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Financial Ownership, Diversification and Firm Profitability in Japan

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Abstract. The Japanese system of corporate governance and in particular the role played by banks and other financial institutions have been the subject of considerable research and controversy in recent years. We estimate the impact of equity ownership by financial institutions on firm performance in Japan for 1986–1991, a period that precedes many of the problems of the ensuing decade. We find that while ownership by financial institutions is associated with unprofitable diversification, such ownership is, on balance, positively associated with firm profitability. Some implications of these findings for Japan's unique system of governance are discussed.

Key words: agency theory, corporate governance, financial institutions, Japan

1. Introduction

The corporate form of organization and its characteristic separation of ownership from control are apparent in varying degrees in most major industrialized economies of the world (La Porta, Lopez-de-Silanes and Shleifer, 1999). However, very different governance systems have evolved across industrialized nations and much recent research has been devoted to analyzing these different systems (Scott, 1999). In particular, the Asian financial crisis and Japan's persistent economic and political difficulties in the past decade have sparked a renewed and invigorated discussion regarding the effectiveness of Japan's system of corporate governance (e.g., Morck and Nakamura, 1999; Dore, 1998; Yafeh, 2000, 2002; Learmount, 2002). Once viewed as a potential model for other countries, the Japanese system is now being subjected to intense critical scrutiny (Aoki, 1995; Porter, Takeuchi and Sakakibara, 2000).

Agency theory views concentrated ownership as the most direct means of resolving principal-agent problems related to the separation of ownership from control (Jensen and Meckling, 1976; Shleifer and Vishny, 1997), and therefore predicts a positive relationship between firm performance and ownership concentration. Recent empirical research has focused on the question of whether this relationship holds for all countries and whether the identity of the owner matters

(Gedajlovic and Shapiro, 1998; Thomsen and Pedersen, 2000). Some recent research has placed particular emphasis on the role played by banks and other financial institutions in the governance systems of Japan and Germany (Morck and Nakamura, 1999; Morck, Nakamura and Shivdasani, 2000; Edwards and Nibler, 2000).

Whereas most recent research has focused on the role of Japan's "Big-Six" banks, we consider the ownership role of *all* financial institutions because of the high degree of cross-ownership between banks and other financial institutions (Prowse, 1992; Roe, 1994). We examine this relationship by specifying an empirical model that accounts for the incentives that Japanese financial institutions have as equity holders and residual claimants to effectively monitor managers, as well as the incentives these same institutions have in their capacity as creditors to encourage over-diversification through their lending policies.

We examine the relationship between ownership by financial institutions and the performance of Japanese companies during the period 1986–1991. Although this was a period when many observers believed that the Japanese system had much to recommend (Prahalad and Hamel, 1990; Porter 1992), it was also a period during which traditional Japanese business practices were stressed by multiple macro economic and structural factors (Lincoln, Gerlach and Ahmadjian, 1996). In particular, the period investigated here spans the *endaka* Yen shock following the ratification of the 1985 Plaza Accord, as well as the bubble economy years of 1987–1990 and its subsequent collapse. This was also a period of significant institutional change in the Japanese economy, including the rapid deregulation of financial services. Japanese firms responded to these external pressures (*gaiatsu*) in many ways including moving low and medium technology production offshore (Honda, 1991) and shifting from bank mediated debt to other forms of financing (Prowse, 1994). We therefore examine the behavior of Japanese financial institutions concurrent with these profound changes and just prior to the onset of Japan's decade-plus long economic malaise.

We begin by discussing the Japanese system of corporate governance and the important role played by financial institutions in that context. We then specify and estimate an empirical model that links financial ownership to firm performance. The results indicate that on balance, ownership in the hands of financial institutions improved the performance of Japanese firms. This result is contrasted with results obtained using a measure of ownership concentration that does not distinguish among different types of owners. This latter measure is found not be strongly related to firm performance. The significance of these results is discussed in the concluding section.

2. Financial Institutions and Corporate Governance in Japan

Financial institutions play a particularly important role in Japan's system of corporate governance because of their unique position as both major creditors and

shareholders (Charkham, 1994). On the equity side, although individual banks and insurance companies are restricted to ownership stakes of 5% and 10% respectively (Prowse, 1994), shares held by several different banks or insurance companies can result in relatively high ownership shares for financial institutions as a whole. Moreover, it is typically the case that there are ownership relations among financial institutions, notably banks and insurance companies (Roe, 1994).

Historically, Japanese firms have been much more reliant on non-equity financing than U.S. firms and their financing has consisted primarily of loans, or other forms of debt mediated by financial institutions (Prowse, 1994; Sheard, 1994).[1] In this regard, it is important to note that, historically, the stakes of financial institutions as creditors have dwarfed their less economically significant equity ties (Prowse, 1996). As a specific example, Gerlach (1987) reports that in the 1980s, the value of Sumitomo Mutual Life Insurance Company's outstanding loans to NEC Corporation was over 8 times more valuable than the market capitalized value of its shares.

Gerlach's example highlights the fact that banks as well as other financial institutions play the dual role of equity holder and creditor in Japan. This historical pattern of financing in Japanese corporations has obviated many of the agency conflicts of interest between shareholders and creditors apparent in the U.S. (Harris and Raviv, 1991). It also suggests that financial institutions may have some incentive to favor growth and income stability rather than profit objectives (Porter et al., 2000).

Financial institutions are therefore in a potentially powerful position to monitor and influence investment decisions in Japanese firms, both because of their ownership positions in aggregate, and because of their position as lenders (Berglof, 1995; Hoshi, Kashyap and Scharfstein, 1990). The large indirect ownership stake Japanese financial institutions typically have through their ownership of affiliated financial institutions who also maintain ownership positions in the same firm augments already strong incentives to monitor and influence investment decisions. Given both the incentive and the ability to monitor, one would expect a positive relationship between firm performance and financial ownership concentration.

Alternatively, it could be argued that as creditors, banks' interests are best served by maximizing the number of loans they extend, even if the funds are invested in projects that do not maximize profits. Indeed, it is sometimes suggested that Japanese financial institutions encourage unprofitable over-investment through their lending policies (Weinstein and Yafeh, 1995). In such a view, the ownership stakes of financial institutions may serve two related purposes. The equity stakes of financial institutions can be used to influence investment decisions and increase loan volumes. At the same time, these equity stakes facilitate the monitoring of outstanding loans (Berglof, 1995). Under such circumstances, the incentives financial institutions have to expand loan volumes (as long as they can be repaid) in conjunction with monitoring opportunities providing them through their equity stakes can be expected to result in unprofitable over-investment. Under

this scenario, one would expect a negative relationship between firm profitability and the ownership stakes of financial institutions.

The relationship between the ownership structure and profitability of Japanese firms is also influenced by the variety of inter-corporate groupings and alliances that characterize that country's governance system. These networks are often referred to as *keiretsu*. Financial *keiretsu* link companies (usually in different industries) through a common main bank (Aoki, Patrick and Sheard, 1994). The main bank provides loans, but also assists with bond and equity issues and provides managerial services. The companies in the financial *keiretsu* are typically linked through cross-holdings, including those of banks. There is some evidence that despite their latent power, banks do not routinely intervene in the management of a company. Charkham (1994) suggests that banks act as "insurance policies", whose main role is to intervene in periods of financial distress by arranging mergers, layoffs of staff and management, or new sources of capital. Aoki (1995) refers to this system as one of "contingent governance", in that so long as loan obligations are met and the firm avoids financial distress monitoring is relatively passive.

It has been suggested that under these circumstances, maximization of firm profits is not the primary objective of owners (who are other firms and banks). Aoki (1984) has suggested that the role of Japanese managers is to mediate among the interests of the various stakeholders and not simply to enhance shareholder value. As a consequence, more emphasis is placed on the growth of the firm and the stability of its networks of banks, suppliers, employees and customers than on profit, or shareholder wealth maximization (Abegglen and Stalk, 1985; Fukao, 1995). In this regard, Porter et al. (2000) note that the strong growth orientation of the Japanese system encourages diversification. They also suggest that the need to maintain growth has resulted in over-investment and excessive diversification into unrelated activities.

While such reciprocal blockholdings within a broader inter-corporate network enhances the monitoring capacity of blockholders, it may also result in a system of joint monitoring geared towards the stability and ongoing viability of the network as a whole, rather than on the profitability of any one company. Nakatani (1984) and Aoki (1988) argue that the purpose of these stable shareholdings is risk sharing. Similarly, Lincoln et al. (1996) suggest that Japanese intercorporate networks act as a sort of collective insurance policy designed to pool downside risk by redistributing profits from more to less profitable firms. Most recently, Khanna and Yafeh (2002) find strong and consistent evidence in favour of the risk- sharing hypothesis in Japan. The result is an economy characterized by firms with both relatively low profits and low variance (Khanna and Yafeh, 2002; Yafeh, 2002).

In addition, shareholders are unlikely to pressure managers to pursue profit maximization since actions to increase the profits of one firm may come at the expense of another, because mutual shareholdings create the possibility of retaliatory actions, and because shareholders with business relationships may fear the loss of business if they are overly critical of management. Morck and Nakamura

(1999) find evidence consistent with the idea that Japanese banks act in the interests of a broad range of stakeholders, and may subsidize failing firms. Thus, the interests of alliance partners may be more important than the interests of any one company.

Given this discussion, it is perhaps not surprising that the empirical evidence relating to the role of banks and financial institutions is ambiguous. Hoshi et al. (1991) provide evidence suggesting that the monitoring power of banks was reduced in the 1980s as regulatory changes caused Japanese firms to switch from debt to equity. Kang and Shivdasani (1995, 1997) found that firms with ties to a main bank are more likely to replace top executives and to downsize when firm performance is poor, but more recently found evidence that firms without ties to a main bank experience better operating performance (Kang and Shivdasani, 1999). Most recently, Morck, Nakamura and Shivdasani (2000) found that bank ownership negatively affects q ratios, but only at low levels of bank ownership.

In summary, financial institutions in Japan play an important, but ambiguous role in that country's system of corporate governance. Given their dual role as owner and creditors, and their additional role as key members of financial *keiretsu*, the impact of financial ownership concentration is difficult to predict. In the next section, we specify an empirical model that accounts for these various roles, and permits the possibility that all exist simultaneously.

3. The Empirical Model

Our basic specification is a dynamic model summarized in equation (1):

$$\pi_{it} = \alpha + \beta 1 * \mathrm{OWN}_{it} + \beta 2 * (\mathrm{OWN} * \mathrm{DIV})_{it} + \beta 3 * \mathrm{DIV}_{it} + \delta * \mathrm{X}_{it} + \lambda \pi_{it-1} + \varepsilon_{it} \quad (1)$$

Equation (1) relates firm performance, to be measured by profitability (π), and financial ownership concentration (OWN) directly, but also includes terms for the degree of diversification (DIV), the interaction of diversification and ownership concentration (OWN*DIV), a series of control variables (collectively designated as X), and the lagged value of firm profitability (π_{it-1}). The subscripts indicate that we will be employing panel data.

The dynamic specification created by the inclusion of the lagged profitability term is chosen to reflect the nature of the Japanese system of corporate governance, discussed above. In particular, it models the importance of risk sharing in Japan. The specification implies that Japanese firms follow a partial adjustment mechanism whereby profitability adjusts gradually to changes in the exogenous variables. The estimated coefficient λ has been interpreted as a measure of the persistence of profitability, and persistence is found in many countries including Japan (Mueller, 1990; Odagiri and Yamawaki, 1990). However, the value of the estimated coefficient can also be understood as reflecting the amount of redistribution and risk sharing. Low levels of profitability may cause suppliers, buyers,

and creditors to extend favorable terms to the distressed company and thus raise subsequent profits. As a consequence, both firm-specific risk and the variance of profitability across firms are reduced. Evidence that this occurs in Japan is provided by Lincoln et al. (1996).

The ownership term (OWN) captures the classic agency theoretic impact of ownership concentration on performance. In their role as owners and creditors, Japanese financial institutions have both the incentive and the ability to monitor firm management, and these are expected to increase with their collective ownership stake (Shleifer and Vishny, 1997). As a consequence, classic agency considerations would suggest that $\beta 1 > 0$.

The interactive term OWN*DIV is designed to capture the possibility that Japanese financial institutions, in their role as creditors, are interested in maximizing the growth of the firms they own. In this sense, Japanese financial institutions are assumed to have the same objective functions as unconstrained Japanese managers, who would choose levels of corporate growth that do not maximize profits. Perhaps the most common general manifestation of this type of agency cost is the choice of excessive levels of diversification (Shleifer and Vishny, 1997). Managers may choose non-profit maximizing or excessive levels of diversification in order to maximize corporate growth (Marris, 1964; Mueller, 1969), and/or to minimize risk by fostering corporate stability (Amihud and Lev, 1981; Hill and Snell, 1989). In either case, managers choose excessive amounts of diversification financed by loans from financial institutions. Porter et al. (2000), suggest that in Japan it is growth, and not risk minimization, that drives diversification. They argue that Japanese firms pursue broadly based strategies because they fear that making trade-offs would constrain growth, and that "ultimately pressure to grow also leads to unrelated diversification" (p. 170).

The empirical problem is that one must measure "excess" diversification, which is both unobservable and conceptually ambiguous. We define excess diversification as diversification that reduces profits by more than would be warranted by normal risk considerations. This definition reflects the possibility that profit-reducing diversification may be warranted by reductions in profit variability, and that there is therefore a distinction between the actual amount of diversification and that portion of it that can be thought of as excessive.

Following Gedajlovic and Shapiro (1998) we assume that the ratio of excessive diversification (DIVE) to total observed diversification (DIV) is given by DIVE/DIV = d1*OWN, with $d1 > 0$ which suggests the amount of excessive diversification increases with financial ownership.[2] For the purpose of estimation, both sides of the equation are multiplied by DIV, which is observable, so that: DIVE = d1*OWN*DIV. Given the assumption that performance is negatively and linearly related to excess diversification, straightforward substitution results in the interactive term reported in (1), with $\beta 2 < 0$ supporting the hypothesis that financial institutions finance over-diversification. Note that if our assumption that excessive diversification is related to financial ownership is false and $d = 0$, then

we would expect that $\beta 2 = 0$. The observed level of diversification (DIV) is also included as an explanatory variable because inter-firm differences in diversification may affect firm profitability. Recent evidence for Japan (Lins and Servaes, 1999) indicates that diversification may negatively impact performance.

Although we define excessive diversification so as to include the possibility that some risk-reducing diversification is warranted, it remains possible that a negative OWN*DIV coefficient simply reflects the desire of risk-averse financial institutions to reduce risk. We do not believe this to be the case. Our previous discussion of the Japanese system suggests that risk minimization is a collective goal, achieved in part through the redistribution of profits, a factor controlled for in our specification. In addition, risk reduction is achieved by financial institutions through the spreading of loans across institutions and through the use of short-run loans with interest paid in advance (Learmount, 2002: 27). These considerations all imply that risk reduction can be achieved through means other than diversification, and it is less necessary to pursue diversification for risk reduction purposes. This line of reasoning is also consistent with the position of Porter et al. (2000) that diversification in Japan is growth motivated. To evaluate this, we calculated the variance of profitability for each firm over the sample period and found no significant correlation between that number and our measure of diversification (discussed below). In addition, we estimated all models using the ratio of profitability to the variance of profitability, and found that the results are similar to those reported below using only profitability as the dependent variable.

We therefore use the coefficient on the ownership term as our test for classic agency effects, and the coefficient on the interaction term as the test for growth maximization *via* excessive diversification. It is possible that both classic agency effects and over-diversification effects exist simultaneously. Managerial opportunism may be manifested in two broad forms: cost escalation and growth maximization. Agency costs related to cost-augmentation arise because professional managers may have an incentive to enhance their non-salary income though the accumulation and consumption of perquisites. There is no reason to believe that financial institutions would not monitor and discourage such behavior, while at the same time encouraging excessive diversification through their lending practices. It is also possible that neither exists, and that goal congruence in Japan renders ownership concentration irrelevant as a determinant of firm performance.

4. Data and Methodology

4.1. SAMPLE SELECTION AND DATA COLLECTION

The data consists of pooled time-series and cross-sectional observations of publicly listed Japanese firms spanning the 1986–1991 fiscal years. The time period precedes the collapse of the Japanese stock market, and the Asian financial crisis. For reasons discussed below, we utilize two samples, one consisting of 335 firms,

and one consisting of 212 firms. The larger sample includes firms with missing observations on a particular variable, while the balanced panel contains no missing observations. The firms included in the sample represent a broad cross-section of medium and large-sized (minimum U.S. $50 million in sales), publicly traded, private sector Japanese firms drawn from eight industrial sectors (automobiles & parts, food & beverages, electronics, transportation, retailing, oil & gas, pulp & paper, and industrial machinery). Approximately 70 percent of the firms were found to be associated with one of the Big-Six main banks (Sumitomo Bank, Mitsui Taiyo Kobe Bank, Dai-Ichi Kango Bank, Fuji Bank, Sanwa Bank and Mitsubishi Bank).[3]

The data source for the financial variables was *Worldscope Disclosure* (*Worldscope-Disclosure*, 1992) and this database established the maximum number of observations and the basic sample. *Worldscope Disclosure* does not supply detailed ownership and banking data on Japanese firms. Ownership and banking data was therefore collected from *The Japan Company Handbook* (Toyo Keizai, 1987–1992).

4.2. VARIABLE MEASUREMENT

The dependent variable, firm profitability, is measured as the return on assets (ROA), the ratio of net income to total assets. This is the dependent variable in all equations. ROA is a common measure of profitability and has been recently used in the Japanese context (Prowse, 1992; Lincoln et al., 1996). Importantly, Prowse (1992) notes that since stock market returns are expected to adjust for any divergences between shareholders and managers, accounting based measures such as ROA are preferable in studies relating ownership structure to financial performance.

We measure the ownership concentration of financial institutions as the percentage of shares held in a Japanese firm by Japanese financial institutions. This measure is comparable to that used by Prowse (1992) for similar purposes. For comparative purposes, we also measure the share of the largest five blockholders, a common measure of general ownership concentration.

WorldScope-Disclosure lists the 4-digit SIC industries in which the firm operates. It does not list the revenues generated within each industry, but does list them in order of importance. Thus, it is possible to measure diversification by a simple SIC count. This is, however, a somewhat crude measure (Hill and Snell, 1989) and for this reason we measure diversification using the weighting method proposed by Caves (1975) and employed by Caves et al. (1980), and Gedajlovic and Shapiro (1998). The measure is similar to a standard Herfindahl measure of diversification, except that the industry weights are imputed from a geometric series rather than being taken from actual line of business data. This measure does incorporate the various elements of diversification noted by Palepu (1985) in that it accounts for the number of product market segments in which the firm competes, it factors

in the distribution of sales across the segments and it incorporates a measure of relatedness.

The following variables constitute additional exogenous variables, previously subsumed under the X-vector in equation (1). These variables have been chosen to control for factors other than ownership concentration and diversification that have been found in the literature to affect profitability.

The growth rate of firms is included to measure demand conditions facing the firm, as well as product-cycle effects. Firms in relatively fast-growing markets are expected to experience above average profitability. Inclusion of a growth term has become common in the industrial organization literature, originating with Hall and Weiss (1967). A more recent example in a related context is provided by Markides (1995: Chapter 8), who finds a positive relationship between profitability and growth, a result also reported for Japan by Lincoln et al. (1996). The variable employed is measured in terms of changes in year-to-year sales and is equal to $((Sales_t - Sales_{t-1})/Sales_{t-1}))$.[4]

The size of a firm is included to account for the potential economies of scale and scope accruing to large firms. If present, these would produce a positive relationship between firm size and profitability. This argument also has its roots in the early industrial organization literature, and Markides (1995) and Lincoln et al. (1996) again provide more recent examples. We measure firm size as the log of assets.

Financial leverage measured as the ratio of debt to capital employed is included as a control variable in the regression models for two reasons. First, there is a large body of literature that indicates that a firm's capital structure influences both investment decisions and firm performance (Harris and Raviv, 1991). Second, financial leverage may be a constraining force on the discretion of managers (Jensen, 1989; Williamson, 1985). Since the focus of this paper is on the effects of ownership structure, the potential constraining influence of financial leverage needs to be controlled for.

5. Estimation

Dynamic panel data models such as that represented by equation (1) pose serious estimation challenges since the lagged dependent variable will be correlated with the error term (Baltagi, 1995: 125–126). Familiar estimation techniques such as OLS, fixed-effects, and GLS (including random effects) produce parameter estimates that are biased and inconsistent, even if the error terms are not serially correlated. Most proposed solutions rely on first difference transformations of the data with some form of instrumental variable estimation (Baltagi, 1995: 126). Arellano and Bond (1991) have suggested using the generalized method of moments (GMM) technique on differenced data. GMM (of which ordinary least squares and generalized least squares are special cases) uses non-linear procedures to estimate the parameters that satisfy all moment restrictions (Greene, 1993: 370–381). Instru-

mental variables must be specified in order to identify the model and the result is a non-linear instrumental variable estimator (Greene, 1993: 376). This technique allows the disturbances to be both heteroscedastic and autocorrelated and is particularly useful for the estimation of panel data. We therefore use the Arellano and Bond method to estimate the parameters of the model.[5]

Arellano and Bond (1991) demonstrate how the GMM method can be used to provide unbiased and consistent parameter estimates (Baltagi, 1995: 127–128). The model assumes that the error structure of the differenced equation exhibits first order serial correlation, but not second order serial correlation. These assumptions are tested by a Lagrange multiplier (LM) test (Greene, 1993: 380). GMM models also require that instrumental variables be chosen in order to identify the moment restrictions. Since the number of restrictions in a model is typically greater than the number of parameters to be estimated, a test of over-identifying restrictions is provided in order to test whether the specification of the model is appropriate (Greene, 1993: 374).

The Arellano-Bond method is specifically designed for panel data and it exploits both the time-series and cross-sectional nature of the data. The procedure requires that the data be organized so that for each firm, every data point is recorded in the same row (Hall, 1996: Chapter 15). Thus, the number of reported observations is the number of firms, even though the estimates are derived from the entire panel of data. The differencing of the equations means that time-invariant dummy variables such as those for industry cannot be estimated. This problem can also occur in fixed-effects estimation. In order to gauge the severity of this problem, we estimated a random-effects model using generalized least squares (GLS). This procedure allows for the estimation of time-invariant industry dummy variables, and like Prowse (1992), we found that very few of the coefficients were statistically significant. Also, it was not possible to estimate dummy variables for each year using the Arellano-Bond method because of the way the data are stored and the model estimated. While time dummy variables were found to be statistically significant in random-effects estimation, their omission did not alter the performance of the sign, or significance of the ownership variables. Similar results are reported in Morck and Nakamura (1999).

As noted above, we have a balanced panel of 212 firms with no missing values. However, we have data for an additional 123 firms that have some missing (control variable) data for some years.[6] In order to "balance" the larger sample, we replaced missing values with the firm's average for that variable. Thus, we have two panels, one with 212 firms and one with 335 firms.

6. Results

Table I provides the pooled (1986–1991) means and standard deviations of the continuous measures used in the multivariate analysis, as well as the correlation

Table I. Means and correlation matrices, pooled 1986–1991 – two samples

	Mean	Standard deviation	Ownership share of financial institutions	Ownership share of the largest five blockholders	Diversification index	Return on assets	Logarithm of assets	Ratio of debt to capital employed	Growth rate (sales)
Ownership share of the largest five blockholders	31.93% 33.66%	13.38 14.07							
Ownership share of financial institutions	20.01% 19.19%	8.55 8.65	1.0000 1.0000						
Ownership share of the largest five blockholders	31.93% 33.66%	13.38 14.07	–0.4241*** –0.4438***	1.0000 1.0000					
Diversification index	0.88 0.85	0.41 0.42	0.1202*** 0.1266***	–0.0211* –0.1006***	1.0000 1.0000				
Return on assets	3.83% 3.84%	2.42 2.86	0.0643 0.0353	–0.0521 –0.0145	–0.0413*** –0.0972***	1.0000 1.0000			
Logarithm of assets (firm size)	8.22 7.47	0.54 ‘0.49	0.0509*** 0.0839***	–0.3094*** –0.1869***	0.0952** 0.0336	–0.0074 0.0193	1.0000 1.0000		
Ratio of debt to capital employed	42.06% 40.96%	24.21 25.74	–0.0310 –0.0310	0.0120 0.0007	0.1487*** 0.1957***	–0.2107*** –0.2459***	0.1756*** 0.1096***	1.0000 1.0000	
Growth rate (sales)	8.36% 8.26%	26.13 26.36	0.0778*** 0.0728***	–0.0399 –0.0262	0.0109 0.0189	0.1607*** 0.1679***	0.0023 0.0023	0.0422* 0.0188	1.0000 1.0000

The top number in each cell refers to the smaller sample (n = 212) and the bottom number to the larger sample (n = 335). Pearson 2-tailed tests are indicated as: *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

matrices of the same variables. Data are presented for both panels and it can be seen that the two samples share very similar characteristics.

As indicated in Table I, on average, financial institutions own between 19.19 and 20.01% of outstanding shares in the sample firms, a number smaller than comparable data presented in Fukao (1995), but not very different from data found in Charkham (1994). Additionally, a firm's five largest blockholders own on average between 31.93% and 33.66% of its outstanding shares, a number consistent with similar measures in Prowse (1994) and Fukao (1995). On balance, these results suggest that our sample is representative. Finally, we note that Japanese firms in the sample had a relatively modest average ROA of 3.8% and a relatively low standard deviation of between 2.4% and 2.8%. When compared to ROA averages and standard deviations from other major economies over the same time period (Gedajlovic and Shapiro, 1998: Table 3),[7] our sample of Japanese firms is characterized by low profitability and low profit variance.

The correlation coefficients reported in Table I indicate that there is a negative correlation between financial ownership concentration and the share of the largest five blockholders. This suggests that despite the fact that banks may be among the largest blockholders, the negative and relatively low level of common variance between the five largest blockholders measure and the financial institution ownership measure ($r = -0.44$; $r^2 = 0.194$) suggests that these measures represent distinct constructs.

Interestingly, diversification is correlated with ownership structure, but the relationship depends on how the latter is measured. The broad measure of ownership concentration (ownership share of the 5 largest blockholders) is *negatively* correlated with diversification, while financial ownership concentration is *positively* correlated with diversification. Thus, there is indirect evidence that banks and their affiliated financial institutions do encourage diversification. However, the correlation could also arise because financial institutions prefer to invest in diversified firms in order to minimize risk. In such an event, their influence would be more passive insofar as firms wishing to tap into that source of funding would diversify in order to be more attractive to these investors.

The results of the GMM estimation are presented in Table II. We present eight sets of representative results. Summary statistics are found beneath the bold line and include T1 (the test for over-identifying restrictions), LM1 (the test for first-order serial correlation) and LM2 (the test for second-order serial correlation). The assumption of first- order serial correlation (imposed on the model) is accepted, while second order serial correlation is rejected (LM2), indicating that the assumptions made in estimating the model are reasonable. However, T1 is not always accepted, a point to be discussed below.

The basic results are presented in Columns 1 and 2, which present the estimates of equation (1) for both samples. For both samples, the estimated coefficients for the terms involving financial ownership are always statistically significant ($p < 0.01$), and their signs are supportive of the view that financial institutions exer-

Table II. GMM regression results: Dependent variable return on assets

	(1) Small sample (N = 212)	(2) Large sample (N = 335)	(3) Small sample (N = 212)	(4) Large sample (N = 335)	(5) Small sample (N = 212)	(6) Large sample (N = 335)	(7) Small sample (N = 212)	(8) Big 6 main bank (N = 151)	(9) Big 6 main bank (N = 151)
Ownership share of financial institutions	0.0957*** (3.6342)	0.1680*** (4.8013)			0.0924*** (3.1806)	0.1774*** (4.1363)	0.0077*** (3.4244)	–0.0291 (–1.2375)	0.0792*** (9.2018)
Ownership share of financial institutions ∗ Diversification	–0.0721*** (–2.7684)	–0.1627*** (–4.8700)			–0.0690*** (–2.4599)	–0.1759*** (–4.2641)		0.0771*** (3.0963)	
Ownership share of the largest five blockholders			0.0165 (1.5993)	0.0043 (0.2386)	–0.0364 (–1.0448)	–0.0544 (–0.7753)	–0.0102 (–0.4811)		
Ownership share of largest five blockholders ∗ Diversification			–0.0014 (–0.1205)	0.0017 (0.0783)	0.0151 (0.4129)	0.0303 (0.4061)			
Diversification	1.7358 (0.4679)	–1.2873 (–0.3745)	–1.0246 (–0.0344)	2.6239 (0.7300)	7.9214 (0.2052)	–2.0469 (–0.5155)	2.6053 (0.6448)	–5.7996 (–0.2537)	7.2945 (0.4642)
Firm size	3.4527*** (6.2778)	2.7435*** (3.8548)	4.1795*** (7.9194)	3.4732*** (5.5129)	3.3408*** (5.2763)	2.9078*** (3.5572)	5.0692*** (7.2555)	3.1507*** (6.9589)	3.0671*** (7.7505)
Firm growth	0.0144*** (19.7210)	0.0158*** (19.9094)	0.0140*** (19.2480)	0.0165*** (23.7973)	0.0145*** (19.4900)	0.0164*** (16.4406)	0.0140*** (19.1926)	0.0144*** (24.9422)	0.0136*** (30.1841)

Table II. Continued

	(1) Small sample (N = 212)	(2) Large sample (N = 335)	(3) Small sample (N = 212)	(4) Large sample (N = 335)	(5) Small sample (N = 212)	(6) Large sample (N = 335)	(7) Small sample (N = 212)	(8) Big 6 main bank (N = 151)	(9) Big 6 main bank (N = 151)
Financial leverage	–0.0026	–0.0065**	–0.0023	–0.0074***	–0.0028	–0.0081**	–0.0055***	–0.0016	–0.0011
	(–1.4094)	(–2.6508)	(–1.3369)	(–3.1934)	(–1.4466)	(–2.7761)	(–2.2333)	(–0.6890)	(–0.8170)
Return on Assets lagged one year	0.2841***	0.2408***	0.2741***	0.2697***	0.2869***	0.2447***	0.2783***	0.2596***	0.2646***
	(20.5319)	(13.4163)	(19.5397)	(14.1895)	(19.9613)	(11.2827)	(20.0900)	(25.8399)	(26.7004)
T1	112.252	110.252	118.522	105.490	111.728	115.606	109.697	102.168	114.167
(p value)	(0.064)	(0.085)	(0.059)	(0.238)	(0.068)	(0.042)	(0.100)	(0.219)	(0.099)
LM1	–3.034	–3.0896	–2.973	–3.0913	–3.039	–3.1105	–2.975	–2.783	–2.820
(p value)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.003)	(0.005)	(0.004)
LM2	0.198	1.0513	0.072	1.0969	0.201	1.0929	0.124	0.926	1.034
(p value)	(0.843)	(0.293)	(0.942)	(0.292)	(0.840)	(0.274)	(0.900)	(0.354)	(0.301)

Notes to Table 3. Coefficients are estimated using the Generalized Method of Moments (GMM) procedure suggested by Arellano and Bond (1991). The Arellano-Bond method uses first differences to estimate coefficients and no constant term is estimated. All independent variables are assumed exogenous, and this restriction is tested by T1, the test for overidentifying restrictions. p-values test the null hypothesis that the restriction is not valid at the 0.05 level. LM1 and LM2 are Lagrange multiplier tests for serial correlation. The LM1 row reports the test for first order serial correlation (accepted in all cases) and the LM2 row reports the test for second order serial correlation (rejected). Figures in parentheses under the coefficient estimates are t-statistics, with the following levels of significance indicated: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$, two-tailed tests.

cise a classic monitoring function while at the same time supporting excessive and unprofitable diversification. Thus, the direct effects of financial ownership are positive and statistically significant while the interactive term is negative and statistically significant ($p < 0.01$).

The results therefore suggest that excessive diversification is one route through which financial institutions in Japan might support unprofitable growth strategies, and are thus broadly consistent with Weinstein and Yafeh (1995). However, although the negative coefficient on the interaction terms for financial institutions is negative, the average impact of financial institutions on performance is positive, and remains positive until levels of diversification well above mean levels.[8] That is, the effect of ownership concentration by financial institutions on profitability is negative only for the most diversified Japanese firms.

Columns 3 and 4 present the same estimating equation, but with ownership concentration measured as the ownership share of the largest five firms, regardless of identity. It is evident that terms involving this more traditional measure of ownership concentration are not statistically significant in either sample, although we note that the large sample estimates do not pass the T1 test. It is apparent that the identity of owners matter in Japan. This statement is confirmed by the estimates in Columns 5 and 6, which include both measures of ownership concentration. Only terms involving financial ownership remain statistically significant, and the estimates are similar to those reported in Columns 1 and 2.

In Column 7 we report the results of a more traditional specification, one that does not include the interactive terms, but does include both ownership terms. Once again, it is found that financial ownership matters, but general ownership concentration does not. This equation also confirms that the net impact of financial ownership concentration is positive. When the terms are entered separately in the non-interactive specification, both are positive and statistically significant (results not reported). Similar results are found for the larger sample.

In order to further evaluate the robustness of the results, we estimated the various models using subsets of samples. Examples are found in Columns 8 and 9, where the smaller sample is employed with the observations restricted to firms with a Big-Six main bank. In Column 8 both the direct and interactive financial ownership terms are entered and the results are somewhat different from those previously reported in that the direct effect term is not statistically significant, and the interaction term is positive and statistically significant. However, this specification fails the T1 test. Interestingly, when the financial ownership term is entered alone in this restricted sample (Column 9), it is positive and statistically significant, and the specification passes the T1 test. Thus, the effects of financial ownership concentration on firms whose main bank was one of the Big-Six, was strictly positive. Thus, lending practices that facilitate over-diversification were apparently limited to firms whose main bank was not among the Big-Six.

In this regard, firms sharing a common Big-Six main bank are not necessarily in a *keiretsu* controlled by that bank. However, Big-Six bank affiliation is often used

as the basis for defining *keiretsu* membership since main banks are at the heart of horizontal *keiretsu* (Nakatani, 1984). Thus, our results may indicate that *keiretsu* membership may limit excessive diversification.[9] This may occur because of the thick monitoring opportunities afforded major shareholders in *keiretsu* (Berglöf and Perotti, 1994) which facilitates the enforcement of a "one-set policy" (*wan setto-shugi*), the tendency among major *keiretsu* to have one and only one company active in any significant industry[10] (Gerlach, 1992).

Collectively, these results indicate that the governance role of financial institutions in Japan during the mid-late 1980s was somewhat more complicated than previous studies suggest. In general, financial institutions played conflicting governance roles. On the one hand, they appear to have successfully monitored any short-run managerial abuses that stem from cost-augmentation, but they also appear to have promoted (and possibly financed) excessive diversification that reduced profitability. Additionally, the results do depend to some degree on the firm's main bank.

In concluding this section, we note some results of interest emerging from the control variables. Growth was positively related to profitability suggesting that firms in growing markets were more profitable, or possibly that more profitable firms were better able to finance growth-enhancing projects. Firms with higher levels of debt were less profitable, reflecting the costs associated with debt financing, although the relevant terms are not always statistically significant. Lincoln et al. (1996) report similar growth and debt results. For our sample, it would appear to be the case that larger firms were more profitable than smaller ones. While a positive relationship is observed in some countries, it is not always the case and there is evidence of a negative relationship in Japan (Lincoln et al., 1996). We believe that the diversity of results on the effects of firm size is the consequence of different sample compositions. The estimated coefficients on the diversification term are not statistically significant in any equation. Recall, however, that the simple correlation between profitability and diversification is negative and statistically significant.

7. Discussion and Conclusions

The results presented here indicate that the concentration of ownership by Japanese financial institutions affected firm profitability in complex and sometimes contradictory ways over the time period considered. We find evidence to support the view that financial institutions acted to effectively monitor managers, much as agency theory would suggest. However, there is also evidence to suggest that in their capacity as creditors, financial institutions have a powerful incentive to increase loan volumes and therefore favour policies that promote excess diversification at the expense of profitability. The latter effect is more pronounced among independent firms, that is firms whose main bank is not among the Big-Six. Nevertheless, we do find evidence to suggest that the role of financial institutions in the

corporate governance system of Japan did to some degree result in over-expansion. Thus, we find that financial ownership brought both costs and benefits. Morck, Nakamura and Shivdasani (2000) arrive at the same conclusion, but their model is sufficiently different that more explicit comparison is difficult.

In contrast with the results regarding financial institutions, blockholder concentration measured without regard to shareholder identity did not typically affect firm profitability in Japan. This result further emphasizes the important role played by financial owners in Japan.

The results taken as a whole suggest quite strongly that distinct types of shareholders exert differing and sometimes contradictory influences on firm profitability. An important implication of this study is that further insights regarding the relationship between ownership structure and profitability can be obtained by distinguishing between classes of shareholders. Studies that make more finely grained distinctions between varieties of financial institutions represent a potentially fruitful direction for future research. Similarly, studies examining the demographic characteristics and/or nationality of major investors may yield new insights into corporate governance processes and outcomes.

Finally, our findings have some specific implications regarding the Japan's enterprise system. In this regard, the macroeconomic shocks faced by Japanese companies in the mid-late 1980s appear to have had significant and rather immediate microeconomic consequences. Some scholars have argued that the profound structural shocks faced by Japanese companies in the wake of the Plaza Accord and the associated *endaka* Yen crisis have transformed traditional post-WWII business relationships between Japanese financial institutions and their clients (Lincoln et al., 1996). Kester (1991) in particular has argued that Japanese financial institutions have become less interested in building and maintaining business relationships and more interested in returns on their equity investments. He concludes, "*banks have begun to act more like conventional institutional equity investors*" (p. 66).

Our findings offer evidence that is supportive of this view and indicate that the structure and functioning of the financial dimension of Japanese inter-corporate networks began to break down in the mid 1980s. More specifically, our finding that the concentration of ownership by financial institutions is on balance associated with higher corporate profitability offers evidence consistent with the view that business dealings between the heterogeneous actors that comprise Japanese inter-corporate networks became less relational and more transactional. At the same time, the finding that ownership concentration by heterogeneous blockholders is largely unrelated to profitability suggests some degree of persistence in the basic orientation towards growth and income stability goals, despite the macroeconomic and institutional pressures they faced during the 1986–1991 period. Likewise, the finding that the ownership of financial institutions is also related to unprofitable diversification suggests that even among Japanese financial institutions, traditional investment patterns are hard to break and significant path dependencies persist.

This evolving pattern of relations between Japanese firms and their major shareholders may shed some light on the micro-economic roots of Japan's persistent and ongoing economic malaise. In the face of the significant macroeconomic shocks and structural reform encountered by Japan in the 1986–1991 period, our results indicate that some major Japanese shareholder were altering the way they viewed relations with firms in which they held equity. On the other hand, other shareholder-firm relation remained committed to traditional business practices. Such a pattern suggests that the broad consensus marking Japan's post-war growth prior to the Plaza Accord was already under stress in the late 1980s as reform minded and conservative forces both held considerable influence. In this regard, with the benefit of retrospect, our results suggest that the leading edge of Japan's ongoing structural crisis was already apparent at a time when the Japanese system was widely regarded as a model for other countries.

Notes

[1] It is true, however, that Japanese firms became less reliant on external sources of finance in the 1980s (Prowse, 1996). Hoshi et al. (1990) report that the share of external financing sourced from corporate bonds increased ten-fold in Japan in the 1980s, while the use of equity financing doubled during the same time-period. Hanazaki and Horiuchi (2000) suggest that as client firms reduced their reliance on bank financing, banks sought to extend their loans into new areas.

[2] Our approach is similar in concept to that taken by Yafeh and Yosha (2003) in a related context. They distinguish between "productive" activities that improve firm performance and "wasteful" activities that provide private benefits to managers. Shareholders can only observe the sum of the two, and cannot distinguish between them.

[3] We refer to the Big-Six, as they existed in the period 1986–1991. Mergers have since reduced their numbers.

[4] The use of firm growth to measure the growth of markets does rely on the implicit assumption that firm growth is exogenous. To the extent that firms choose to grow by entering low-profit markets, one might expect a negative relationship between profitability and growth, something that is not typically found. Alternatively, firms may use high profits to finance growth, which would result in a positive relationship.

[5] The model was estimated using the GMM procedure in TSP 4.3. Details may be found in Hall (1996) and Baltagi (1995: Chapter 8).

[6] The data set cover six years. If an individual firm had missing data for no more than three years, the average of the remaining years was used. If data were missing for more than three years, the observation was excluded.

[7] The comparable *means* and (standard deviations) for other countries reported by Gedajlovic and Shapiro (1998) are: U.S. 7.92 (*8.96*), U.K. 11.02 (*7.58*), Germany 5.26 (*8.94*), France 7.62 (*8.37*) and Canada 6.32 (*9.35*).

[8] This conclusion is based on evaluating the partial derivative of profitability with respect to ownership concentration, using the mean value of diversification. For example, using column 1 in Table 2, the partial derivative is equal to: 0.0957–0.0721∗Diversification. The partial derivative is positive for firms with levels of diversification below 1.33, while the mean level of diversification is 0.88.

[9] We conducted some additional tests to better ascertain the effect of *keiretsu* membership on excessive diversification. Unfortunately, there is some debate and uncertainty regarding how to define the composition of a *keiretsu* (Yafeh, 2002). While some have defined keiretsu membership primarily on the basis of main-bank ties (Miyashita and Russell, 1994), perhaps the clearest, but also one of

the most restrictive measures is based on membership in a Presidents' Council (*shacho-kai*) (Lincoln et al., 1996). In our sample, 51 firms are members of Big-Six *shacho-kai*. We attempted to estimate the models using this sub-sample, but the relatively small number of observations proved insufficient for estimation purposes and the estimated equations failed the test for over-identifying restrictions. However, we were able to estimate the model using a sub-sample that excluded *shacho-kai* firms. These results were very similar to those reported in Columns 1 and 2 of Table 2 suggesting that financial ownership among non *shacho-kai* firms promoted excessive diversification. Interestingly, the coefficient of the INST*DIV term in this model was larger than that obtained for the full balanced panel (–0.1120 vs. –0.0721) suggesting that excessive diversification is more pronounced when *shacho-kai*.firms are excluded from the sample.

[10] We thank an anonymous reviewer for bringing this possible explanation to our attention.

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