firm operating performance. *ERATE* is defined as operating income before interest and taxes weighted by the replacement value of assets as previously. As in the Q regression, *ERATE* is regressed against foreign ownership (*forown*) and squared of foreign ownership ($forown^2$), and I find the following strong curvilinear relation:

$$ERATE = 0.053 + 0.949\ forown - 1.441\ forown^2, \quad (3)$$
$$(8.36)\ \ (9.95)\ \ \ \ (-7.12)$$

F-statistic = 56.30, R-squared = 0.11,

where the figures in parentheses in the above equation are *t*-statistics. Figure 3 illustrates this curvilinear relation. *ERATE* rises as equity ownership by foreigners increases in industrial firms listed in TSE, up to an inflection point where *ERATE* reaches its maximum in this estimated regression in Figure 3. We note that the inflection point has decreased to 32.9% of foreign ownership (down from 44.0% in Figure 2) suggesting that firms with moderate to substantial levels (10% to 40%) of foreign ownership generally receive favorable market valuation beyond their value implied by firm performance. Starting from the foreign ownership at the inflection point, *ERATE* declines as foreign ownership increases. Also, the slope of the curve given in Figure 3 is steeper than that given in Figure 2. This implies that the difference in earnings rates is much more pronounced than difference in *Q* at different levels of foreign ownership. For example, Tobin's *Q*s are close to 1.8 and 4.0 at zero and 20 percent of foreign ownership, while earnings rates are close to 5.3 percent and 18.0 percent at zero and 20 percent of foreign ownership, respectively. The results in Figure 2 and Figure 3 provide important evidence that equity ownership by foreigners and firm value are related. In the next two sections, I attempt to explain why firm value and foreign ownership structure have curvilinear relation.

[Insert Figure 3 about here]

B. Large shareholders of firms with foreign ownership

Because of the non-linear relation observed between *Q* and foreign ownership in Japan in the previous analysis, I further examine the large shareholders characteristics of firms largely owned by foreigners to find some determinants of the curvilinear relation between firm value and foreign ownership at concentrated levels. PACAP database, unfortunately, does not provide detailed information of large shareholders, therefore I hand-collect names of large foreign shareholders appearing in the list of top 10 shareholders from various issues of Japan Company Handbook published by *Toyo Keizai Inc*. Table 2 shows characteristics of industrial firms, which are largely held by foreigners, and listed in the 1st Section of Tokyo Stock Exchange as of the end of 1997 fiscal year. TSE prohibits listing of firms with highly

concentrated ownership (over 70% of ownership), so medical gases manufacturer *Teisan* has the highest foreign ownership where *Air Liquide* of France owns 64.8% of this firm.

There exists a clear pattern of foreign ownership structure in Table 2 sorted in this descending order of foreign ownership. Foreign shareholders among top ten shareholders are mostly either industrial firms or institutional investors. A name of individual investors only appears with the switching power regulator manufacturer *Densei-Lamda* (foreign ownership of 52.45%) where an Egyptian investor Mr. Wady own 2.0% of this firms. The firms owned by foreigners at the range of 40% to 70% foreign ownership have foreign industrial firms mainly included among their top 10 shareholders. Akai Electric (foreign ownership of 67.37%) and Sony Corporation (foreign ownership of 45.27%) are two exceptional cases where large foreign institutional investors appears among top 10 shareholder list in Table 2. In fact, Sony Corporation is one the largest and most valuable companies in Japan with total assets size of 3.0 trillion yens and with Tobin's *Q* as high as 12.45 as of the end of the fiscal year 1997.

[Insert Table 2 about here]

Firms with 30% to 40% of foreign ownership, on the other hand, often have foreign institutional investors included among their top 10 shareholders list. For example, Table 2 shows, at the range between 30% and 40% foreign ownership, that Boston-based State Street Corporation and Chase Manhattan Bank's London investment banking affiliate are major foreign institutional investors in the Japanese market. State Street can be found in 8 cases out of 13 and Chase London in 9 cases out of 13 in the top 10 shareholders list among firms with foreign ownership between 30% and 40%. This observation is consistent with the findings by Dahlquist and Robertsson (2001), which examine Swedish firms and document that majority of foreign investors are typically U.S. institutional investors or mutual and pension funds in Swedish Stock Exchange. Firms with 20% to 30% foreign ownership (not reported) also frequently have foreign institutional investors' names listed in their top 10 shareholder list. Thus, the positive relation between foreign ownership and firm value up to the inflection point in Figure 2 and

Figure 3 is consistent with the prediction by Pound (1988) and McConnell and Servaes (1990) which hypothesize positive relation between firm value and institutional ownership.

C. Piecewise linear regressions

I then conduct several piecewise linear regressions to examine a non-linear relation between Tobin's *Q* and the levels of foreign ownership. A number of firm characteristics variables such as advertising intensity, R&D intensity, management compensation intensity, and firm size variables are included as control variables. The first and second columns of Table 2 are the results of OLS estimation, one without industry dummies and the other with industry controls. The results are broadly similar to each other. It shows that at very small (0% to 1%) foreign ownership levels, there exists no significant relation between firm value and foreign ownership, however, at the 1% to 40% foreign ownership levels, there exists significantly positive relation between Tobin's *Q* and foreign ownership. The majority of foreign investors in this range are institutional investors. The slope is steepest with the foreign ownership levels between 10% and 20%, where a 1% point increase in foreign ownership would lead to a 0.1535 rise in the value of *Q* in the OLS industry controlled regression. On the other hand, the coefficient for over 40% foreign ownership variable has a significant negative coefficient at -10.65 in the industry adjusted OLS regression. This indicates that Tobin's *Q* declines by -.1065 as foreign industrial firms increase their fraction of shareholdings by 1 percentage point at over 40 percent foreign ownership level. Thus, Table 3 confirms the non-linear relation I detected in Figure 2 and Figure 3.

[Insert Table 3 about here]

This finding supports the theoretical prediction by Stulz (1988), where the value of a firm is negatively related to the fraction of shares controlled by management, within an empirical setting including foreign ownership structure. The results are also consistent with the efficient-monitoring hypothesis of Pound (1988) and McConnell and Servaes (1990), which predict that there exists positive relation between corporate performance and the fraction of ownership by institutional investors. My

finding further shows that at least, in Japan, foreign institutional investors serve the role of good monitoring. This paper also partly confirms the study by Khanna and Palepu (1999), which find that Tobin's *Q* is positively correlated with the presence of foreign institutional ownership and negatively correlated with the presence of domestic institutional ownership.

The first and second columns of Table 3 also show that advertising expenditures weighted by replacement value of assets, R&D expenditures weighted by replacement value of assets, and director salary weighted by replacement value of assets all have strong positive correlation with firm value. A one dollar increase in advertising, R&D, and director salary leads to an increase in the market value of assets for $4.39, $5.15, and $36.74, respectively, in the industry adjusted regression results. The logarithm of replacement value of assets as a proxy for a standardized firm size variable shows significant negative correlation with *Q*. The study by Morck et al. (2000) using Japanese data, however, shows that only the coefficient for the R&D intensity is significantly positive. In their analysis, advertising intensity is insignificant and executive compensation variable is not included. On the other hand, our results for such firm characteristics variables as R&D intensity and advertising intensity are broadly consistent with Morck et al. (1988), McConnell and Servaes (1990), and Hermalin and Weisbach (1991) which use data for the U.S. The results by Morck et al. (1988) slightly differ by using only the large (*Fortune* 500) U.S. data, and could not find significant coefficient for advertising intensity measure.

I further estimate the equation using 2-stage least squares (2SLS) method. Foreign equity ownership variables are treated as endogenous in this estimation method, and their lagged values are used are instrument variables. The main purpose of this analysis is to document the possibility of simultaneity problem noted by Hermalin and Weisbach (1991; 1998; 2001). In so doing, I present a richer interpretation of the curvilinear relation found in Figure 1 and Figure 2.This technique has been first adopted from Hermalin and Weisbach (1991), which point out the potential endogeneity problems of managerial ownership on firm value. My study extends their work by considering potential simultaneity problems associated with foreign ownership as noted in Section 3. The third and forth columns in Table 3

show the results based on 2SLS estimation method one without industry controls and the other with industry effects. Again, both 2SLS results are broadly consistent with each other. There is also no clear pattern of overall increase (or decrease) in the magnitude of each coefficient compared to the results from OLS estimates. For the foreign ownership levels from 5% to 40%, the significant positive coefficients are kept in the industry controlled regressions. This implies that large foreign institutional blockholders serve good monitoring functions and can be used to overcome the free-rider problems, a hypothesis consistent with that of Shleifer and Vishny (1986).

There is one variable, however, which is significant in OLS *Q* equation, but is not significant in the 2SLS *Q* equation. This variable is at a modest level (1% to 5%) of foreign ownership, which has coefficient of 14.97 significant at the 1% level with the OLS regression and 10.29 significant 10% level with the industry adjusted OLS regression, but it becomes insignificant as we treat the variable endogenously. It appears that at modest levels firms with high Tobin's *Q* are consistently attracting new foreign investors for capital infusion rather than firms adding more foreign investment with modest levels of foreign ownership have higher *Q*. I also do not reject the hypothesis that there exists no endogeneity problem using a specification test developed by Hausman (1978).

The results of regressing *ERATE* against the same explanatory variables are presented in Table 4. A similar pattern of non-linear relation between operating performance and foreign ownership is observed in this analysis of both OLS and 2SLS regressions with and without industry effects. The positive effect of foreign ownership on firm operating performance is pronounced at lower levels of foreign ownership, i.e., zero to 1 percent and 1 percent to 5 percent, with coefficients of 5.93 and 1.72 in the industry adjusted regressions results. This implies that a 1% increase in foreign ownership is correlated with a 5.93 percent and 1.72 percent increase in earnings rate. Table 4 also describes that advertising intensity, R&D intensity, and executive compensation intensity variables have strong positive correlations with operating performance, while firm size has an inverse relationship with earnings rate in Japan.

[Insert Table 4 about here]

There is one variable (except the intercept), which is significant (at the 10 percent level) in the OLS earnings rate equations with and without industry effects, but is not significant in the instrumental variable estimations in Table 4. The coefficient for ownership over 40% is -0.50 (second column) with a *t*-statistics of -1.88, but the coefficient becomes insignificant when I treat this variable as endogenous (forth column). Therefore, it appears that poorly performing Japanese firms are adding more foreign investors at the substantially large levels of foreign ownership (over 40%) rather than firms with large foreign ownership perform poorly. Incorporating the findings with the top 10 shareholder characteristics provided in Table 2, we may argue that foreign investors at over 40% foreign ownership levels are more likely be industrial firms, rather than institutional investors, who have been frequently involved in "rescue" merger transactions.

D. Analysis using yearly change in Tobin's Q

I also use the yearly change in Tobin's *Q* as a dependent variable and run a regression like equation (1) in Section 3.2 to get around the simultaneity problems in a more direct way. The results are reported in Table 5 for OLS estimates without industry effects and with industry controls. The significant negative coefficients in both OLS regressions suggest that Tobin's *Q* has decreased for most firms from 1996 to 1997 fiscal year reflecting the turbulent year of the adverse shock. It is, however, should be noted that at the range of 10 percent to 20 percent and 20 percent to 40 percent in the fiscal year 1996, where most foreign investors are institutional investors, an increase in foreign ownership lead to an increase in Tobin's *Q*. This is especially pronounced at the 20 percent to 40 percent foreign ownership level where a one percent increase in foreign ownership would lead to 0.1490 increase in Tobin's *Q* in the OLS regression with industry controls. The coefficients for concentrated foreign ownership level (over 40 percent) have negative coefficients, but they are not statistically significant at all, thereby resulting in no conclusive arguments in this range. All in all, Table 5 suggests that at substantial levels of foreign

ownership where most investors are investors there is evidence of positive correlation between increase in foreign ownership and increase in firm value.

[Insert Table 5 about here]

E. Long-run vitality and foreign ownership

As discussed in the introduction, Japanese firms' major concern on foreign investment has been on the "stability" of foreign capital. Morck and Nakamura (1999) have pointed out that ownership by *stable shareholders* who almost never sell out their shares and show consistent support for management, has been common in Japan until recently.[7] Thus, I examine the association between a firm characteristic variable proxying the long-term vitality and the levels of foreign ownership. I use R&D intensity as a dependent variable to represent the long-run vitality of a firm and regress against other dependent variables used in the earlier analysis.

Table 6 shows the results of the OLS and 2SLS regressions without and with industry controls. We can observe an interesting result in this table at the 10% to 20% level of foreign ownership, where the majority of large foreign owners are institutional investors, R&D expenditures rise as fraction of foreign ownership rises. In the first column of Table 6, we see that the coefficient at the 10% to 20% level of foreign ownership is 0.37 (*t*-statistics of 2.97) and 0.30 (*t*-statistics of 2.64), respectively, for each OLS regression. However, with the 2SLS estimates, the coefficient becomes insignificant at the 10% to 20% levels of foreign ownership. On the other hand, for foreign ownership level between 20% and 40%, the coefficients are consistently significant with estimates without industry controls, but the coefficients are not statistically significant with industry effects at this range. This suggests that at the 10% to 20% levels of foreign ownership, foreign institutional investors are adding capital with firms with higher R&D intensity, while at the 20% to 40% levels of foreign ownership, foreign institutional investors are actually

responsible for increased R&D intensity in several industries in Japan. These industries include chemicals, general and electric machinery, and precision equipment. Overall, the results broadly indicate that foreign institutional investors substantially concern firms' long-run vitality, which is contrary to the claim that foreign investors are merely short-term speculators.

[Insert Table 6 about here]

However, at over 40% foreign ownership levels, R&D intensity decline as fraction of foreign ownership increases, and the coefficients are significant with both OLS and 2SLS estimates with -0.33 (first column) and -0.31 (second), respectively, in Table 6. There is one plausible explanation for this surprising result. As previously noted in Table 2, foreign investors in this heavily foreign-owned firm category are more likely to be industrial firms, and these industrial owner firms are more likely to be in the same industry with their Japanese target firms. Those industrial owners may tend to spend less R&D in Japan, but expend more on R&D on their main R&D facility in the home country conducting various joint R&D projects. For example, Mazda Motor is 33.3% owned by Ford Motor (see Table 2), where the acquirer firm and the target firm are within the same automobile industry, and both Mazda and Ford have been operating joint R&D center in Flat Rock, Michigan since 1988. R&D intensity for Mazda itself therefore has declined substantially after an acquisition by Ford. The finding is broadly consistent with the view by Stulz (1988), where top managers (mostly foreigners) may not pursue value-maximizing agendas at very high concentrated foreign ownership levels. This concern has become the central arguments by a group of policy advisors in Korea and Thailand who are against large foreign acquisitions after the Asian financial crisis. Finally, I also find a positive association between R&D intensity and firm size in Table 6 (the last coefficient). This indicates that larger firms spend more on R&D expenditures. Larger firms tend to be more oriented in advance in technology than smaller firms, a finding consistent with the view by Morck et al. (1988) using the U.S. data.

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[7] Gerlach (1992) reports that among, 82 percent of top-shareholders in Japanese firms in 1980 remained in the top ten in 1994, while only 23 percent of top-ten shareholders in the U.S. remained in the top ten over the same period.

5. Conclusion

Much recent academic research provides evidence that the bank-centered corporate governance system in Japan is not effective, with arguments that main bank system has generated value-destroying practices during the time of economic downturn. This paper is motivated by the observation that economic and financial distress of 1990s along with the deregulation has encouraged massive foreign investment in Japan. The increase in foreign ownership of Japanese firms coincides with the decrease in equity ownership by banks. I take an alternative approach in examining firm value and ownership structure in Japan where foreign ownership variables are employed as explanatory variables. Using Tobin's *Q* as a proxy for market valuation of the firm, I show how foreign ownership structure and firm value are related.

I find a strong curvilinear relation between Tobin's *Q* and the fraction of common stocks owned by foreigners in Japan. *Q* rises until foreign ownership reaches approximately 40% to 45 %, then falls back. The analysis using earnings rate or the yearly change in Q shows a similar pattern of non-linear relation between foreign ownership and firm value. It appears that, in Japan, large foreign institutional investors invest in well-performing firms and serve as good monitors. The results are broadly consistent with Pound (1988), which predicts that there exists a positive relation between firm value and institutional equity ownership. These results are also consistent with the empirical findings by Khanna and Palepu (1999), which examine the firm value and foreign institutional ownership, and find that Tobin's *Q* is positively related to the presence of foreign institutional investors. I also find that foreign industrial firms increase their equity holdings in poorly performing Japanese firms suggesting a rescue acquisition of equity ownership at very concentrated foreign ownership levels.

Finally, I find that, in Japan, an increase in foreign ownership at substantial levels of foreign ownership (up to 40%) is correlated with a rise in R&D intensity. This suggests that foreign institutional investors in Japan concern much of firms' long-run vitality contrary to the notion that foreign investors

are merely short-term speculators. However, at very concentrated foreign ownership levels (over 40%), an increase in foreign equity ownership is correlated with a decrease in R&D intensity supporting the managerial entrenchment hypothesis of Stulz (1988), where foreign owner-managers pursue agendas which may not be the best interest of their Japanese affiliates. In the future research, I will add variables like foreign CEO appointments and the fraction of foreign members serving in the board, and examine how these variables can affect firm value in Japan.

This research will offer important new insights into the relation between the ownership structure and firm value. Because these issues have not been sufficiently examined in the existing literature although a rise in foreign equity ownership has become pronounced in every corner of the world, this paper will add to finance literature in our rich understanding of the economic impact of foreign ownership.

References

Berle, A. A. and G. C. Means. *The Modern Corporation and Private Property,* New York, NY: Macmillan (1932).

Bolton , P. and X. Freixas. "Equity, Bonds, and Bank Debt: Capital Structure and Financial Market Equilibrium under Asymmetric Information." *Journal of Political Economy,* 108 (2000), 324-351.

Claessens, S.; S. D. Djankov; and L. H. P. Lang. "The Separation of Ownership and Control in East Asian Corporations." *Journal of Financial Economics,* 58 (2000), 81-112.

Claessens, S.; S. D. Djankov; J. Fan; and L. H. P. Lang. "Expropriation of Minority Shareholders in East Asia." Working Paper (1999), World Bank.

Dahlquist, M. and G. Robertsson. "Direct Foreign Ownership, Institutional Investors, and Firm Characteristics." *Journal of Financial Economics,* 59 (2001), 413-440.

Demsetz, H. "The Structure of Ownership and the Theory of the Firm." *Journal of Law and Economics,* 26 (1983), 375-90.

French, K. and J. Poterba. "Were Japanese Stock Prices Too High?" *Journal of Financial Economics,* 29 (1991), 337-63.

Gerlach, M. L., *Alliance Capitalism: The Social Organization of Japanese Business,* Berkeley, CA: University of California Press (1992).

Hausman, J.A. "Specification Tests in Econometrics." *Econometrica,* 46 (1978), 1251-71.

Hayashi, F. and T. Inoue. "The Relation between Firm Growth and *Q* with Multiple Capital Goods: Theory and Evidence from Panel Data on Japanese Firms." *Econometrica,* 59 (1991), 731-53.

Healy, P.; K. Palepu; and R. Ruback. "Does Corporate Performance Improve After Mergers?" *Journal of Financial Economics,* 31 (1992), 135-75.

Hermalin, B. E. and M. S. Weisbach. "The Effects of Board Composition and Direct Incentives on Firm Performance." *Financial Management,* 20 (1991), 101-12.

Hermalin, B. E. and M. S. Weisbach. "Endogenously Chosen Boards of Directors and Their Monitoring of Management." *American Economic Review,* 88 (1998), 96-118.

Hermalin, B. E. and M. S. Weisbach. "Boards of Directors as an Endogenously Determined Institution: A Survey of the Economic Literature." Forthcoming in Federal Reserve Bank of New York *Economic Policy Review* (2001).

Hoshi, T. and A. K. Kashyap. "Evidence on *q* and Investment for Japanese Firms." *Journal of the Japanese and International Economy,* 4 (1990), 371-400.

Hoshi, T.; A. K. Kashyap; and D. Scharfstein. "The Role of Banks in Reducing the Costs of Financial Distress in Japan." *Journal of Financial Economics,* 27 (1990), 67-88.

Hoshi, T.; A. K. Kashyap; and D. Scharfstein. "Corporate Structure, Liquidity, and Investment: Evidence from Japanese Industrial Groups." *Quarterly Journal of Economics*, 106 (1991), 33-60.

Kang, J.-K. and A. Shivdasani. "Firm Performance, Corporate Governance, and Top Executive Turnover in Japan." *Journal of Financial Economics*, 38 (1995), 29-58.

Kang, J.-K. and R. M. Stulz. "Why Is There a Home Bias? An Analysis of Foreign Portfolio Equity Ownership in Japan." *Journal of Financial Economics*, 46 (1997), 3-28.

Kang, J.-K. and R. M. Stulz. "Do Banking Shocks Affect Borrowing Firm Performance? An Analysis of the Japanese Experience." *Journal of Business*, 73 (2000), 1-23.

Kaplan, S. N. and B. A. Minton. "Appointments of Outsiders to Japanese Boards: Determinants and Implications for Managers." *Journal of Financial Economics*, 36 (1994), 225-58.

Khanna, T. and K. Palepu. "Emerging Market Business Groups, Foreign Investors, and Corporate Governance." National Bureau of Economic Research Working Paper #6955 (1999).

Kole, S. R. "Measuring Managerial Equity Ownership: A Comparison of Sources of Ownership Data." *Journal of Corporate Finance*, 1 (1995), 413-35.

Kester, W. C. *Japanese Takeovers: The Global Contest for Corporate Control*, Boston, MA: Harvard Business School Press (1991).

Lang, L. H. P. and R. M. Stulz. "Tobin's *q*, Corporate Diversification, and Firm Performance." *Journal of Political Economy*, 102 (1994), 1248-80.

Lewis, K. K. "Trying to Explain Home Bias in Equities and Consumption." *Journal of Economic Literature*, 37 (1999), 571-608.

La Porta, R.; F. Lopez-de-Silanes; and A. Shleifer. "Corporate Ownership around the World." *Journal of Finance*, 54 (1999), 471-517.

Mahrt-Smith, J. "Should Banks Own Equity? A Corporate Finance Perspective." Working Paper, London Business School (2000).

McConnell, J. J. and H. Servaes. "Additional Evidence on Equity Ownership and Corporate Value." *Journal of Financial Economics*, 27 (1990), 595-612.

Morck, R. and M. Nakamura. "Banks and Corporate Control in Japan." *Journal of Finance*, 54 (2000), 319-39.

Morck, R. and M. Nakamura. "Japanese Corporate Governance and Macroeconomic Problems." Working Paper, Harvard University (2000).

Morck, R.; M. Nakamura; and A. Shivdasani. "Banks, Ownership Structure, and Firm Value in Japan." *Journal of Business*, 73 (2000), 539-568.

Morck, R.; Shleifer, A.; and R. W. Vishny. "Management Ownership and Market Valuation: An Empirical Analysis." *Journal of Financial Economics*, 20 (1988), 293-315.

Prowse, S. D. "The Structure of Corporate Ownership in Japan." *Journal of Finance*, 47 (1992), 1121-40.

Rajan, R. "Insiders and Outsiders: The Choice between Informed and Arm's-Length Debt." *Journal of Finance*, 47 (1992), 1367-400.

Shleifer, A. and R. W. Vishny. "Large Shareholders and Corporate Control." *Journal of Political Economy*, 94 (1986), 461-88.

Shleifer, A. and R. W. Vishny. "A Survey of Corporate Governance." *Journal of Finance*, 52 (1997), 737-83.

Stulz, R. M. "Managerial Control of Voting Rights: Financing Policies and the Market for Corporate Control." *Journal of Financial Economics*, 20 (1988), 25-54.

Tokyo Stock Exchange. *1999 Share Ownership Survey*, Tokyo, Japan (2000).

United Nations Conference on Trade and Development (UNCTAD). *World Investment Report*, New York, NY (1999).

Weinstein, D. E. and Y. Yafeh. "On the Costs of a Bank-Centered Financial System: Evidence from the Changing Main Bank Relations in Japan." *Journal of Finance*, 53 (1998), 635-72.

White, H. "A Heteroscedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroscedasticity." *Economterica*, 48 (1980), 817-38.

Yafeh, Y. and O. Yosha. "Large Shareholders and Banks: Who Monitors and How?" Mimeo, The Hebrew Univeristy (1996).

Yermack, D. "Higher Market Valuation of Companies with a Small Board of Directors." *Journal of Financial Economics*, 40 (1996), 185-211.

Zeckhauser, R. and J. Pound. "Are Large Shareholders Effective Monitors?" In R. Glenn Hubbard, ed., *Asymmetric Information, Corporate Finance, and Investment*, University of Chicago Press: Chicago, IL (1990).

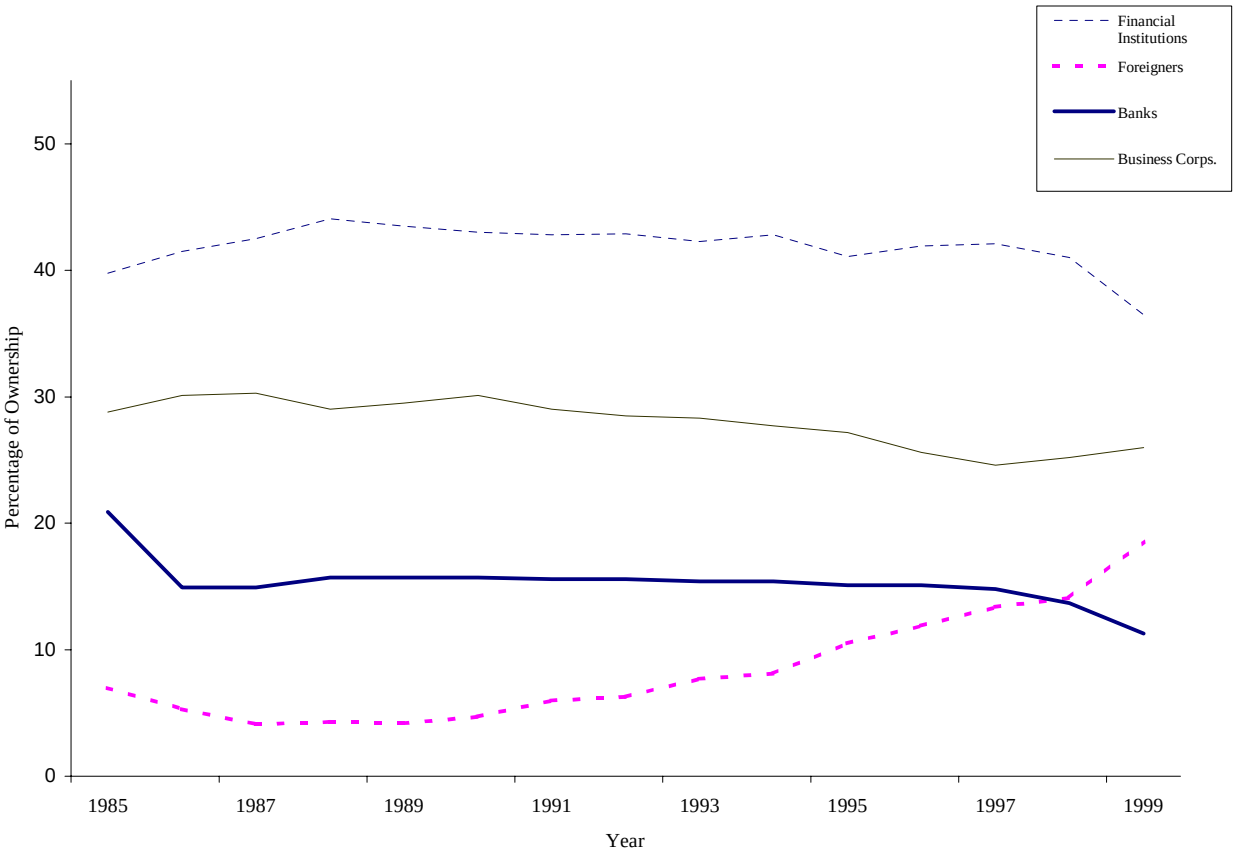

Fig.1. Historical Market Value by Types of Ownership in Japan

This figure shows the historical data of market value owned by different types of owners for all firms listed in Tokyo Stock Exchange. Financial institutions include banks, trusts, life and property-casualty insurance, and other finance companies. Banks include Long Term Credit Bank, city banks, and regional banks. This chart is constructed by the data provided by Tokyo Stock Exchange.

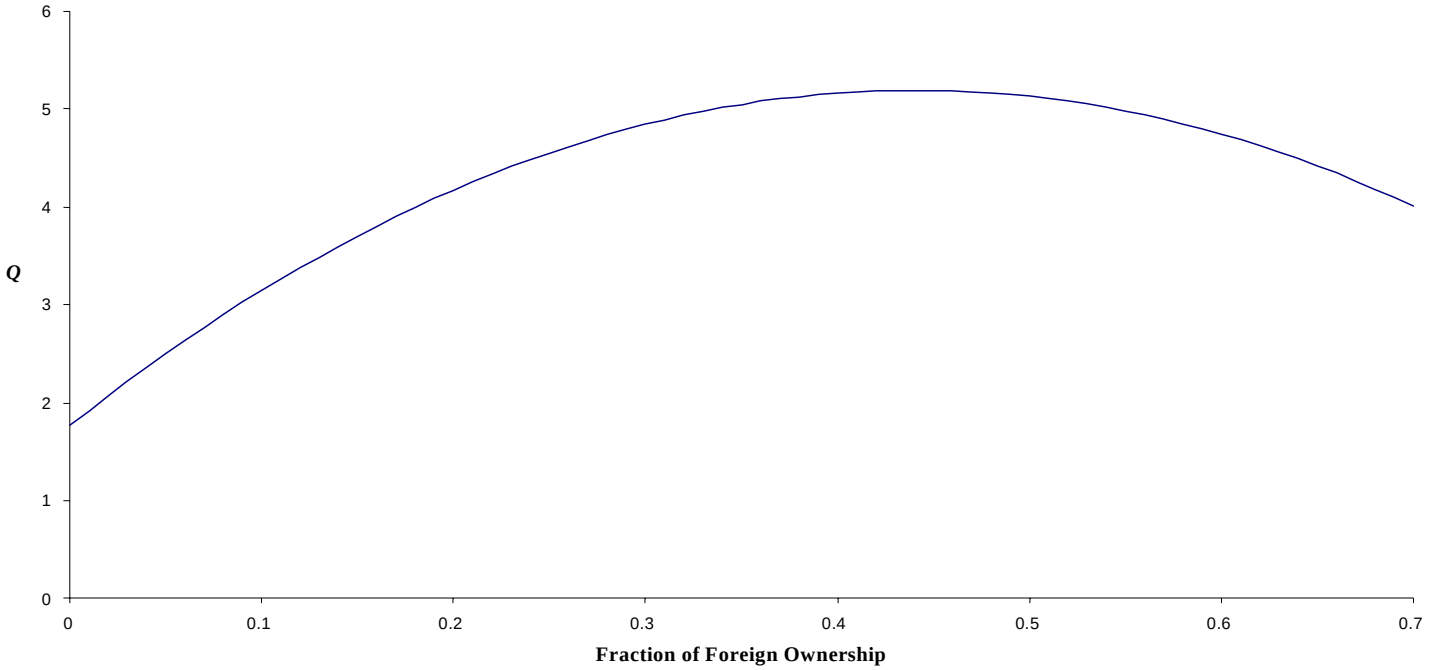

Fig.2. Tobin's *Q* and Foreign Ownership in Japan

This figure shows the relation between Tobin's *Q* and fraction of foreign ownership from 945 sample of industrial firms listed in 1st section of Tokyo Stock Exchange in the fiscal year of 1997. Firms in financial services, transportation, and wholesale and retail industries are excluded. Tobin's *Q* is regressed against foreign ownership (*forown*) and squared of foreign ownership ($forown^2$), and the above graph is charted based on the following strong curvilinear relation:

$Q = 1.7714 + 15.38\ forown - 17.47\ forown^2$, F-statistic = 103.34, R-squared = 0.18,
(19.66) (11.44) (-6.12)

The figures in parentheses in the above equation are *t*-statistics. The inflection point where the value of *Q* reaches its maximum in this estimated regression is 44.02% of ownership by foreigners.

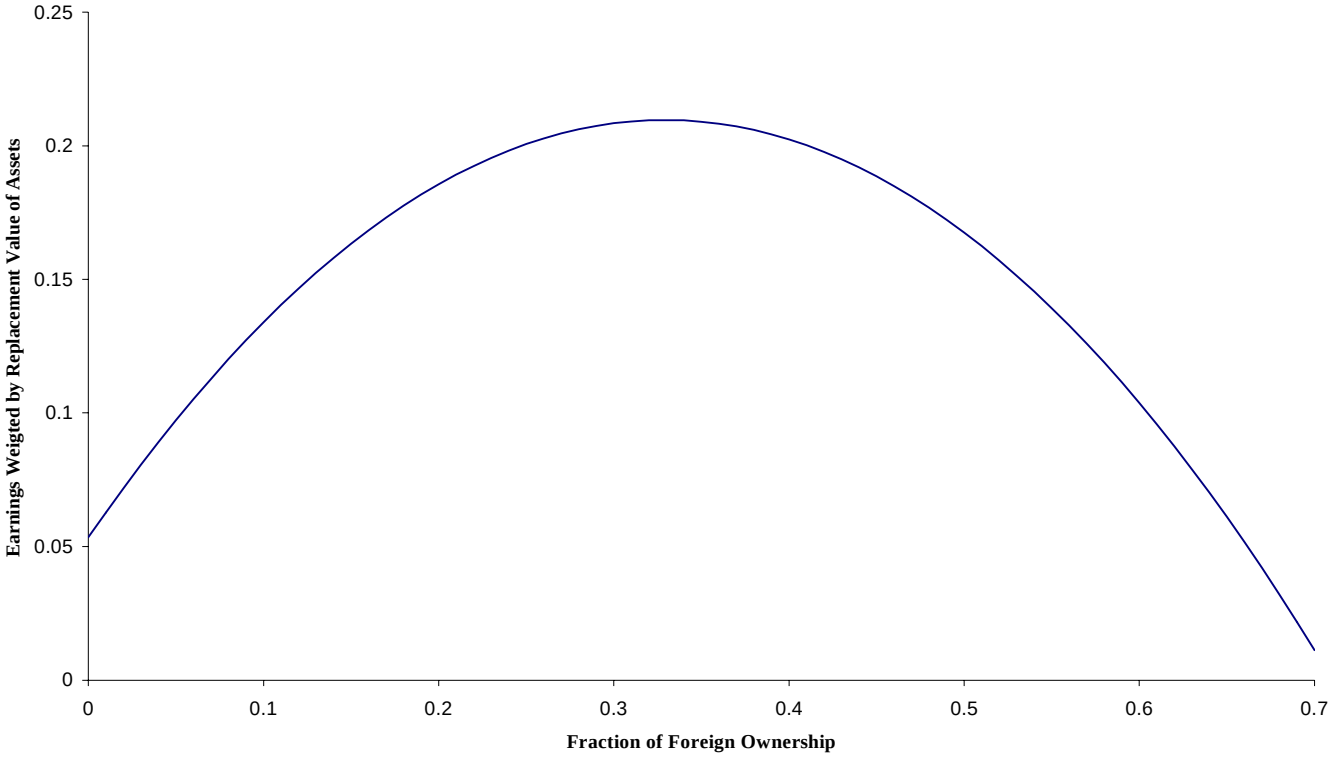

Fig.3. Earnings Rate and Foreign Ownership in Japan

This figure shows the relation between profit rate and fraction of foreign ownership from 945 sample of industrial firms listed in 1st section of Tokyo Stock Exchange in the fiscal year of 1997. Earnings rate is defined as operating income before interest and taxes weighted by the replacement value of assets. Firms in financial services, transportation, and wholesale and retail industries are excluded. Earnings rate is regressed against foreign ownership (*forown*) and squared of foreign ownership ($forown^2$), and the above graph is charted based on the following strong curvilinear relation:

$ERATE = 0.053 + 0.949\ forown - 1.441\ forown^2$, F-statistic = 56.30, R-squared = 0.11,
(8.36) (9.95) (-7.12)

The figures in parentheses in the above equation are *t*-statistics. The inflection point where the value of profit rate reaches its maximum in this estimated regression is 32.91% of ownership by foreigners.

Table 1. Descriptive statistics on firm characteristics of industrial firms listed in Tokyo Stock Exchange

This table shows descriptive statistics on firm characteristics of industrial firms, which are listed in 1st Section of Tokyo Stock Exchange as of the end of 1997 fiscal year. Firms in financial services, transportation, and wholesale and retail industries are excluded. Tobin's *Q* is defined as the ratio of the market value of assets to the replacement value of assets. The numerator of *Q* is the market value of equity, plus the book value of long- and short-term debt, minus the estimated market value of shares held in other firms. The denominator of *Q* includes the following seven items: non-residential buildings, structures, machinery, transportation equipment, instruments and tools, land, and inventories. *ERATE* is defined as the earnings before taxes and interest weighted by the estimate of the replacement value of assets. *ADV/RV*, *R&DRV*, and *DIR/RV* are expenditures on advertising, research and development, and directors' salary weighted by the estimate of the replacement value of assets, respectively. *LRATIO* is the short-term and long-term bank loans divided by total assets. Finally, *TA* and *PROF* represent total assets and the earnings before taxes and interest, respectively. Std. Error represents the standard error which is used to test the null hypothesis that the mean is zero.

Descriptive Statistics	Tobin's *Q*	*PRATE*	*ADV/RV*	*R&D/RV*	*DIR/RV*	*LRATIO*	*TA*	*PROF*
Panel A:	All 945 Sample Firms							
Mean	2.71	0.106	0.026	0.037	0.009	0.186	301.29	11.41
Std. Error	0.062	0.004	0.002	0.002	0.001	0.006	27.339	1.336
Median	2.12	0.079	0.007	0.011	0.007	0.139	92.81	2.85
25th Percentile	1.51	0.037	0.002	0.001	0.003	0.037	49.32	1.08
75th Percentile	3.09	0.156	0.025	0.042	0.013	0.292	223.18	7.67

Table 1 (Continued)

Panel B: Descriptive statisitcs by fraction of foreign ownership

Foreign Ownership		Tobin's *Q*	*ERATE*	*ADV/RV*	*R&D/RV*	*DIR/RV*	*LRATIO*	*TA*	*PROF*
0-1%	Mean	2.23	0.045	0.013	0.018	0.014	0.305	63.61	0.97
	Std. Error	0.095	0.008	0.002	0.002	0.001	0.016	6.550	0.157
	Median	1.89	0.048	0.005	0.007	0.011	0.287	41.32	0.76
	N=150								
1-5%	Mean	2.11	0.083	0.026	0.031	0.010	0.184	173.29	5.75
	Std. Error	0.064	0.005	0.004	0.003	0.001	0.005	26.893	1.321
	Median	1.84	0.069	0.006	0.008	0.009	0.137	68.13	1.90
	N=322								
5-10%	Mean	2.61	0.123	0.028	0.032	0.007	0.169	467.41	18.49
	Std. Error	0.112	0.008	0.004	0.004	0.001	0.011	94.035	4.847
	Median	2.21	0.098	0.007	0.013	0.005	0.127	152.86	5.38
	N=220								
10-20%	Mean	3.34	0.141	0.028	0.053	0.007	0.148	423.69	15.46
	Std. Error	0.165	0.011	0.003	0.008	0.001	0.011	51.111	1.956
	Median	2.52	0.107	0.009	0.014	0.005	0.100	168.00	7.36
	N=192								
20-40%	Mean	5.88	0.242	0.050	0.100	0.007	0.055	603.22	33.54
	Std. Error	0.437	0.029	0.014	0.018	0.001	0.010	131.507	5.903
	Median	5.55	0.222	0.022	0.054	0.004	0.034	400.86	18.95
	N=46								
Over 40%	Mean	3.92	0.092	0.024	0.052	0.007	0.151	497.12	13.78
	Std. Error	0.848	0.031	0.008	0.023	0.002	0.037	210.451	6.948
	Median	2.03	0.073	0.010	0.003	0.004	0.086	205.08	4.07
	N=15								

Table 2. Characteristics of industrial firms listed in Tokyo Stock Exchange which are largely held by foreigners

This table shows characteristics of industrial firms, which are largely held by foreigners, and listed in 1st Section of Tokyo Stock Exchange as of the end of 1997 fiscal year. Firms in financial services, transportation, and wholesale and retail industries are excluded. Tobin's *Q* is defined as the ratio of the market value of assets to the replacement cost of assets. The numerator of *Q* is the market value of equity, plus the book value of long- and short-term debt, minus the estimated market value of shares held in other firms. The denominator of *Q* includes the following seven items: non-residential buildings, structures, machinery, transportation equipment, instruments and tools, land, and inventories. In the fifth column, names of foreign owners among top 10 shareholders of largely foreigner-owned TSE industrial firms are listed as appeared in various issues of Japan Company Handbook.

Company Name	Overall Foreign Ownership	Total Assets in billion yens	Tobin's *Q*	Foreign Owners Among Top 10 Shareholders (Ownership in Percentage)
Teisan	69.06%	68.21	1.81	Air Liquide International (64.8), Air Liquide Pacific (1.3)
Akai Electric	67.37	86.10	5.92	Bankers Trust (42.2), Percula B.V. (23.8)
Banyu Pharmaceuticals	65.13	244.35	8.10	MSD International (26.3), MSD Ireland Holdings (13.1), Merck (11.3)
Showa Shell Sekiyu K.K.	63.37	827.91	4.32	Shell Petroleum (39.1), Anglo-Saxon Petroleum (7.6), Mexican Eagle Oil (3.2), Schroder Investment Management (1.5)
Hokuriku Seiyaku	57.77	49.83	1.78	BASF Group (59.6)
Tonen Corporation	54.64	499.96	2.42	Esso Eastern (25.0), Mobil Petroleum (25.0)
General Sekiyu	54.54	347.29	1.85	Esso Eastern (48.5), State Street Corp. (0.9)
Nippon Light Metal	54.15	374.99	2.52	Alcan Aluminium (37.1), Alcan Nikkei Asia Holdings Ltd. (8.4)
Osaka Sanso Kogyo	53.36	57.99	1.26	BOC Japan (49.6)
Densei-Lambda K.K.	52.45	24.61	5.61	Lambda Holdings Inc. (51.8), Lambda Far East Ltd. (10.0), Wady (2.0), State Street Corp. (1.5)
KOA Oil Co.	52.29	205.07	1.50	Caltex Petroleum (50.0)
Yamatake Honeywell	48.54	121.93	5.85	Honeywell Asia Pacific Inc. (21.6), Northern Trust (AVFC) American (2.0)

Table 2 (Continued)

Sony Corporation	45.27	3,057.00	12.45	Moxley & Co. (4.9), Chase London (4.6), State Street Corp. (4.3), Ray Kay Inc. (2.2)
Mazda Motor Corp.	42.98	1,014.86	1.99	Ford Motor (33.3), Chase London (1.8)
Rohm Co.	42.32	385.95	17.62	Rohm Music Foundation (5.6), Chase London (4.8), State Street Corp. (4.7)
Isuzu Motors	41.40	964.65	1.80	GM (37.4)
Nihon Unisys Ltd.	40.20	252.96	2.31	Unisys Corp. (29.5)
Canon Inc.	38.88	1,370.68	4.86	State Street Corp. (4.3), Chase London Omnibus Account (2.1), Chase London (2.0), Boston Safe Deposit (1.8)
Meitec Corporation	38.69	59.52	5.96	Bankers Trust (5.3), State Street Corp. (3.6), Chase London (3.3), Progressive Pension Management (3.1)
Minebea Co. Ltd.	37.81	384.83	13.76	Chase London (4.1), State Street Corp. (2.7)
Sansui Electric Co.	36.58	15.21	5.82	Bankers Trust (29.5)
Murata Mfg.	36.57	407.60	11.6	Chase London (11.1), State Street Corp. (3.5)
Fuji Photo Film	36.19	1460.78	8.66	State Street Corp. (3.4), Chase London Omnibus Account (2.4), Chase London (2.2)
TDK Corporation	35.47	511.64	10.27	Chase London (2.8), State Street Corp. (2.6)
Sankyo	32.59	713.25	9.70	State Street Corp. (3.1), Chase London (2.4)
Zexel Corporation	32.43	228.58	2.42	Robert Bosch (16.2), Robert Bosch Corp. (13.1)
Suzuki Motor	32.06	723.48	2.12	GM (10.0), Chase London (7.3), Chase London Omnibus Account (2.5)
Yamanouchi Pharmaceuticals	30.88	716.33	14.36	State Street Corp. (2.3), Chase London (2.2)
Shimura Kako	30.87	5.72	7.68	Societe General Paris (2.1), Goldman Sachs (2.1), UBS AG London (2.0), Morgan Stanley (1.5), Indosuez Securities (1.5)
Tokyo Electron	30.29	439.86	12.03	Chase London Omnibus Account (2.8), Chase London (2.7)

Table 3. Piecewise linear regressions of 1997 Tobin's *Q* on foreign ownership and other firm characteristics

This table presents regression coefficient estimates of the association between Tobin's *Q* and the levels of foreign ownership. A number of firm characteristics variables such as advertising intensity, R&D intensity, management compensation intensity, and the firm size are included as control variables. Sample consists of 945 industrial firms listed in 1st Section of Tokyo Stock Exchange as of the end of 1997 fiscal year. *ADV/RV*, *R&DRV*, and *DIR/RV* are expenditures on advertising, research and development, and directors' salary weighted by the estimate of the replacement value of assets, respectively. The first column shows ordinary least squares (OLS) estimates with *t*-statistics in parentheses are for White (1980) heteroscedastic-consistent standard errors. The second column shows estimates using 2-stage least squares (2SLS) instrument variable estimation method.

Variable	Dependent Variable: *Tobin's Q*			
	OLS Estimates	OLS Estimates (with Industry Dummies)	2SLS Estimates	2SLS Estimates (with Industry Dummies
Constant	3.19**	3.33**	2.96**	3.46**
	(4.43)	(4.10)	(3.69)	(3.91)
0-1% Foreign Ownership[a]	-38.01	-25.55	-35.03	-48.69
	(-0.90)	(-0.62)	(-0.54)	(-0.77)
1-5% Foreign Ownership[b]	14.89**	10.29	7.93	7.25
	(2.74)	(1.94)	(0.85)	(0.79)
5-10% Foreign Ownership[c]	8.21	10.10*	14.21	16.16*
	(1.78)	(2.20)	(1.71)	(1.98)
10-20% Foreign Ownership[d]	16.61**	15.35**	11.87**	9.71*
	(5.91)	(5.57)	(2.83)	(2.35)
20-40% Foreign Ownership[e]	8.42**	6.37*	11.83**	9.72**
	(2.92)	(2.26)	(3.49)	(2.93)
Over 40% Foreign Ownership[f]	-12.12**	-10.65**	-12.93**	-11.42**
	(-3.45)	(-3.07)	(-3.35)	(-2.98)
ADV/RV	4.31**	4.39**	4.71**	4.68**
	(4.90)	(4.78)	(5.35)	(5.08)
R&D/RV	5.86**	5.15**	6.51**	5.71**
	(8.19)	(6.55)	(9.15)	(7.29)
DIR/RV	36.59**	36.74**	36.51**	36.67**
	(5.04)	(5.03)	(5.02)	(5.02)
Ln (Replacement Value of Assets)	-0.151**	-0.09	-0.124*	-0.07
	(-2.62)	(-1.35)	(-2.17)	(-1.08)
Sample Size	945	945	945	945
F-statistic	48.55	20.94	43.12	19.30
(*P*-value)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
R-Squared	0.34	0.40	0.32	0.38

Significant at 1% (**) and 5% (*) levels, respectively.

Table 3 (Continued)

a. If the fraction of the company held by foreigners is less than 0.01, the variable equals the fraction itself and 0.01 otherwise.
b. If the fraction of the company held by foreigners is less than 0.01, the variable equals 0. If the fraction of the company held by foreigners is greater than 0.01 and less than 0.05, the variable equals the fraction minus 0.01. If the fraction of the company held by foreigners is greater than 0.05, variable equals 0.04.
c. If the fraction of the company held by foreigners is less than 0.05, the variable equals 0. If the fraction of the company held by foreigners is greater than 0.05 and less than 0.1, the variable equals the fraction minus 0.05. If the fraction of the company held by foreigners is greater than 0.1, variable equals 0.05.
d. If the fraction of the company held by foreigners is less than 0.1, the variable equals 0. If the fraction of the company held by foreigners is greater than 0.1 and less than 0.2, the variable equals the fraction minus 0.1. If the fraction of the company held by foreigners is greater than 0.2, variable equals 0.1.
e. If the fraction of the company held by foreigners is less than 0.2, the variable equals 0. If the fraction of the company held by foreigners is greater than 0.2 and less than 0.4, the variable equals the fraction minus 0.2. If the fraction of the company held by foreigners is greater than 0.4, variable equals 0.2.
f. If the fraction of the company held by foreigners is less than 0.4, the variable equals 0. Otherwise, the variable equals the fraction minus 0.4.

Table 4. Piecewise linear regressions of 1997 earnings rate on foreign ownership and other firm characteristics

This table presents regression coefficient estimates of the association between earnings rate and the fraction of foreign ownership. A number of firm characteristics variables such as advertising intensity, R&D intensity, management compensation intensity, and the firm size are included as control variables. Sample consists of 945 industrial firms listed in 1st Section of Tokyo Stock Exchange as of the end of 1997 fiscal year. *ERATE* is defined as the earnings before taxes and interest weighted by the estimate of the replacement value of assets. *ADV/RV*, *R&DRV*, and *DIR/RV* are expenditures on advertising, research and development, and directors' salary weighted by the estimate of the replacement value of assets, respectively. The first column shows ordinary least squares (OLS) estimates with *t*-statistics in parentheses are for White (1980) heteroscedastic-consistent standard errors. The second column shows estimates using 2-stage least squares (2SLS) instrument variable estimation method.

Variable	Dependent Variable: *ERATE*			
	OLS Estimates	OLS Estimates (with Industry Dummies)	2SLS Estimates	2SLS Estimates (with Industry Dummies)
Constant	0.12*	0.14*	0.07	0.10
	(2.25)	(2.22)	(1.12)	(1.45)
0-1% Foreign Ownership[a]	5.52	5.93	9.21	7.71
	(1.75)	(1.89)	(1.92)	(1.62)
1-5% Foreign Ownership[b]	2.00**	1.72**	1.86**	1.97**
	(4.93)	(4.29)	(2.66)	(2.84)
5-10% Foreign Ownership[c]	-0.11	0.25	-0.26	-0.09
	(-0.31)	(0.71)	(-0.43)	(-0.15)
10-20% Foreign Ownership[d]	0.77**	0.68**	0.77*	0.70*
	(3.70)	(3.26)	(2.47)	(2.25)
20-40% Foreign Ownership[e]	-0.05	-0.09	-0.08	-0.15
	(-0.25)	(-0.43)	(-0.34)	(-0.58)
Over 40% Foreign Ownership[f]	-0.49	-0.50	-0.33	-0.33
	(-1.86)	(-1.88)	(-1.13)	(-1.13)
ADV/RV	0.25**	0.24**	0.25**	0.23**
	(3.82)	(3.40)	(3.90)	(3.31)
R&D/RV	0.31**	0.25**	0.33**	0.27**
	(5.74)	(4.13)	(6.39)	(4.62)
DIR/RV	1.40**	1.33*	1.43**	1.41*
	(2.59)	(2.41)	(2.65)	(2.55)
Ln (Replacement Value of Assets)	-0.01**	-0.02**	-0.01**	-0.01**
	(-3.43)	(-3.17)	(-2.93)	(-2.74)
Sample Size	945	945	945	945
F-statistic	24.48	10.58	21.39	9.70
(*P*-value)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
R-Squared	0.21	0.25	0.18	0.24

Significant at 1% (**) and 5% (*) levels, respectively.

Table 4 (Continued)

a. If the fraction of the company held by foreigners is less than 0.01, the variable equals the fraction itself and 0.01 otherwise.
b. If the fraction of the company held by foreigners is less than 0.01, the variable equals 0. If the fraction of the company held by foreigners is greater than 0.01 and less than 0.05, the variable equals the fraction minus 0.01. If the fraction of the company held by foreigners is greater than 0.05, variable equals 0.04.
c. If the fraction of the company held by foreigners is less than 0.05, the variable equals 0. If the fraction of the company held by foreigners is greater than 0.05 and less than 0.1, the variable equals the fraction minus 0.05. If the fraction of the company held by foreigners is greater than 0.1, variable equals 0.05.
d. If the fraction of the company held by foreigners is less than 0.1, the variable equals 0. If the fraction of the company held by foreigners is greater than 0.1 and less than 0.2, the variable equals the fraction minus 0.1. If the fraction of the company held by foreigners is greater than 0.2, variable equals 0.1.
e. If the fraction of the company held by foreigners is less than 0.2, the variable equals 0. If the fraction of the company held by foreigners is greater than 0.2 and less than 0.4, the variable equals the fraction minus 0.2. If the fraction of the company held by foreigners is greater than 0.4, variable equals 0.2.
f. If the fraction of the company held by foreigners is less than 0.4, the variable equals 0. Otherwise, the variable equals the fraction minus 0.4.

Table 5. Linear regressions of the *yearly change* in Tobin's *Q* on the yearly changes in foreign ownership

This table shows regression coefficient estimates of the association between yearly change (for the fiscal years from 1996 to 1997) in Tobin's *Q* and the yearly changes in foreign ownership in various categories. Sample consists of 945 industrial firms listed in 1st Section of Tokyo Stock Exchange as of the end of both 1996 and 1997 fiscal years. *t*-statistics are given in parentheses.

Variable	Dependent Variable: Yearly Change in Tobin's *Q*	
	OLS Estimates	OLS Estimates (with Industry Dummies)
Constant	-0.73**	-1.17**
	(-13.26)	(-4.63)
Yearly change in foreign ownership x foreign ownership category dummy (0-1%)[a]	1.56	1.71
	(0.56)	(0.62)
Yearly change in foreign ownership x foreign ownership category dummy (1-5%)[a]	4.49	5.77
	(0.82)	(1.05)
Yearly change in foreign ownership x foreign ownership category dummy (5-10%)[a]	2.71	4.17
	(0.64)	(0.98)
Yearly change in foreign ownership x foreign ownership category dummy (10-20%)[a]	8.49*	7.72*
	(2.56)	(2.33)
Yearly change in foreign ownership x foreign ownership category dummy (20-40%)[a]	14.17*	14.90**
	(2.57)	(2.72)
Yearly change in foreign ownership x foreign ownership category dummy (over 40%)[a]	-14.80	-12.90
	(-0.69)	(-0.61)
Sample Size	945	945
F-statistic	7.78	2.20
(*P*-value)	(0.0001)	(0.0006)
R-Squared	0.07	0.06

Significant at 1% (**) and 5% (*) levels, respectively.

a. The variable indicates the interaction between the yearly change (from 1996 to 1997) in foreign ownership and the dummy variable in the given foreign ownership category (e.g., between 10% and 20%). The dummy variables take a value of 1 when the fraction of the company held by foreigners within the given category in the fiscal year 1996, and zero otherwise.

Table 6. Piecewise linear regressions of R&D intensity on foreign ownership and other firm characteristics

This table shows regression coefficient estimates of the association between R&D intensity and the levels of foreign ownership. A number of other firm characteristics variables such as advertising intensity, and executive compensation level, and firm size are also employed as explanatory variables. Sample consists of 945 industrial firms listed in 1st Section of Tokyo Stock Exchange as of the end of 1997 fiscal year. *ADV/RV*, *R&D/RV*, and *DIR/RV* are expenditures on advertising, research and development, and directors' salary weighted by the estimate of the replacement value of assets, respectively. *t*-statistics are given in parentheses.

Variable	Dependent Variable: *R&D/RV*			
	OLS Estimates	OLS Estimates (with Industry Dummies)	2SLS Estimates	2SLS Estimates (with Industry Dummies)
Constant	-0.05	-0.15**	-0.06	-0.15**
	(1.56)	(-4.34)	(-1.68)	(-4.06)
0-1% Foreign Ownership[a]	2.69	1.34	3.32	1.44
	(1.39)	(0.77)	(1.13)	(0.55)
1-5% Foreign Ownership[b]	-0.06	-0.16	-0.06	-0.19
	(-0.25)	(-0.72)	(-0.16)	(-0.50)
5-10% Foreign Ownership[c]	0.09	0.12	0.06	0.21
	(0.47)	(0.64)	(0.15)	(0.60)
10-20% Foreign Ownership[d]	0.37**	0.30**	0.27	0.19
	(2.97)	(2.64)	(1.40)	(1.09)
20-40% Foreign Ownership[e]	0.25	0.19	0.34*	0.22
	(1.89)	(1.63)	(2.21)	(1.58)
Over 40% Foreign Ownership[f]	-0.33*	-0.35*	-0.31	-0.28
	(-2.08)	(-2.41)	(-1.78)	(-1.73)
ADV/RV	0.10*	0.09*	0.11**	0.10*
	(2.39)	(2.27)	(2.69)	(2.52)
DIR/RV	0.48	0.89**	0.47	0.89**
	(1.44)	(2.90)	(1.42)	(2.92)
Ln (Replacement Value of Assets)	0.004	0.01**	0.005*	0.01**
	(1.78)	(4.47)	(2.00)	(4.63)
Sample Size	945	945	945	945
F-statistic	7.78	12.80	6.08	12.31
(*P*-value)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
R-Squared	0.07	0.28	0.05	0.28

Significant at 1% (**) and 5% (*) levels, respectively.

Table 6 (Continued)

b. If the fraction of the company held by foreigners is less than 0.01, the variable equals the fraction itself and 0.01 otherwise.
c. If the fraction of the company held by foreigners is less than 0.01, the variable equals 0. If the fraction of the company held by foreigners is greater than 0.01 and less than 0.05, the variable equals the fraction minus 0.01. If the fraction of the company held by foreigners is greater than 0.05, variable equals 0.04.
d. If the fraction of the company held by foreigners is less than 0.05, the variable equals 0. If the fraction of the company held by foreigners is greater than 0.05 and less than 0.1, the variable equals the fraction minus 0.05. If the fraction of the company held by foreigners is greater than 0.1, variable equals 0.05.
e. If the fraction of the company held by foreigners is less than 0.1, the variable equals 0. If the fraction of the company held by foreigners is greater than 0.1 and less than 0.2, the variable equals the fraction minus 0.1. If the fraction of the company held by foreigners is greater than 0.2, variable equals 0.1.
f. If the fraction of the company held by foreigners is less than 0.2, the variable equals 0. If the fraction of the company held by foreigners is greater than 0.2 and less than 0.4, the variable equals the fraction minus 0.2. If the fraction of the company held by foreigners is greater than 0.4, variable equals 0.2.
g. If the fraction of the company held by foreigners is less than 0.4, the variable equals 0. Otherwise, the variable equals the fraction minus 0.4.