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I. Introduction

Banks in some countries, notably in Japan and Germany, are thought to play a substantial corporate governance role in nonfinancial corporations. Important to this role is the fact that banks are typically equity holders in nonfinancial firms in these countries. Creditors' interests often differ from those of shareholders. Since banks' stakes as creditors are typically substantial, moderate equity stakes may give them considerable voice in corporate governance without significantly aligning their interests with those of shareholders and so could lower value for public shareholders. Bank ownership should improve firm value, however, when the incentives of banks and shareholders are closely aligned.

This article explores these hypotheses using ownership structure data for large Japanese corporations. A Japanese firm typically has a "main bank," which is its largest provider of debt financing, is involved in its routine financial transactions, and is generally well-informed about the

We investigate the relation between firms' ownership structures and q ratios in Japan. At low levels of ownership by main banks, firms' q ratios fall as bank equity ownership rises. At higher levels of bank ownership, this relationship is mitigated and, in some specifications, even reversed. We argue that this relation reflects both costs and benefits of equity holdings by banks. In Japan, unlike the United States, firm value rises monotonically with increased managerial ownership. Equity ownership by corporate blockholders is also positively related to firm value in Japan.

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firm's prospects. In addition, the main bank plays a lead role in consortia that raise capital for the firm, acts as a monitor, and in cases of financial distress, serves as a guarantor for other creditors. Kaplan (1994), Kaplan and Minton (1994), Kang and Shivdasani (1995), and Morck and Nakamura (1999) show that main banks have a key corporate governance role. Main banks appoint their employees to the boards of financially troubled client firms, and these appointments presage increased rates of top executive turnover and shifts in corporate strategy.

We find that at low levels of bank ownership, Tobin's q falls with increased bank equity stakes. At higher levels, we find that the adverse effect of bank ownership on q is mitigated. In some specifications, we find a positive relation between bank ownership and q at high ownership levels. A similar pattern holds using accounting profitability as the performance metric. We explore how banks' equity holdings influence the firm's investment policy. We find a positive relation between investment expenditures and bank ownership. In addition, we show that increased investment expenditures are associated with lower q , and this relation is stronger for firms with higher bank-owned equity stakes. We argue that higher bank ownership is associated with higher liquidity for firms, allowing them to undertake more marginally acceptable investments, which lowers their average q ratio. We also find a positive relation between bank ownership and interest costs for firms that meet regulatory restrictions for issuing public debt. This finding suggests that high bank equity ownership increases the bank's ability and willingness to charge higher interest rates, particularly when the bank's ownership is relatively modest. The documented relation between bank ownership and q thereby reflects both the costs and benefits of bank equity holdings. We explore several alternative explanations, including regulatory changes in equity ownership limits, changes in bond market access, and potential endogeneity of ownership, but these do not appear to explain the results.

If corporate governance rights rest primarily with banks in Japan, the relation between managerial ownership and firm value should differ from that observed in the United States. Jensen and Meckling (1976) argue that higher ownership serves to align interests of managers and shareholders. Stulz (1988) demonstrates that higher managerial ownership can insulate managers from external takeovers. Morck, Shleifer, and Vishny (1988); McConnell and Servaes (1990, 1995); Hermalin and Weisbach (1991); and Holderness, Kroszner, and Sheehan (1999) all find that in the United States, the relation between firm value and managerial ownership is nonlinear. These findings indicate the importance of both the incentive alignment and entrenchment effects of management ownership in the United States. Since takeovers are virtually

absent in Japan, an entrenchment effect ought not be observed. Supporting this view, we find that the relation between managerial ownership and firm value is monotonically positive in Japan. This is consistent with control rights resting generally with creditors and with increased ownership serving to align managerial and shareholder interests.

In addition to banks and management, corporate block holders are important in Japan. We show that equity ownership by corporate block holders is positively related to firm value in Japan. This finding supports evidence in Kaplan and Minton (1994), who show that corporate block holders perform an important monitoring role in precipitating board-level changes and with Kang and Shivdasani (1997), who find that such block holders facilitate significant asset restructuring in poorly performing firms. Since corporate block holders do not have a significant claim as creditors, we do not find evidence of nonmonotonicity in the relation between firm value and corporate block holdings.

The article proceeds as follows: Section II discusses bank ownership of nonfinancial Japanese firms in more detail and considers testable implications. Section III describes our data. Section IV presents empirical tests, and Section V concludes.

II. Japanese Equity Ownership

A. Origins of Bank Equity Ownership

Analysis of Japanese economic history shows that equity ownership of industrial firms by Japanese banks is fundamentally different from the limited equity ownership by banks that arises in the United States. Bank ownership of equity in the United States is typically a temporary result of a bankruptcy reorganization.¹ However, equity ownership by banks has been ubiquitous for most of Japan's modern history.

The origins of bank equity ownership can be traced back to prewar Japan, when powerful Meiji families ran large banks that served as financial command centers of closely held family corporate groups called *zaibatsu*. The U.S. occupation government imposed U.S. style corporate ownership structures on these banks and firms, and by the early 1950s all of these former *zaibatsu* firms were widely held. A series of high-profile hostile takeover raids and greenmail payments in the subsequent two decades fostered the rapid growth of intercorporate eq-

1. In the United States, banks are typically prohibited from owning the equity of their client firms. An important exception to this is that U.S. banks are allowed to hold equity as part of a debt restructuring or workout agreement. See James (1995) for a detailed analysis of this issue.

uity holdings, largely as a defensive response to these takeover threats (Sheard 1989; Morck and Nakamura 1999).² In many cases, Japanese banks took equity stakes in firms that formerly belonged to their *zaibatsu*. Banks also placed blocks of their own stock, and that of former *zaibatsu* member firms, with other former *zaibatsu* firms. As a result, many large Japanese firms are now members of corporate groups called financial *keiretsu*, characterized by a complex web of intercorporate ownership centered around banks. Other Japanese firms organized themselves into analogous corporate groups called industrial *keiretsu* that are centered around large industrial firms. Industrial *keiretsu* firms also have main banks that own blocks of their equity.

This structure of intercorporate ownership, with banks as the central entity in many of the groups, resulted in an industrial structure where banks have substantial influence over their client firms. Shares held by the banks and by other entities in the group are generally regarded as “stable shareholdings” and display little variation over time. In particular, Japanese banks do not appear to adjust their ownership levels in their client firms in response to changing economic performance. Kang and Shivdasani (1997) provide evidence on this point in studying Japanese firms that experience large declines in operating performance. They document that bank ownership of equity is virtually unchanged in the years surrounding the performance decline.

While Japanese shareholdings have been largely uninfluenced by firm performance, they have been influenced by important regulatory changes. Until 1977, Japanese banks were restricted to holding no more than 10% of a firm’s outstanding equity. Due to concerns with banks’ excessive control over corporations, in 1977 the Japanese Anti-Monopoly Act lowered the limit for stock ownership by individual banks and other financial institutions to 5%, providing a 10-year period until April 1, 1987, for institutions to meet this requirement.³ As we show below, the new regulatory ceiling on ownership has been a predominant factor behind changes in bank ownership in Japan.

2. For example, in the 1970s, Hong Kong Investor Group acquired 13% of Oji Paper, a former Mitsui *zaibatsu* firm. The Mitsui Bank, Mitsui Trust and Banking, other former Mitsui *zaibatsu* firms, and the Industrial Bank of Japan all participated in a targeted block repurchase to rid Oji of the raider. Another raider, Osano, acquired 30% of Mitsui Mining. At about the same time, the Mitsui Bank coordinated a buyout of Osano by 10 former Mitsui *zaibatsu* firms. Corporate control challenges in the 1970s were deflected similarly at Kao Soap, Ajinomoto, Nakayama Steel, Asahi Breweries, and other firms.

3. In certain cases, the Japanese Fair Trade Commission allows exceptions to this by allowing firms negotiated settlements to decrease their ownership to the 5% limit. Instances of such settlements can occur when banks acquire stakes in other firms as a result of a merger. In other cases, trust banks, which are sometimes main banks to other firms, can have effective ownership of over 5% if the excess shares are in a trust account. Under these circumstances, Japanese trust banks can have an ownership position that exceeds 5%.

B. Hypothesized Effects of Bank Equity Ownership

The simultaneous ownership of both debt and equity claims by Japanese banks can be beneficial for client firms if it alleviates potential conflicts of interests between creditors and equity holders, such as underinvestment, asset-substitution, and overinvestment problems (Jensen and Meckling 1976; Myers 1977; Stulz 1990). Hoshi, Kashyap, and Scharfstein (1990) show that Japanese firms with close bank ties tend to grow faster during financial distress, suggesting that this arrangement mitigates the underinvestment problem associated with debt financing. Jensen (1986, 1989) also argues that this structure creates incentives for Japanese banks to engage in stringent managerial monitoring, thereby improving firm value.

Equity ownership may also help alleviate incentive conflicts between banks and other creditors. Diamond (1993) shows that banks can have incentives to liquidate excessively, resulting in the loss of nonappropriable control rents. In this framework, subordinating the bank's claim internalizes some of the costs of lost control rents, reducing the incentive for excessive liquidation and improving firm value. In related work, Admati and Pfleiderer (1994) demonstrate that ownership of an equity claim by an informed creditor can alleviate information asymmetry problems that can arise between informed and uninformed creditors, resulting in improved investment decisions.

Hoshi, Kashyap, and Scharfstein (1991) argue that independent Japanese firms face stricter financing constraints than those in bank groups. If so, higher bank ownership should be correlated with a greater ability to take on more marginally profitable investments. This might induce a negative relationship between q and bank equity holdings. Firms without strong links to their banks would appear to have higher values only because they are unable to raise funds for all but the very best opportunities.

Although Japanese banks' equity holdings can endow them with substantial power, their equity stakes are often small relative to their stakes as creditors. Further, if Japanese banks, as stable shareholders, implicitly agree to hold their equity stakes indefinitely to block external control challenges, their incentive to enhance the current market value of their shares would be limited. This contrasts sharply with banks' interests as creditors. In addition to the large direct debt holdings, main banks also informally guarantee loans other creditors make to their clients (Sheard 1994). This has the effect of magnifying their interests as creditors. For these reasons, maximization of the value of client firms' equity might have a low weight in the objective function for Japanese banks, compared to the maximization of the value of their debt claims.

Thus, a bank's equity ownership may give it a stronger voice in corporate decisions without giving it proportional residual claims from equity. If so, bank equity ownership might actually worsen the distortions in a firm's investment policy. A bank-controlled firm might approve a low-risk negative net present value (NPV) project that enhances the value of the debt obligations even though it is detrimental to shareholder wealth and lowers firm value. Alternatively, it might veto a high-risk positive NPV project that imperils creditor interests even though it enhances shareholder wealth and firm value. This distortion of client firms' capital spending policies should reduce firm values across levels of bank ownership large enough to bestow influence in corporate governance but not large enough to align bank interests with those of shareholders.

Finally, the ownership of equity can increase the bank's power and concomitant ability to extract surplus from client firms *ex post*, as described by Rajan (1992). This argument also suggests a negative relationship between bank ownership and firm value when bank ownership is large enough to affect corporate governance but not large enough to align bank interests with those of shareholders.

C. Hypothesized Effects of Managerial Equity Ownership

Sheard (1989), Morck and Nakamura (1999), and others argue that bank and intercorporate equity ownership in Japan arose as antitakeover defenses and have been effective in eliminating the possibility of a disciplinary takeover. If so, the relation between managerial stock ownership and firm value should differ from that observed in the United States.

Jensen and Meckling (1976) show that higher ownership serves to align interests of managers and shareholders and thereby raises firm value. Stulz (1988) demonstrates that sufficiently high managerial ownership, by allowing managers to block takeover bids, can lower firm value. Using U.S. data, Morck et al. (1988), McConnell and Servaes (1990, 1995), Hermalin and Weisbach (1991), and Holderness et al. (1999) all find firm value to rise with low levels of managerial ownership and to fall with higher levels of managerial ownership. These findings are consistent with both an incentive alignment and an entrenchment effect in the United States.

Since hostile takeovers are virtually impossible among large Japanese firms,⁴ an entrenchment effect at higher levels of managerial ownership ought not be observed. We therefore expect to find only the monotonically positive relation between managerial ownership and firm value derived by Jensen and Meckling (1976). That is, increased

4. For evidence on the takeover market in Japan, see Kester (1991) and Kaplan (1994).

managerial ownership should align managerial and shareholder interests but not lead to any significant decline in the (already negligible) probability of a hostile takeover.

D. Hypothesized Effects of Nonfinancial Block Holder Equity Ownership

Much of the intercorporate equity ownership among nonfinancial firms in Japan occurs with simultaneous trading and business ties between firms. To the extent that firms extend large amounts of credit to each other as customers or suppliers, nonfinancial block holders may face incentives similar to those postulated for banks: extensive trade credit might lead them to behave primarily as creditors rather than shareholders. However, if their equity ownership stakes are large relative to their positions as creditors, nonfinancial block holders in Japan should seek to improve shareholder value as postulated by Shleifer and Vishny (1986). In support of the latter sort of behavior, Kaplan and Minton (1994) show that corporate block holders perform an important monitoring role in precipitating board-level changes, and Kang and Shivdasani (1997) find that such block holders facilitate significant asset restructuring in poorly performing firms.

III. Methodology and Data

A. Basic Methodology

Following the methodology of Tobin and Brainard (1977), we focus on average q as a measure of firm value.⁵ A firm's average q measures investors' beliefs about the collective net present value of its ongoing activities. If a firm with a 10% cost of capital invested ¥100 in a project that returns cash flows of ¥15 per year in perpetuity, the project has an NPV of ¥50 ex post. If all its past investment projects have similar returns, its average q ratio is 1.5. If some of its projects have such returns, but others have returns closer to its cost of capital, its overall average q is less than 1.5 but greater than one. An abundance of ex post negative NPV projects would drive the average q to below one.

Assume that investors, using information Ω , available in year t , estimate a firm's value in year t to be

$$E[V_t|\Omega_t] = R_t + \sum_{\tau=-\infty}^{\infty} E[NPV_{\tau}|\Omega_t], \quad (1)$$

5. This approach is widely used in the finance literature. See, e.g., Morck et al. (1988, 1989), McConnell and Servaes (1990, 1995), Hermalin and Weisbach (1991), Lang and Stulz (1994), and Yermack (1996), among others.

where R_t is the replacement cost of the firm's assets and NPV_τ is the ongoing NPV of the investments the firm undertook, or is expected to undertake, in year τ . Our hypothesis is that bank ownership and other aspects of a firm's ownership structure affect its market value. However, unadjusted market values are unsuitable as a dependent variable in regressions because firm size effects would make the residuals highly heteroskedastic. We therefore normalize by dividing firm value by replacement cost, producing average q estimates,

$$\begin{aligned}\bar{q}_t &= \frac{E[V_t|\Omega_t]}{R_t} \\ &= 1 + \frac{1}{R_t} \sum_{\tau=-\infty}^{\infty} E[NPV_\tau|\Omega_t].\end{aligned}\quad (2)$$

Thus, the average q is above one if shareholders believe that the firm's projects, on balance, add value. These expectations of added value can also be interpreted as the values of intangible assets or future growth opportunities. Our methodology is to run regressions of the form

$$\bar{q}_t = \mathbf{b} \times \mathbf{x}_t + \varepsilon_t, \quad (3)$$

where \mathbf{x}_t is a vector containing control variables and ownership variables.

This methodology implicitly assumes that every firm has been able to undertake all available projects that have positive net present values at appropriate costs of capital. Hoshi et al. (1991) find that investment in independent Japanese firms is more sensitive to liquidity than for bank-group affiliated firms. One interpretation of this finding is that independent firms are relatively constrained from undertaking all their positive NPV projects. If some firms in our sample are subject to this sort of capital rationing, their average q ratios may be elevated because they are only investing in projects with high NPVs, while forgoing projects with lower but positive NPVs. We explore this possibility in detail below.

B. Description of Data

Our data on average q , defined as the market value of the firm's net debt and equity as a fraction of the replacement cost of capital stock, is from Asako et al. (1989). Capital stock is divided into seven components: nonresidential buildings, structures, machinery, transportation equipment, instruments and tools, land, and inventories. Replacement costs are computed using separate estimated depreciation rates and price indices for each component.⁶ The present values of future depreci-

6. For land and inventories, physical depreciation rates are assumed to be zero.

ation tax shields are also included and are estimated separately for each component. The numerator of q is the market value of outstanding equity at the beginning of each year plus the estimated net value of the firm's debt. The latter is the book value of outstanding long- and short-term debt minus the estimated market value of shares held in other firms, which is in turn estimated as the annual dividend receipts divided by the Tokyo Stock Exchange (TSE) dividend-price ratio. The importance of these corrections for equity holdings, land price appreciation, and taxes in the computation of Japanese q ratios is emphasized by Hayashi and Inoue (1991) and Hoshi and Kashyap (1990). In their detailed comparison of alternative measures of Japanese q ratios, Hoshi and Kashyap (1990) conclude that the Asako et al. (1989) procedure results in the most reliable estimates of q for Japanese firms.⁷

Average q ratios are available from Asako et al. (1989) for the 373 manufacturing firms listed on the First Section (large firms) of the Tokyo Stock Exchange in 1986.⁸ We choose this year because it is the last year in which bank equity stakes could exceed 5%. Banks were legally required to dispose of their equity stakes in excess of 5% by 1987. Banks with stakes above 5%, therefore, have an unusual incentive to be concerned about shareholder value in this year. They must sell some of their equity holdings.

Our data on ownership and bank loans are from *Toyo Keizai*, which provides this information at the end of each firm's fiscal year. We consider each firm's largest creditor to be its main bank, following Sheard (1989), Hoshi et al. (1990), and Kang and Shivdasani (1997). In 12 cases, the largest (and typically only) creditor is a corporation other than a bank. We exclude these observations because extending the above listed arguments about banks to nonfinancial corporations is problematic.⁹ We also collect data on managers' equity ownership, equity block holdings by nonfinancial corporations, and block holdings by nonbank financial corporations. We define block holders as the 10 largest shareholders in each firm, following Kaplan and Minton (1994).

We are interested in how dependent our firms are on bank debt.

7. The q estimates that we employ have been widely used by other authors, including Hayashi and Inoue (1991). For a complete description of the algorithm and data sources to compute these q 's, see Hayashi and Inoue (1991, pp. 737–39), and the appendix therein.

8. The original sample of Asako et al. (1989) is a subset of the 942 manufacturing firms listed on the Tokyo Stock Exchange (TSE) in 1977. For this set of firms, they restricted the sample by dropping firms that ceased to be listed by 1986, were suspended from trading, changed their fiscal year, or acquired other firms during 1977–86. These screens, imposed to ensure consistency in the q estimates, result in a sample of 543 firms, 373 of which are listed on the First Section of the TSE.

9. Inclusion of these firms yields results qualitatively similar to those reported below, but the inflection points of nonmonotonic regressions of "main creditor ownership" on average q fall outside the regulatory bounds of bank ownership in Japan. This is understandable, as ownership by nonfinancial corporate block holders can exceed the 10% bound faced by banks.

Banks' exposures as creditors are presumably higher in companies with high levels of bank debt. We also include a measure of leverage, the ratio of total liabilities to assets. Japanese main banks often informally guarantee other creditors' loans to their client, so total debt is a broader measure of a bank's exposure as a creditor. We identify firms belonging to the six major bank-centered *keiretsu* groups (Mitsui, Mitsubishi, Sumitomo, Fuji, Daiichi Kangyo, and Sanwa) based on Nakatani (1984).¹⁰ We also use the amount of public debt as the total of outstanding straight, convertible, and warrant bonds as a fraction of assets to measure dependence on a bank. We expect access to public debt to be correlated with less dependence on bank financing.

Following Morck et al. (1988), we include both research and development (R&D) and advertising spending as a fraction of assets as control variables. To capture intangibles related to firm size, we include the logarithm of sales. Since "normal" levels of intangible assets may vary across industries, all the regressions include fixed effects for TSE industry classification codes.

Table 1 reports 1986 univariate statistics on the sample firms. The firms are typically large, with sales averaging ¥177 billion and assets of nearly ¥200 billion. The mean average q is about 1.4, but the median is lower at 0.86, indicating a positively skewed distribution. Of particular interest is the status of banks as creditors. The average ratio of bank debt to assets is 0.22, indicating that main banks' exposure as creditors is substantial. The ownership of main banks is substantially less and averages 3.6% of the outstanding equity. In only 23% of the sample does the ownership by the main bank exceed 5%. Management ownership averages 2.4%, nonfinancial corporate block holders own on average 16.4%, and nonbank financial institutions have an average ownership of 14.5%. Finally, 51% of the sample firms belong to a bank-centered *keiretsu* group. These ownership statistics are comparable to other studies of large Japanese firms such as Prowse (1992) and Kaplan and Minton (1994). Table 2 presents correlations between selected financial and ownership variables.

IV. Empirical Evidence

A. Ownership Structure and Market Value

Table 3 presents regressions of average q ratios on ownership structure and controls for size, R&D and advertising, and bank dependence using data for 1986. Model 1 in table 3 relates q to main bank ownership.

10. Alternative definitions of *keiretsu* affiliation, such as those based on Industrial Groupings in Japan, yield similar inferences.

TABLE 1 Descriptive Statistics on Firm Characteristics

Variable	Mean	Median	25th Percentile	75th Percentile	Standard Deviation
Tobin's q	1.44	.86	.49	1.53	2.11
Total assets (billions of yen)	190.57	74.84	.36	192.38	37.08
Sales (billions of yen)	176.97	72.22	36.31	179.36	303.84
Public debt/assets	.42	.44	.35	.51	.12
Bank debt/assets	.22	.19	.05	.34	.20
Main bank ownership (% of outstanding shares)	3.59	4.18	2.25	4.99	2.22
Management ownership (% of outstanding shares)	2.44	.40	.20	2.30	4.90
Ownership by all bank block holders (% of out- standing shares)	13.27	12.95	9.56	17.23	6.23
Ownership by other finan- cial block holders (% of outstanding shares)	14.50	13.22	8.66	19.48	7.79
Ownership by corporate block holders (% of out- standing shares)	16.37	8.38	2.27	26.49	17.67
Fraction of firms that be- long to a bank-centered <i>keiretsu</i>	.51
R&D/assets	.015	.006	.00	.021	.022
Advertising/assets	.011	.003	.00	.13	.020
Capital investment/assets	.189	.176	.125	.244	.085

NOTE.—The sample consists of 373 Japanese manufacturing firms listed on the First Section of the Tokyo Stock Exchange during 1986. The main bank is defined as the firm's largest creditor, and block holder ownership is defined to include ownership by the firm's 10 largest shareholders. Firms are considered as part of a bank-centered *keiretsu* if they belong to the Mitsui, Mitsubishi, Sumitomo, Fuji, Daiichi Kangyo, or Sanwa groups. Financial data are obtained from the Japan Development Bank tapes, and ownership data are obtained from Toyo Keizai.

In this regression, where it is constrained to have a linear effect, higher main bank ownership is associated with lower q ratios. The effect is statistically significant at the 1% level. The point estimate implies that a 1% increase in main bank ownership corresponds to a drop in q of 0.21. Given an average q of 1.4, this amounts to a 15% decline.

The discussion above suggests a possible nonlinear relationship between q and main bank ownership. Model 2, therefore, adds the square of main bank ownership. While main bank ownership has a large negative coefficient, its square has a positive coefficient. The estimated coefficients on both the linear and quadratic terms are statistically significant at the 1% level. Model 3 adds the equity ownership of managers and corporate block holders. The nonlinear relation between main bank ownership and average q remains significant.

Management ownership is positively and significantly related to average q . Equity ownership by corporate block holders also has a positive relationship with average q , and the coefficient on block ownership

TABLE 2 Correlation Matrix for Financial and Ownership Variables

	Logarithm of Sales	Bank Debt/ Assets	Public Debt/ Assets	Other Block Holder Ownership	Management Ownership	Keiretsu Membership
Main bank ownership						
Logarithm of sales	.09*	.33**	.03	-.25**	-.18**	.05
Bank debt/assets		.01	.08	-.13**	-.24**	.23**
Public debt/assets			-.47**	.14**	-.18**	.20**
Other block holder ownership				-.02	-.06	.00
Management ownership					-.37**	.09**
						-.24**

NOTE.—The sample consists of 373 Japanese manufacturing firms listed on the First Section of the Tokyo Stock Exchange during 1986. The main bank is defined as the firm's largest creditor, and block holder ownership is defined to include ownership by the firm's 10 largest shareholders. Firms are considered as part of a bank-centered *keiretsu* if they belong to the *Mitsui*, *Mitsubishi*, *Sumitomo*, *Fuji*, *Daiichi Kangyo*, or *Sanwa* groups. Financial data are obtained from the Japan Development Bank tapes, and ownership data are obtained from Toyo Keizai.

* Significant at the 10% level.

** Significant at the 1% level.

TABLE 3 Cross-sectional Regressions of Tobin's q and Ownership with Industry Fixed Effects

Explanatory Variable	Dependent Variable: Tobin's q				
	(1)	(2)	(3)	(4)	(5)
Logarithm of sales	-.22 (2.26)	-.20 (2.03)	-.07 (.68)	-.09 (.93)	-.05 (.49)
R&D/assets	19.46 (3.46)	20.00 (3.57)	19.30 (3.51)	18.49 (3.33)	17.36 (3.21)
Advertising/assets	2.46 (.40)	1.34 (.22)	1.33 (.22)	1.11 (.18)	-.23 (.04)
Main bank ownership	-.21 (4.27)	-.46 (3.77)	-.40 (3.35)	-.40 (3.34)	-.30 (2.48)
(Main bank ownership) ²		.04 (2.25)	.04 (2.27)	.04 (2.23)	.03 (2.04)
Management ownership			.09 (4.02)	.04 (.83)	.08 (3.64)
(Management ownership) ²				.002 (1.00)	
Corporate block holder ownership			.01 (1.70)	-.002 (.09)	.02 (2.35)
(Corporate block holder ownership) ²				.0002 (.61)	
Bank debt/assets					-2.31 (3.14)
Public debt/assets					-2.01 (1.93)
<i>Keiretsu</i> membership					-.10 (.49)
F-statistic (model p -value)	4.03 (.00)	4.12 (.00)	4.66 (.00)	4.32 (.00)	4.61 (.00)
R^2	.18	.19	.23	.23	.25

NOTE.—The sample consists of 373 Japanese manufacturing firms listed on the First Section of the Tokyo Stock Exchange during 1986. The main bank is defined as the firm's largest creditor, and block holder ownership is defined to include ownership by the firm's 10 largest shareholders. Firms are considered as part of a bank-centered *keiretsu* if they belong to the Mitsui, Mitsubishi, Sumitomo, Fuji, Daiichi Kangyo, or Sanwa groups. Financial data are obtained from Toyo Keizai. The t -statistics are in parentheses.

is significant at the 9% level. In model 4, adding the squares of managerial and corporate stakes renders the linear variables insignificant and does not materially affect the coefficients of bank stake and its square. These findings suggest a monotonic relationship between average q and both management and block holder ownership as with collinearity problems arising when linear and squared terms are included in the same regressions.

Model 5 includes bank debt as a fraction of assets and a dummy for membership in a major financial *keiretsu* as indicators of firms in which main banks' stakes as creditors might be large. It also controls for the extent of public debt financing by the sample firms. Inclusion of these controls does not change the basic nature of the results. We still find evidence of a negative relation between main bank ownership and q

over low ownership ranges and an attenuation of that effect over high ownership ranges.

Inspection of the point estimates on the linear and quadratic terms for bank ownership provides some perspective on the economic magnitude of its effect on firm value. For example, the point estimates in model 5 imply that average q is lowest, *ceteris paribus*, when bank ownership is at 5%. When ownership is at this level, average q is 0.75 lower than when bank ownership is zero.

The negative relationship between q and bank ownership at low levels of the latter is robust to reasonable specification changes. Regressions (not shown) dropping the control variables do not greatly change either the magnitudes or significance levels of the coefficients of bank ownership and its square. Results qualitatively similar to those for 1986 data are also present in regressions using data for 1985 or 1987. Piecewise linear regressions (not shown) display a similar nonmonotonic relationship between firm value and bank ownership. At levels of ownership below 5%, q is significantly negatively related to bank ownership. At higher ownership levels, these coefficients on bank ownership are consistently positive across specifications analogous to those in table 3; however, they lack statistical significance. This indicates that over high bank ownership ranges, there is little relation between increased bank ownership and q .

The negative relation with bank equity holdings is also evident if we use pretax return on assets (ROA), computed as the ratio of pretax operating income to assets, rather than average q , to measure firm performance. Table 4 shows ROA to be negatively related to bank equity ownership and positively related to the square of bank ownership squared. The linear term is statistically significant, while the quadratic one is not.

The results for managerial and block holder ownership also pass all of the above robustness tests. A positive and significant linear effect is always present, and no nonlinear effect is detected in any specification.

We conclude that increased bank equity ownership is associated with reduced firm value at low levels of bank ownership. At higher ownership levels, the negative relation between bank ownership and firm value is not observed, possibly because higher ownership levels accomplish a better alignment of bank and shareholder interests. We also conclude that no managerial entrenchment effect arises as managerial ownership rises. Since takeovers were virtually absent in Japan during our sample period, increased managerial ownership does not provide increased insulation from corporate takeovers. We also observe a positive relation between equity ownership and corporate block holders. This supports the evidence in Kaplan and Minton (1994) and Kang and Shivdasani (1997), who document that large corporate shareholders in

TABLE 4 Cross-sectional Regressions of Pre-Tax Operating Income with Industry Fixed Effects

Explanatory Variable	Dependent Variable: Pretax Operating Income to Assets		
	(1)	(2)	(3)
Logarithm of sales	.005 (2.21)	.00 (2.32)	.06 (2.62)
R&D/assets	.09 (.75)	.09 (.79)	.10 (.83)
Advertising/assets	-.21 (1.67)	-.22 (1.75)	-.20 (1.57)
<i>Keiretsu</i> membership	.00 (.09)	-.00 (.16)	-.00 (.24)
Main bank ownership	-.004 (3.93)	-.006 (2.51)	-.006 (2.31)
(Main bank ownership) ²		.0004 (1.03)	.0003 (1.00)
Management ownership			.0003 (.63)
Corporate block holder ownership			.0002 (1.25)
<i>F</i> -statistic (model <i>p</i> -value)	4.25 (.00)	4.10 (.00)	3.81 (.00)
<i>R</i> ²	.20	.20	.20

NOTE.—The sample consists of 373 Japanese manufacturing firms listed on the First Section of the Tokyo Stock Exchange during 1986. The main bank is defined as the firm's largest creditor, and block holder ownership is defined to include ownership by the firm's 10 largest shareholders. Firms are considered as part of a bank-centered *keiretsu* if they belong to the Mitsui, Mitsubishi, Sumitomo, Fuji, Daiichi Kangyo, or Sanwa groups. Financial data are obtained from the Japan Development Bank tapes, and ownership data are obtained from Toyo Keizai. The *t*-statistics are in parentheses.

Japan precipitate board-level changes and corporate restructuring in poorly performing Japanese firms.

In contrast to our results, Lichtenberg and Pushner (1994) argue that total factor productivity among Japanese firms is positively related to the ownership of financial institutions. However, inspection of their productivity residuals across subsamples of low, medium, and high institutional ownership (table 5) shows a U-shaped pattern between total factor productivity and institutional ownership, although the authors do not note or investigate this pattern. Our results are in partial agreement with those obtained by Lins and Servaes (1999), who document that the diversification discount in Japan is lower for *keiretsu* firms when bank ownership exceeds 5%.¹¹

11. Cable (1985) finds a positive linear relation between bank equity stakes and performance for German firms in 1974. Gorton and Schmid (1996) reject a quadratic specification in regressions of accounting profitability on bank ownership in Germany in 1974 in favor of a linear specification. One explanation is that institutional structures of Japan and Ger-

TABLE 5 Cross-sectional Regressions of Interest Costs with Industry Fixed Effects

Explanatory Variable	Dependent Variable: Interest Rate				
	Full Sample (1)	Firms with Bond Market Access (2)	Firms that Cannot Issue Bonds (3)	Firms with Bond Market Access (4)	Firms that Cannot Issue Bonds (5)
Logarithm of sales	-.0006 (.86)	.0003 (.32)	-.001 (1.34)	-.0006 (.62)	.0006 (.72)
R&D/assets	.01 (.39)	-.08 (2.33)	-.09 (1.65)	.08 (1.40)	-.079 (2.23)
Advertising/assets	-.06 (1.61)	-.01 (.20)	-.09 (1.80)	-.07 (1.33)	-.04 (.85)
Debt/assets	.03 (6.82)	.02 (3.15)	.04 (5.74)	.04 (4.88)	.02 (3.65)
Bond market access	-.005 (3.20)				
Main bank ownership	.0005 (.69)	.002 (2.19)	-.003 (.29)		
(Main bank ownership) ²	-.0000 (.78)	-.0002 (1.50)	.0000 (.19)		
Main bank ownership in 1976				-.003 (2.38)	.001 (1.23)
(Main bank ownership in 1976) ²				.0003 (2.45)	-.0001 (1.10)
<i>F</i> -statistic (model <i>p</i> -value)	13.09 (.00)	4.23 (.00)	5.06 (.00)	3.67 (.00)	3.98 (.00)
<i>R</i> ²	.45	.41	.35	.32	.43

NOTE.—The sample consists of 373 Japanese manufacturing firms listed on the First Section of the Tokyo Stock Exchange during 1986. Interest cost is computed as the ratio of interest expense to debt. The main bank is defined as the firm's largest creditor. Firms are considered as part of a bank-centered *keiretsu* if they belong to the Mitsui, Mitsubishi, Sumitomo, Fuji, Daiichi Kangyo, or Sanwa groups. Financial data are obtained from the Japan Development Bank tapes, and ownership data are obtained from Toyo Keizai. The *t*-statistics are in parentheses.

As an out of sample test of our results, we examine the sample of 154 Japanese acquisition announcements from 1975 to 1992 studied by Kang, Shivdasani, and Yamada (1999). An acquisition of another firm represents an important investment decision, and it is possible to directly measure the market's response to the acquisition announcement. Kang et al. (1999) document that average 2-day cumulative abnormal returns (CARs) for Japanese acquirers are significantly positive but do not explore whether acquisition CARs are related to the main bank's equity ownership. We use their sample and collect data on the

many differ as to the extent and mechanisms of bank power over nonfinancial firms. It is possible that German banks, because they control the proxies of public shareholders' stock and because they control most investment firms, always have great influence over industrial firms but only become interested in share price maximization when their direct equity holdings are large.

equity holdings of the main bank. We estimate a regression using the 2-day announcement return for the acquirer and include the following explanatory variables: logarithm of firm size, relative size of the transaction, prior industry adjusted stock return, the bidder's toehold in the target, bidder management equity ownership, the bidder's ratio of borrowings from the main bank to assets, and the equity ownership of the bidder's main bank and its square.¹² Consistent with findings in Kang et al. (1999), we find that the fraction of borrowing from the main bank is positively related to bidder CARs. Interestingly, equity ownership by the main bank is negatively related to the announcement return with a p -value of 0.01, and the square of main bank ownership is positively related to the announcement return with a p -value of 0.04. The point estimates indicate that CARs for Japanese acquirers are lowest when the main bank's ownership is 5.23%, an inflection point that is similar to that obtained from the regressions in table 3. Thus, the initial negative effect of bank ownership on firm value and the reversal of that effect at higher levels of ownership appear to be a robust relation. We now turn to potential explanations of this regularity.

B. Explanations for the Relation between Bank Ownership and Q

In this section, we explore explanations for the relation between bank ownership and firm value. These explanations include the appropriation of surpluses by banks, differences in Japanese firms' access to capital, overinvestment, possible endogeneity of bank equity holdings, the relaxation of the Bond Issuance Criterion, and the impact of the Anti-Monopoly Act regulating bank holdings.

Bank extraction of surpluses. Rajan (1992) argues that powerful banks have the ability to extract surpluses from client firms ex post. At modest levels of ownership, bank ownership might be large enough to endow banks with substantial power but not large enough to align bank interests with those of shareholders. This argument offers a potential explanation for the observed negative relation between firm value and Tobin's q over low levels of bank ownership and with the mitigation of that effect at higher levels of ownership.

Rajan's (1992) hypothesis implies that the bank's power to extract surplus is greater when the firm is heavily dependent on the bank, as would be the case if the firm were prohibited from issuing public debt. Such firms would be subject to bank appropriation regardless of the level of bank ownership. On the other hand, for firms that can issue bonds, higher bank ownership might increase the bank's power, allowing it to appropriate a greater portion of the surplus. Thus, a differential appropriation of rents associated with bank equity ownership lev-

12. For a complete description of the sample and the variables employed, see Kang et al. (1999). The results described here are available in tabulated form from the authors.

els may be restricted to firms that can issue bonds. The gradual relaxation of the Bond Issuance Criterion during the 1980s, which allowed Japanese firms easier access to public debt markets, provides an opportunity to test this prediction. Hoshi, Kashyap, and Scharfstein (1993) and Campbell and Hamao (1994) document that firms satisfying these criteria substantially reduced their reliance on bank financing.

We explore this hypothesis by examining the relationship between the interest costs paid by firms on their bank debt and bank ownership. We use the total interest expense as a fraction of total debt as a proxy for the interest rate on bank debt. If banks are using their control rights to extract surplus, we should find higher interest costs associated with increased bank ownership, at least at low levels of bank ownership. At higher levels of bank ownership, this effect should be mitigated (or even reversed) because every yen of surplus the bank extracts is balanced by a greater reduction in the value of the bank's shares. These regressions, which include controls for firm size, leverage, research and development, and advertising expenses, are presented in table 5. Model 1 includes an indicator variable for whether the firm satisfied the Bond Issuance Criterion to access public debt markets.

Consistent with Rajan's hypothesis, model 1 shows that the ability to issue bonds is associated with lower interest costs. Further, models 2 and 3 show that higher bank ownership is associated with higher interest costs but only for firms that are able to issue public debt, also supporting the surplus extraction explanation.

One concern with these regressions is that banks might hold larger stakes in firms that are riskier or closer to financial distress if these firms need to be monitored more closely. If so, this would induce a positive relation between bank ownership and interest costs. We do not find much support for this interpretation. Models 4 and 5 show that the positive relation between interest costs and bank ownership for firms that can access bond markets exists even when we use the 10-year lagged values of bank ownership as instruments.

Average q as a proxy for marginal q and underinvestment problems. Our dependent variable is the average Tobin's q ratio, investors' estimate of the firm's value per yen of replacement cost. Hayashi (1982) demonstrates that, under certain assumptions, a firm's average q ratio equals its marginal q ratio, the change in its market value associated with a unit increase in its replacement cost. Ignoring complications due to tax and depreciation rules, marginal q is equal to one plus the ratio of the NPVs shareholders attribute to the capital budgeting projects the firm undertakes during period t to the setup costs of those projects. A firm's marginal q is thus greater than one if and only if the NPVs of its current capital budgeting opportunities are positive. This equivalence gives rise to the q theory of investment, which posits that firms should invest until the marginal q of investment opportunities

equals one. In this framework, the marginal productivity of capital should be the only determinant of investment.

It is well documented, however, that liquidity is also an important determinant of investment. There are two potential explanations for this finding. First, the importance of liquidity can be interpreted as a departure of investment policy from the q theory, possibly as a result of agency conflicts (Jensen and Meckling 1976) or informational frictions (Myers and Majluf 1984). Alternatively, the Hayashi (1982) conditions ensuring equality of average and marginal q could be violated, and liquidity might reflect a component of marginal q not fully captured by average q (Kaplan and Zingales 1997).

Fazzari, Hubbard, and Peterson (1988) distinguish among these interpretations by examining subsamples sorted by a priori beliefs about the importance of liquidity.¹³ Hoshi et al. (1991) follow a similar approach for Japanese firms and show that investment is less sensitive to liquidity for group-affiliated Japanese firms than for independent firms. They suggest that Japanese banks relax liquidity constraints faced by borrowing firms as a result of informational frictions in external capital markets.

The possibility of capital rationing by firms not closely tied to banks suggests an alternative interpretation of our results. If the firms in our sample are operating on a schedule of capital budgeting opportunities with declining NPVs, firms subject to capital rationing will have higher average q ratios because capital limits prevent them from undertaking investment opportunities with low but positive NPV. Therefore, our finding of a negative relationship between average q and bank ownership may indicate that bank-controlled firms have better access to capital for more marginal projects.

To assess this explanation, we examine investment expenditures for sample firms. If higher q ratios for firms with low bank ownership reflect capital rationing, total capital expenditures should be less for these firms. Table 6 regresses capital expenditures relative to industry medians on bank ownership and control variables. Main bank ownership is significantly positively related to capital expenditure levels. Therefore, lower bank ownership levels are associated with lower capital expenditures, consistent with the presence of capital constraints for these firms.

To explore further the role of a declining marginal return to investment schedule, table 7 reports regression results where the dependent variable is the firm's q ratio and where the independent variable of interest is the ratio of investment (investment in plant, property, and

13. In related work, Gilchrist and Himmelberg (1995, 1998) estimate structural models of investment to quantify the role of fundamental and financial induced determinants of investment.

TABLE 6 Cross-sectional Regressions of Industry-Adjusted Ratio of Capital Expenditures to Assets

Explanatory Variable	Dependent Variable: Industry-Adjusted Capital Expenditures	
	(1)	(2)
Intercept	-.01 (1.39)	-.02 (1.76)
R&D/assets	-.28 (1.58)	-.29 (1.63)
Advertising/assets	-.02 (.10)	-.002 (.01)
Cash flow	.15 (1.66)	.15 (1.70)
<i>Keiretsu</i> membership	-.005 (.66)	-.005 (.62)
Main bank ownership	.004 (2.29)	.01 (2.03)
(Main bank ownership) ²		-.001 (1.23)
<i>F</i> -statistic (model <i>p</i> -value)	1.86 (.09)	1.80 (.09)
<i>R</i> ²	.03	.03

NOTE.—The sample consists of 373 Japanese manufacturing firms listed on the First Section of the Tokyo Stock Exchange during 1986. The main bank is defined as the firm's largest creditor. Firms are considered as part of a bank-centered *keiretsu* if they belong to the Mitsui, Mitsubishi, Sumitomo, Fuji, Daiichi Kangyo, or Sanwa groups. Financial data are obtained from the Japan Development Bank tapes, and ownership data are obtained from Toyo Keizai. The *t*-statistics are in parentheses.

equipment) to total assets in the prior year. The regressions control for research and development expenditures, advertising expenses, membership in a bank-centered *keiretsu*, and for industry and year. Model 1 shows investment expenditure levels to be strongly and negatively related to average *q* in Japan. The point estimate on investment is large, implying that a 1% increase in the ratio of investments to assets corresponds to a fall in *q* of 0.037. A possible interpretation is that increased investment lowers the average *q* because the incremental NPV is lower than the average NPV of the firm's existing opportunities.

If capital rationing occurs primarily when the ownership by the main bank is low, then the negative relation between *q* and investment should be more pronounced for firms with low bank ownership. To examine this, model 2 of table 7 includes interaction terms between investment and main bank ownership. The significant negative coefficient on the interaction between investment and bank ownership indicates that lower bank ownership makes investment more strongly associated with *q*. Therefore, we cannot reject the view that bank ownership is posi-

TABLE 7 Cross-sectional Regressions of Tobin's q with Industry Fixed Effects

Explanatory Variable	Dependent Variable: Tobin's q					
	Full Sample (1)	Full Sample (2)	High q Firms (3)	Low q Firms (4)	High q Firms (5)	Low q Firms (6)
Logarithm of sales	-.39 (3.51)	-.33 (2.98)	-.24 (1.16)	-.03 (1.90)	-.19 (.89)	-.03 (1.86)
R&D/assets	11.98 (2.03)	13.57 (2.30)	10.14 (1.15)	1.47 (1.17)	12.81 (1.43)	1.50 (1.18)
Advertising/assets	4.81 (.77)	2.42 (.39)	18.01 (1.31)	1.03 (1.22)	12.54 (.91)	1.00 (1.16)
<i>Keiretsu</i> membership	.23 (1.03)	-.23 (1.03)	-.31 (.74)	.04 (1.15)	-.30 (.70)	.04 (1.08)
Investment expenditure/assets	-3.30 (2.20)	-.18 (.09)	-6.76 (2.32)	.35 (1.69)	.22 (.05)	.37 (1.39)
(Investment expenditure/assets) × main bank ownership		-1.28 (2.02)			-3.12 (2.05)	-.03 (.31)
(Investment expenditures/assets) × (main bank ownership) ²		-.11 (1.34)			.32 (1.44)	.00 (.37)
<i>F</i> -statistic (model <i>p</i> -value)	2.38 (.00)	2.43 (.00)	1.74 (.03)	1.79 (.03)	1.43 (.11)	1.62 (.05)
<i>R</i> ²	.21	.22	.13	.18	.16	.18

NOTE.—The sample consists of 373 Japanese manufacturing firms listed on the First Section of the Tokyo Stock Exchange during 1986. The main bank is defined as the firm's largest creditor. Firms are considered as part of a bank-centered *keiretsu* if they belong to the Mitsui, Mitsubishi, Sumitomo, Fuji, Daiichi Kangyo, or Sanwa groups. Financial data are obtained from the Japan Development Bank tapes, and ownership data are obtained from Toyo Keizai. All regressions include indicator variables for industry. The *t*-statistics are in parentheses.

tively associated with q because close bank ties relax capital rationing constraints faced by firms.

Banks as "creditors first" and overinvestment problems. The higher capital spending associated with bank ownership is beneficial if it allows firms to undertake positive NPV projects up to the point where the marginal q of investment equals one. However, increased investment could also be symptomatic of an overinvestment problem. As discussed in Section II, banks interested in maximizing the value of their stakes as creditors might coerce their client firms to overinvest by undertaking low risk ex ante negative NPV projects. This explanation is also consistent with the finding that higher bank ownership is associated with high levels of capital spending and with the negative relation between bank ownership and q being stronger for firms with higher levels of capital spending. It also allows for the nonlinearity in the relationship between q and bank ownership found in table 3, for banks should be less interested in pursuing overinvestment in firms in which they have a substantial equity stake.

To examine the overinvestment hypothesis, we divide the sample

according to the median average q of 0.85. We expect that the marginal q of investment is more likely to be positive for the high q subsample and is more likely to be negative for the low q subsample. If moderate bank ownership leads to overinvestment, we should find moderate bank ownership related negatively to value for firms with low q ratios. On the other hand, if bank ownership relaxes capital constraints and allows firms with good investment opportunities to grow, the effects of bank ownership on the q and investment relation should only be observed in the high q subsample.

Models 3 and 4 of table 7 show that the negative relation between q and investment is driven entirely by the subsample of firms with high q . This result is not supportive of the view that bank ownership promotes overinvestment. Consistent with this interpretation, we find that the relation between average q and bank ownership documented in table 3 is driven entirely by firms in the high q subsample. For firms with low q 's, we find no relation between q and bank ownership.

Endogeneity of bank ownership. Sheard (1989) and Morck and Nakamura (1999) argue that Japanese bank equity ownership, and Japanese intercorporate ownership in general, are long-term arrangements between "stable shareholders" for the purpose of blocking takeovers. In contrast, U.S. banks tend to acquire equity ownership only in financially distressed firms. If Japanese banks also tend to acquire ownership stakes when firms are financially distressed, this might account for our finding of the negative relation between ownership and firm value.

Kang and Shivdasani (1997) explicitly test for an effect of this sort. They study changes in ownership structure in the years surrounding a large decline in performance but find no evidence that bank equity stakes rise in response to poor performance.

We further investigate this possibility by sorting firms into quintiles based upon their change in q over 1, 2, and 3 year intervals prior to 1985. For firms in the lowest quintile (i.e., largest declines in q) we examine the changes in bank ownership from the year before to the year after the decline. We are unable to find evidence that Japanese banks increased their ownership positions in firms as a response to poor firm performance, confirming the results in Kang and Shivdasani (1997).

Finally, to control for potential endogeneity of bank ownership we use bank ownership data that is lagged by 10 years in the model. This alleviates the concern that recent performance changes might influence bank ownership. Our results, shown in model 1 of table 9, are qualitatively unchanged with this approach.

Regulatory changes in firm access to public capital markets. The relaxation of the Bond Issuance Criterion allowed Japanese firms easier access to public debt markets, and many firms substantially reduced their reliance on bank debt. The shift away from bank debt was concen-

trated in well-performing firms because the Bond Issuance Criterion required potential issuers to satisfy specific financial targets. If banks reduced their ownership stakes in client firms as their lending positions declined, we may uncover a spurious relation between ownership and performance because the decline in bank debt was most notable for well-performing firms. Does this explain the negative relation between bank ownership and performance at low bank ownership levels?

To address this issue, we compute the change in the fraction of bank debt to assets for our sample firms over the 1976–86 period. In 1976, the median bank debt ratio in our sample is 34.3%, and this declines to 18.6% by 1986. Panel B of table 8 shows that bank equity ownership declines by 1% for firms where bank debt declines by more than the sample median. However, bank equity holdings also decline by 1% for firms that did not witness a substantial decline in bank debt. We find the correlation between changes in bank debt ratio and bank equity holdings to be 0.06 and statistically insignificant. Thus, banks did not systematically dispose their ownership stakes in firms where their lending positions declined.

To confirm that adjustments in equity ownership as a response to declining bank loans do not drive our results, we estimate the average q model excluding firms that had above-median declines in their bank debt ratio over the period 1976–86. If our results are driven primarily by firms that are reducing their reliance on bank debt, the effects of bank ownership should be unimportant for firms that do not substantially lower their reliance on bank debt. Model 2 of table 9 shows, however, that the negative effect of bank ownership on firm value at low ownership levels is apparent for firms that do not experience a substantial decline in bank financing. Thus, regulatory changes in bond markets do not appear to offer an explanation for the valuation effects of bank ownership.

Regulatory changes in bank ownership limits. Our data immediately predates the implementation of the 1977 Japanese Anti-monopoly Act, which required all banks to reduce their ownership positions to 5% or less by April 1, 1987. This regulation forces banks with large ownership positions to depart from their normal role as “stable shareholders.” As a “stable shareholder,” a bank would normally have little direct interest in the price of its client firms’ shares. However, in the period prior to April 1987, banks with ownership positions exceeding 5% had a uniquely strong incentive to enhance share price in order to maximize the proceeds from the disposition of these shares. Our results from table 3, showing a possible inflection point in the q regressions at about 5% bank ownership, may therefore arise due to the incentives created by this impending regulatory limit.

To assess this argument, we examine bank holdings prior to the enactment of the Anti-Monopoly Act. In 1976, main banks had stakes in

TABLE 8 Levels and Changes in Main Bank Ownership during 1976–86

A. Main Bank Ownership Levels				
Variable	Sample	1976 Mean (Median) (%)	1981 Mean (Median) (%)	1986 Mean (Median) (%)
Main bank ownership	All firms	4.76 (4.41)	4.43 (4.48)	3.59 (4.18)
Main bank ownership	Firms with main bank ownership over 5% in 1976	7.67 (7.65)	6.76 (6.67)	4.79 (5.00)
Main bank ownership	Firms with main bank ownership 5% or less in 1976	2.77 (2.92)	3.14 (3.30)	2.93 (3.40)
Percentage of firms with main bank stake over 5%	All firms	36	31.5	19.3

B. Changes in Main Bank Ownership				
Variable		1976–81 Mean (Median) (%)	1981–86 Mean (Median) (%)	1976–86 Mean (Median) (%)
All firms		-.20 (.00)	-.84 (-.20)	-1.07 (.62)
Firms above 5% ownership in 1976		-.94 (-.67)	-1.90 (-.98)	-2.84 (1.95)
Firms below 5% ownership limit in 1976		.32 (.00)	-.23 (.01)	.18 (.00)
Firms above 5% ownership limit in 1981		-.72 (-.56)	-2.30 (-1.36)	-2.99 (-2.36)
Larger than median decline in bank debt 1976–86		-.29 (-.15)	-.77 (-.37)	-1.06 (-.87)
Smaller than median decline in bank debt 1976–86		-.10 (.00)	-.91 (-.17)	-1.01 (-.40)

NOTE.—The sample consists of 373 Japanese manufacturing firms listed on the First Section of the Tokyo Stock Exchange during 1986. The main bank is defined as the firm's largest creditor. The table reports adjustments in main bank ownership relative to the 5% ownership limit imposed by the Japanese Anti-Monopoly Act of 1977 and for subsamples classified by the change in the ratio of bank debt to total assets during 1976 to 1986.

excess of 5% in 36% of sample firms. Among the other 64% of sample firms whose bank ownership was less than 5% in 1976, no unusual incentives to increase share values should have arisen as a result of the Anti-Monopoly Act. Model 3 of table 9 estimates the effect of bank ownership on q for the latter subsample. As with the earlier results, we find a negative coefficient on the linear bank ownership term and a positive coefficient on the quadratic term. Estimates for this subsample indicate that q declines with bank ownership until 4% and that the negative relation is not evident beyond bank ownership levels of 4%.

TABLE 9 Cross-sectional Regressions of Tobin's q with Industry Fixed Effects

	Dependent Variable: Tobin's q					
	All Firms	Smaller than Median Decline in Bank Debt 1976-86	Bank Stake 5% or Less in 1976	Bank Stake 5% or Less in 1986	Bank Stake 5% or Less in 1976 or by 1981	All Firms
Year for bank ownership data	1976	1986	1986	1986	1986	1987
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)
Logarithm of sales	-10	.10	.03	-.01	-.02	.01
	(.91)	(.54)	(.21)	(.12)	(.11)	(.09)
R&D/assets	20.57	29.23	23.33	21.77	20.86	14.10
	(3.66)	(3.03)	(3.01)	(3.20)	(2.81)	(2.55)
Advertising/assets	7.61	.29	-3.71	1.10	.68	10.81
	(1.27)	(.03)	(.48)	(.16)	(.09)	(1.71)
Main bank ownership	-41	-.56	-.91	-.80	-.81	-.51
	(2.88)	(2.90)	(3.34)	(3.03)	(3.07)	(3.55)
(Main bank ownership) ²	.04	.05	.12	.12	.11	.05
Management ownership	(2.85)	(1.78)	(2.32)	(2.22)	(2.10)	(2.33)
	.12	.10	.13	.10	.12	.04
Corporate block holder ownership	(4.99)	(3.25)	(4.37)	(3.97)	(4.23)	(1.77)
	.01	.02	.01	.02	.01	.01
<i>Keiretsu</i> membership	(.69)	(1.64)	(1.69)	(1.96)	(1.67)	(1.13)
	-.08	-.48	-3.71	-.28	-.24	.26
<i>F</i> -statistic (model <i>p</i> -value)	(.38)	(1.32)	(.48)	(1.10)	(.84)	(1.22)
	4.08	1.64	3.71	3.88	3.53	2.88
<i>R</i> ²	(.00)	(.10)	(.00)	(.00)	(.00)	(.00)
	.24	.27	.29	.25	.26	.16
Number of observations	323	184	237	297	261	362

NOTE.—Cross-sectional regressions of Tobin's q on ownership variables with industry fixed effects, using bank ownership data from 1976 and for subsamples classified according to status on ownership regulatory requirements. The sample consists of 373 Japanese manufacturing firms listed on the First Section of the Tokyo Stock Exchange during 1986. The main bank is defined as the firm's largest creditor, and block holder ownership is defined to include ownership by the firm's 10 largest shareholders. Firms are considered as part of a bank-centered *keiretsu* if they belong to the *Mitsui*, *Mitsubishi*, *Sumitomo*, *Fuji*, *Daiichi Kangyo*, or *Sanwa* groups. Financial data are obtained from the Japan Development Bank tapes, and ownership data are obtained from Toyo Keizai. The *t*-statistics are in parentheses.

In untabulated tests, we find similar results if we estimate the model for this subsample without any control or ownership variables. Evidence for the upward effect of bank ownership at higher ownership levels is weak, however, when this model is estimated using the lagged values of bank ownership from 1976. In this specification, we obtain the negative coefficient on the linear ownership term but do not find a quadratic effect.

To explore further the role of impending legal limits, we estimate the results for the subsample of firms where the 5% ownership limit was not binding in 1986. Since these firms were in compliance of the limits by 1986, concerns about valuation resulting from impending sales of equity positions would not be present in this subsample. As shown in model 4 of table 9, a quadratic effect of bank ownership on q also obtains in this subsample. Overall, the results of these tests suggest that the quadratic effect of bank ownership does not arise exclusively as a result of impending regulatory limits, although the evidence appears to be mixed.

A related concern is the 10-year period, 1977–87, provided by the law to implement the adjustment in holdings. Since our main cross-section of data is from 1986, only the firms that opted for delayed adjustment or those that had difficulty in selling their shares earlier have ownership levels exceeding 5% in 1986. It is therefore possible that the positive effect of ownership beyond 5% that we document is driven by the unique characteristics of firms where banks were unable to bring their ownership to the 5% compliance level earlier. For example, banks might find it more difficult to sell their shares in firms with few tangible but substantial intangible assets (i.e., high q firms), which might explain the possible positive relation between q and ownership beyond 5%.

According to this interpretation, the positive coefficient on the quadratic term should not be observed for firms that adjusted their ownership levels relatively quickly or where the 5% ownership ceiling was nonbinding. As shown in table 8, 36% of firms had ownership exceeding 5% in 1976, but this drops to 31.5% by 1981, indicating that 4.5% of firms disposed of excess shares during this period. In model 5 of table 9, we estimate the basic regression using these firms and the 64% of the sample where bank ownership was below 5% in 1976. These estimates also indicate a negative coefficient on the linear ownership term and a positive effect of the quadratic term, suggesting that our results are not driven by instances where banks were unable to dispose of excess shares in high q firms by 1986.

To examine whether the quadratic effect of bank ownership is an artifact of using data from 1986, we also estimate the results for all firms using 1987 data for all variables. Model 6 of table 9 presents these results, which also shows evidence of a negative linear term and

a positive quadratic term for bank ownership. However, the point estimate on the quadratic term is much lower than the previous regressions, which is not surprising since virtually all firms were in compliance of the 5% limit as of 1987. Overall, the evidence for a mitigation of the negative relation between bank ownership and q at higher levels of bank ownership is weak but obtains in several model specifications.

V. Conclusions

Equity ownership by main banks and firm value are negatively related in Japan. This relation is nonlinear and evident at low to moderate levels of bank ownership only. We also find support for the view that moderate ownership levels significantly increase a bank's power to appropriate surplus from client firms. This is because higher levels of bank ownership are associated with increased interest costs for firms that are dependent on banks. Bank ownership also appears to influence firm value, at least in part, by influencing client firms' investment policies, and we cannot reject the view that higher bank ownership is associated with relaxed financial constraints, which allow firms to undertake more marginally acceptable investment opportunities. The findings do not offer much support for several alternative explanations, including the potential endogeneity of bank ownership, regulatory changes in ownership limits, and in bond market access, as well as the potential for bank ownership to induce underinvestment in client firms.

Japanese firms' average q ratios rise monotonically with both ownership by management and corporate block holders. The entrenchment effect (protection from hostile takeovers due to large managerial stock holdings) postulated by Stulz (1988), should be much less important in Japan than in the United States because intercorporate cross-holdings and bank ownership are thought to deter hostile takeovers in Japan. Consequently, Japanese data should not be expected to generate the nonlinear effects observed by Morck et al. (1988) and McConnell and Servaes (1990) in U.S. data, and greater managerial ownership should be monotonically related to better alignment of shareholder and managerial interests (Jensen and Meckling 1976). The positive relation between firm value and corporate block holdings is consistent with the hypothesis of Shleifer and Vishny (1986) that large block holders are a way of overcoming the free-rider problems in shareholder monitoring associated with dispersed ownership.

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