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by Yoshiro Miwa & J. Mark Ramseyer*

Abstract: In 1985, Demsetz & Lehn argued both that the optimal corporate ownership structure was firm-specific, and that market competition would drive firms toward that optimum. Because ownership was endogenous to expected performance, they cautioned, any regression of profitability on ownership patterns should yield insignificant results.

To test the Demsetz-Lehn hypothesis, we use the zaibatsu dissolution program from late-1940s Japan as an exogenous shock to the pre-war ownership equilibrium. Through that program, the U.S.-run occupation removed the more prominent shareholders from many of the most successful Japanese companies. By focusing on the effect the program had on profitability and on the way firms responded to the program, we accomplish two goals: (a) we avoid the endogeneity problem that has plagued much of the other research on the subject, and (b) we clarify the equilibrating dynamics by which competitive markets move firms toward their optimal ownership structure.

With a sample of 637 Japanese firms for 1953 and 710 for 1958, we confirm the equilibrating mechanism behind Demsetz-Lehn: between 1953 and 1958, the ex-zaibatsu firms did significantly reconcentrate their ownership structure. As of 1953, the unlisted ex-zaibatsu and new firms still had not yet been able to negotiate the transactions necessary to approach their optimum ownership structures, and even the listed firms had not fully undone the effect of the occupation-induced changes on managerial practices. By 1958 they had, and the earlier correlation between profitability and ownership disappeared. By then, firm profitability showed no correlation with ownership, whether under linear, quadratic, or piecewise specifications. We further find no evidence that ex-zaibatsu firms sought to strengthen their ties to banks over 1953-58.

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Does ownership matter? For all the rhetorical references to Berle & Means' 1932 book, the debate largely entered the world of modern empirical research with Harold Demsetz and Kenneth Lehn in 1985. Ownership matters, Demsetz & Lehn argued, but not in a way scholars would notice by regressing profitability on shareholding patterns.

Instead, reasoned Demsetz & Lehn (and Demsetz, 1983), the optimal ownership structure will vary by firm, and market competition will drive each firm to choose its firm-specific optimum. Because investors will then equalize at the margin, in equilibrium observed returns across firms will not vary systematically by the type of ownership structure in place. True to the theory, when Demsetz & Lehn regressed profitability on ownership concentration, they found no relationship.

Despite this logic, other scholars have not confirmed the empirics. Instead, when they regress firm performance on ownership structure, they generally find some correlation. Usually, the one they find is non-linear: profitability rises at low levels of ownership concentration, then declines.

Hence the debate: On the one hand, by the very design of their models some scholars seem to suggest (however implicitly) (a) that the optimal ownership structure is in significant ways not firm-specific, and (b) that market competition need not drive firms to approach that optimum. On the other, Demsetz & Lehn argued in effect that many of these later regressions were fundamentally misspecified. Because ownership was endogenous to expected performance, it seldom made sense to regress profitability on ownership.

In significant part, the debate between Demsetz-Lehn and these writers is a debate over the effectiveness with which market competition drives firms toward their ownership optimum. In the study that follows, we address that debate by using the Japanese zaibatsu-dissolution program as a natural experiment. The American-controlled occupation of Japan lasted from 1945-52. During 1946-49, the government forcibly dissolved the pre-war zaibatsu shareholding networks. It attacked the networks at a wide variety of firms, but the most prominent involved the Mitsui, Mitsubishi, Sumitomo and Yasuda.

By using this dissolution program as an exogenous shock to the pre-war ownership equilibrium, we avoid the obvious endogeneity program that plagues much of the research on ownership concentration. Because the occupation did not stop firms from reconcentrating their ownership after 1949, however, we can also use the program to do more: to focus on the empirically largely-ignored process by which firms approach their firm-specific ownership optimum. Suppose market competition does drive firms toward their value-maximizing ownership structure (i.e., suppose Demsetz & Lehn are right). If so, then the program must necessarily have caused the ex-zaibatsu firms subsequently either to reconcentrate their ownership, or to perform more poorly than before.

Using a database of 637 large firms from 1953 and 710 from 1958, we confirm the essential Demsetz-Lehn logic. We do not explain why writers after them have found the results that they did (though we note that many do not advance a theory for their results either). Instead, we show how ex-zaibatsu firms did restructure their ownership. Many of the stock-exchange listed firms had already restructured their ownership before 1953. Because the unlisted firms often needed to negotiate sales individually, they continued the reconcentration process after 1953, and regressions of 1953 profitability on ownership still show a significant relationship. As unlisted firms negotiated better ownership structures, and as the listed ex-zaibatsu firms undid the managerial changes caused by the earlier

occupation-imposed ownership structure, that effect disappeared. By 1958, a regression of profitability on ownership structure yields the Demsetz-Lehn predicted equilibrium: no relationship, linear or otherwise.

We begin by reviewing the literature (Section I) and explaining the zaibatsu dissolution program, our data, and our variables (Section II). We then turn to the way firms responded to the dissolution program by readjusting their ownership structure, and to the eventual effect that the process had on profitability (Section III.A.). We ask whether the firms in our data base exhibit the patterns found by the other post-Demsetz-Lehn studies (Section III.B.). We conclude by exploring the implications our data pose for understanding the development of bank-firm relations in modern Japan (Section III.C.).

I. The Debate

At least hypothetically, the relationship between ownership structure and profitability could take one of several forms (see generally Shleifer & Vishny, 1997: 753-61). In some firms, dispersed shareholdings might increase the odds that managers pursue non-value-maximizing strategies. After all, dispersed shareholdings raise the coordination costs investors incur in monitoring the firm's managers. They also increase the divergence between the interests of the firm's managers and those of its investors.

Alternatively, dispersed shareholdings might sometimes increase firm value. With a larger fraction of shares in play, a firm with dispersed ownership may be more strongly subject to the discipline of the corporate control market. With a more liquid market for its stock, it may have a capital market advantage among investors wanting to diversify.

Yet again, in countries like the U.S. and Japan with well-developed legal systems, none of this may matter very much. Dispersed or no, access to courts may stop most managers from diverting substantial corporate assets. Even if some residual agency slack might otherwise remain, the combined constraints of product, service, and labor market competition may induce firms to maximize profits, dispersed shareholdings or no.

Demsetz & Lehn (1985) took a fundamentally different tack. As they saw it, firms often did have an optimal ownership structure, but one that varied from firm to firm and one toward which market competition necessarily drove them. Because investors would equalize on the margin, in equilibrium firms would exhibit the same observed profitability whatever their ownership structure. When they then regressed firm profitability on ownership concentration (511 U.S. firms, 1976-80 data), they found exactly what they predicted: no evidence that ownership patterns affected profitability.

Despite this logic, others have persistently disputed the empirics. Early on, Randall Morck, Andrei Shleifer and Robert W. Vishny (1988) argued that ownership did exhibit an observable correlation with profitability -- just not a linear one. To test the point, they regressed Tobin's Q on piecewise dummies for board shareholdings (0-5, 5-25, and over 25 percent). Using a sample of 371 large U.S. firms (1980 data), they found that Q rose steeply with board ownership of under five percent. Over the 5-25 percent range it declined, and beyond 25 percent it then rose again (though not significantly). For ownership by officers and outside-directors, they found much the same effect.

John J. McConnell and Henri Servaes (1990) similarly argued that low levels of ownership concentration raised observable profitability while high levels did not.

With a data base of 1,000-1,200 listed U.S. firms from 1976 and 1986, they regressed Tobin's Q on both the percentage of shares held by corporate insiders (*i.e.*, officers and directors) and that shareholding percentage squared. Consistent with Morck-Shleifer-Vishny, they found that as shareholding concentration rose, firm profitability initially increased but then fell. Where Morck-Shleifer-Vishny found that Q peaked at board ownership levels of about 5 percent, McConnel-Servaes located the peak at 40-50 percent.

Empirical work since has not resolved the debate. On the one hand, Holderness, Kroszner & Sheehan (1999: 459) recently obtained results that "in terms of both signs and magnitudes, are strikingly similar to those found in Morck et al. ...." They too used a piecewise linear specification, but on a massive data base of 1,236 U.S. firms from 1935 and 3,759 from 1995. For both 1935 and 1995, they found that Q rises with officer and director ownership in the 0 to 5 percent range. From 5 to 25 percent, it falls for 1935 but is insignificant for 1995. Beyond 25 percent, the coefficients are insignificant for both years. Based on the stock-price effects of private equity sales, Wruck (1989) similarly finds that stock price rises with ownership concentration in the 0-5 percent range, falls over 5-25 percent, and rises after 25 percent.

On the other, Hermalin & Weisbach (1991) used an instrumental-variables approach on panel data (142 NYSE firms, 1971-83) to address the endogeneity issue. Regressing Q on piecewise variables, they reached results very nearly opposite those of Morck-Shleifer-Vishny, Holderness-Kroszner-Sheehan, and Wruck: positive coefficients at management ownership levels of 0-1 percent, but negative at 1-5 percent, positive at 5-20 percent, and negative beyond 20 percent.

On Japanese data, the results have been just as inconclusive. Using a linear model with 143 firms (1979-84 data), Prowse (1992) found no relationship between profits/equity and ownership concentration. Weinstein & Yafeh (1998) similarly discovered no relation between profits/sales and ownership by the top 10 shareholders (686 firms, 1977-86; linear model). They did, however, locate a significantly negative relationship between profits/sales and both ownership by financial institutions and ownership by non-financial firms. In contrast, on his sample of 90 Japanese firms from 1960, Yafeh (1995: 165; 90 firms) found that profits/sales increased with "main bank" shareholdings. More recently, Morck, Nakamura & Shivdasani (2000; 1986 data for 373 firms) concluded that Q fell as "main bank" ownership rose from 0 to 5 percent, but increased thereafter; that it increased monotonically with managerial ownership; and that it increased monotonically with non-financial corporate ownership as well.

Readers would do well not to confuse this debate with the discussion over the impact of corporate law on ownership patterns. In a recent series of articles, La Porta, Lopez-de-Silanes, Shleifer & Vishny (e.g., 1998) show that ownership patterns vary in predictable ways by the legal system in place. The relative benefits of concentrated and dispersed ownership depend, they reason, on the access investors have to legal machinery. In the article below, we do not ask whether legal access affects ownership structures. As Shleifer & Vishny (1997: 770) rightly explain, the United States and Japan both have "a legal system that protects investor rights." Instead, we ask whether, given a legal system that protects investors reasonably well, market competition drives firms to select a firm-specific optimum.

II. The Impact of Ownership on Profitability

A. Introduction:

If, as Demsetz-Lehn argue, ownership is potentially endogenous to expected performance, then the straightforward way to explore the relation between the two is not to regress profitability on ownership. It is to study the effect of an exogenous shock to ownership patterns. The American-run zaibatsu-dissolution program offers precisely such a shock. What is more, because the program did not require firms to maintain the new ownership structure, it offers a chance to examine what Demsetz-Lehn hypothesized but which neither they nor subsequent scholars empirically explored: the equilibrating mechanism by which firms move toward their ownership optimum.

Douglas MacArthur arrived to head the allied occupation (called the Supreme Commander for the Allied Powers, or SCAP) in 1945. Among the men on his staff, many believed that the pre-war zaibatsu had supported the war effort. In truth, the zaibatsu had simply been successful industrialist families. The most prominent had been the Mitsui, the Mitsubishi (the Iwasaki family), the Sumitomo, and the Yasuda. On average, they had invested in highly profitable firms (Miwa & Ramseyer, 2000b; Frankel, 2000). Having amassed large amounts of wealth, they had then diversified by investing widely.

In most cases, the zaibatsu firms owed this success neither to monopoly rents nor to armaments.[1] In most industries, they had neither had monopoly power nor been part of a successful price-fixing cartel. When they invested in the war effort, they primarily had done so only under military pressure.

To head its efforts at reconstructing the economy, SCAP appointed Northwestern economist Corwin Edwards. In his own academic work, Edwards had taken a clear big-is-bad line, and he now imported that approach to his work at SCAP. The approach fit well with the anti-zaibatsu sentiment among MacArthur's staff, and under SCAP supervision in 1946 the Japanese government began the process of eliminating the zaibatsu.

To dissolve the zaibatsu, the government effectively confiscated all shares held directly or indirectly by the most prominent zaibatsu families. Nominally, it bought the shares. Since it paid in non-negotiable 10-year government bonds and then promptly inflated the currency, however, the compensation came to very little. It then resold the acquired stock. It finished the process shortly after the Tokyo Stock Exchange reopened in 1949 (see generally Hadley, 1970: ch. 4).

Before turning to the regressions themselves, note several things. First, the mid-1950s were generally years with slower growth than either the first years of the decade or the 1960s. Despite lackluster performance during the earliest post-war years, the Japanese economy had taken a sharp turn for the better in 1950. The Korean War had begun, and for the U.S. military Japan made a convenient operations base and procurement source. In constant prices, the Japanese economy grew 11 percent in 1950, 13 percent in 1951, and 12 percent in 1952. The boom ended the next year, though, and from 1953 to 1959 the growth rate hovered in the 5 to 9 percent window. It jumped to 13 percent in 1960, and stayed in the double-digit range for most of the 1960s (Nihon tokei, 1988: 409).

Second, the debate over the post-war keiretsu is beyond the scope of this study. Many observers argue that the pre-war zaibatsu continued in diminished form as the post-war keiretsu. Although we argue elsewhere (Miwa & Ramseyer, 2000a)

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[1] This is not a point on which all observers would agree, but it also is not essential to this study.

that the keiretsu lack economic substance, we table the issue here. Demsetz-Lehn argue that market competition will drive firms toward a firm-specific ownership concentration optimum. The mix of owner-types may also matter, but Demsetz-Lehn do not address the issue and we here follow their practice.

Third, although during the 1950s Japanese law limited banks to no more than 10 percent shareholding in any firm, banks seldom approached that legal maximum. Fourth, over the 1950s the fraction of outstanding shares individuals held fell at the same time that the total volume they owned rose. In 1953 individuals held 56 percent of the 5.4 billion outstanding shares and financial institutions held 22 percent. By 1958, individuals held 50 percent of the 19 billion outstanding shares but financial institutions now held 26 percent (Tokyo shoken, 1981: 116-17).

B. Data:

For our tests, we assemble financial data on Japanese firms in most of the major manufacturing industries in 1953 and 1958. Because the standard computer-accessible sources (e.g., Nikkei NEEDS, Japan Development Bank) do not cover the 1950s, we collect the data manually from the Kaisha nenkan (Nihon keizai). The source lists what it considers all of the "major" Japanese firms. This includes both most stock-exchange listed firms, and most large unlisted firms.

From the Kaisha nenkan, we extract relevant financial data for all firms catalogued in the following industries: electrical equipment, instruments, automobiles, other machinery, shipbuilding, cotton spinning, weaving, other textiles, mining, coal, oil, steel, other metals, chemicals, paints, pharmaceuticals, food products, cement, and paper. Through this process, we obtain a population of 645 firms for the fiscal year ending in March 1953 and 721 for the fiscal year ending in March 1958. We eliminate several firms either missing crucial financial data or yielding egregiously extreme values (usually firms that undertook major capital restructuring in the middle of the accounting year). Ultimately, we calculate profits/equity ratios for 637 firms in 1953 and 710 in 1958. We include sample statistics in Table 1.

[Insert Table 1 about here.]

Note a couple of preliminary comparisons to the Demsetz-Lehn sample. First, Demsetz-Lehn's U.S. firms had modestly less concentrated ownership than our Japanese firms. The top 5 shareholders in Demsetz-Lehn's sample on average owned 24.8 percent of the firm's stock (1985: tab. 1).[2] The top 5 shareholders in our sample owned 30.9 percent in 1953, and 34.8 percent in 1958 (Table 1).

Second, in both the U.S. and Japan the larger firms had more dispersed shareholding structures than the smaller. To explore the determinants of ownership, Demsetz-Lehn regressed a logistic transformation of ownership concentration on, inter alia, industry dummies and firm equity. The larger the equity, they find, the more dispersed the shareholding. Regressing the same transformed variable on industry dummies and firm equity, we obtain the same result: equity is strongly and negatively correlated with ownership concentration.

We collect data on the zaibatsu dissolution program from the records of the oversight committee: Nihon zaibatsu to sono kaitai (see Mochikabu, 1950). We use the data given in the zaibatsu shareholding table (it cover all shares held by the

[2] The board of directors in the Morck-Shleifer-Vishny study (1988: 297) owned 10.6 percent. Insiders in McConnell-Servaes (1990) owned a mean 11-14 percent.

designated zaibatsu, their holding companies, and family members) found on pages 140-91. Of the firms in our data base for 1953, 28 percent had some of their stock sold pursuant to the dissolution program. At those firms subject to the program, the simple mean amount of stock sold was 31 percent. Reflecting the diversified portfolios at the zaibatsu families, for most firms the fraction of shares subject to the program was modest: 80 to 100 percent -- 21 firms; 60 to 80 percent -- 11 firms, 40 to 60 percent -- 36 firms, 20 to 40 percent -- 44 firms, and 20 percent or less -- 102 firms.

To trace the firms in the 1950s to their immediate post-war antecedents, where necessary we use the Hompo shuyo kigyo keifuzu shu (see Ikujima, 1981).

C. Variables:

Using this data, we calculate the following variables:

1. Dependent variables.

58-53 top 5 difference: The fraction of stock held by the top 5 shareholders at a firm in 1958, less that fraction in 1953.

Profits/Equity: Profits are after taxes and interest, in 1000 yen. Equity is the sum of legal capital, all reserves, carryforwards, and current profits or losses, in 1000 yen. Obviously, the use of accounting profitability raises issues of reliability. Note, however, three points. First, in using profitability, we follow Demsetz & Lehn (1985). While we would have preferred to use Tobin's Q as well, we lack the data to calculate it. Second, Morck, Shleifer & Vishny (1988: 300; U.S. data), McConnell & Servaes (1990; U.S. data), and Morck, Nakamura and Shivdasani (2000: 552; Japanese data) all obtain similar results whether they use profitability or Q as their dependent variable. Last, our basic point concerns the dynamics of the equilibrating process addressed in Table 2 -- for which profitability is simply not a central issue.

58-53 leverage difference: Leverage (defined below) in 1958, less leverage in 1953.

2. Independent variables.

Fraction of shares sold: The fraction of a firm's outstanding shares sold pursuant to the zaibatsu dissolution program.

Leverage: 1 less the ratio of equity to gross assets. The maximum value of leverage exceeds 1 because of insolvent firms -- 3 in 1953, and 5 in 1958.

Gross assets: Book value of a firm's gross assets, in 1000 yen. We use this as a proxy for firm size.

Top 5 shareholdings: The fraction of a firm's shareholdings held by the five shareholders owning the most stock.

Top5-0to5, **Top5-5to25**, and **Top5-over25**: In order to compare our results to those in Morck, Shleifer & Vishny (1988: 298) and Holderness, Kroszner & Sheehan (1999), we calculate piecewise linear regressions using definitions comparable to theirs for the top five shareholders.

More specifically, **Top5-0to5** is equal to the actual fraction owned by the top 5 shareholders if that amount is less than 5 percent; it is .05 if the fraction exceeds 5 percent.

Top5-5to25 is equal to 0 if the fraction owned by the top 5 shareholders is less than 5 percent; it equals the actual fraction owned less .05 if the fraction owned by the top 5 shareholders is more than 5 and less than 25 percent; it equals .2 if the top 5 shareholders collectively hold more than 25 percent of the firm's stock.

Top5-over25 is equal to 0 if the fraction owned by the top 5 shareholders is less than 25 percent; it equals the actual fraction owned less .25 if that fraction exceeds 25 percent.

Exchange listed: 1 if public information on stock price is available; 0 otherwise.

Industry dummies: Dummies based on the industry categories used in Kabushiki nenkan.

III. Results

A. Reconcentration among Ex-Zaibatsu Firms:

Suppose market competition drove Japanese firms to select ownership structures close to their firm-specific optimum before the war. All else equal, those same competitive forces should have driven the ex-zaibatsu firms to re-select a structure close to that optimum after the occupation-mandated sell-off. Among the firms, moreover, market competition should have pushed the stock-exchange listed firms to restructure their ownership more quickly than the unlisted firms. At the listed firms, investors could have assembled packages of shares whenever they located firms with low profitability caused by sub-optimal ownership structures. At the unlisted firms, they would have needed individually to negotiate each transaction. Even in the best of times, the process would have taken longer than among the listed firms. For war-devastated Japan of the 1940s, they were anything but the best of times.

In Table 2A, we regress the difference in top-5 shareholder ownership levels for 1958 and 1953 on, inter alia, the fraction of a firm's shares sold under the occupation sell-off.[3] The coefficient is positive, significant, and robust to a variety of specifications: ex-zaibatsu firms did reconcentrate their ownership during the period.

In Table 2B, we divide the sample between listed and unlisted firms, and re-run the principal regressions. Again, the results confirm what theory predicts. Given that the listed firms would already have been able to undo many of the occupation-induced changes between 1949 and 1953, they changed their ownership structure little between 1953 and 1958. Given that the unlisted firms would have needed more time, they continued the process after 1953.

In 1953, the population of ex-zaibatsu firms thus still included many unlisted firms trapped in a suboptimal ownership structure. In addition, even the listed firms would not necessarily have had time to undo the managerial problems caused by the occupation-induced ownership shifts. As a result, among the ex-zaibatsu firms share concentration could well have been correlated with profitability. According to the first column of Table 3, it was.[4] As the unlisted firms negotiated better ownership structures, and as the ex-zaibatsu firms reimposed better managerial practices, that effect should have disappeared. According to the second column of Table 3, it did.

[Insert Tables 2 and 3 about here.]

B. Equilibrium Ownership and Profitability:

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[3] We use profits/equity for 1958 as a measure of the potential gains to restructuring the firm's ownership.

[4] The point is consistent with Yafeh's (1995) conclusion -- based on a much smaller sample of 111 companies -- that firms whose shares were sold off under the occupation were had lower profits/sales ratios in 1953.

According to Demsetz-Lehn, a general regression of profitability on equilibrium ownership structures should yield no significant results. At some firms ownership will not matter, and those for which it does will have selected their firm-specifically optimal structure already. According to our discussion above, by 1953 many unlisted Japanese firms had not yet negotiated structures close to their optimum. By 1958, they would have had much more time to do so. If Demsetz is right, then we may or may not see a significantly positive relation between profitability and ownership in our 1953 data. In our 1958 data base, we should see none.

We present our results for 1953 in Part A of Table 4, and for 1958 in Part B. To facilitate comparison with the principal extant studies, we report three regression models: the simple linear model found in Demsetz & Lehn (1985), the quadratic model found in McConnell & Servaes (1990); and the piecewise model found in Morck, Shleifer & Vishney (1988) and Holderness, Kroszner & Sheehan (1999).

[Insert Table 4 about here.]

In our 1953 data, the coefficients on the ownership concentration variables are insignificant for the linear model, but significant in the quadratic model. Although the coefficients are again insignificant in the piecewise model, the quadratic model suggests that firm value peaks at 47 percent. If we replace the piecewise variables with one for concentration rates of under 50 percent and one for over 50 percent, the coefficients are again significant: positive for the former, and negative for the latter.

The correlation between profitability and ownership also shows the problems new unlisted firms had negotiating ownership structures during the chaotic post-war years. Consider Table 5 -- where we divide the 1953 sample into four parts. The regressions in Table 3 had showed the problems entrepreneurs at the unlisted ex-zaibatsu firms had in negotiating the transactions necessary to re-select their ownership optimum. The regressions in Table 5 indicate that the entrepreneurs behind the new unlisted firms had similar problems. Like their peers at the ex-zaibatsu unlisted firms, they too found it hard in those war-devastated years to negotiate their ownership optimum.

[Insert Table 5 about here.]

As the unlisted firms (both new and ex-zaibatsu) improved their ownership structures over the next five years and as all zaibatsu firms undid the managerial problems introduced by the occupation-induced ownership changes, the 1953 correlation between profitability and ownership should have disappeared. It did. Although the coefficient on **Top5-0to5** in the last column of Table 4.B. appears significantly negative, this cell includes only one firm. Otherwise, the coefficients on the 1958 ownership variables are uniformly insignificant.

C. Implications for Bank-Firm Relations:

In his study of the zaibatsu dissolution program, Yishay Yafeh (1995: 166) attributes what he sees as the close bank-firm relations in post-war Japan to the lingering effects of zaibatsu dissolution.[5] Monitoring by a firm's "main bank" in Japan, he explains, emerged as a substitute for the earlier monitoring by zaibatsu shareholders. More specifically, monitoring by a firm's main bank:

> can be interpreted as evidence that close monitoring of managers by financial institutions, who are involved in firm operations and hold equity stake in it,

[5] Whether Japanese firms do have unusually close ties to a "main bank" is a subject beyond the scope of this paper.

> "corrected" for insufficient postreform monitoring by shareholders and hence led to increased profitability. ... "Main Bank" monitoring [can thus] be interpreted as a capital market evolution in response to an exogenously imposed ownership structure.

If firms did adopt "main bank" ties to correct for the zaibatsu dissolution program, then those firms subject to the program should disproportionately have formed such ties. In fact, according to our data the opposite occurred. In Table 6, we regress the change in a firm's leverage during 1953-58 on, inter alia, the fraction of the firm's shares sold under the program. As the first column shows, the coefficient is significantly negative: firms subject to the dissolution program reduced their dependence on debt over the period. Although the ex-zaibatsu firms did have disproportionately high leverage rates in 1953 (column 2), by 1958 that effect had disappeared (column 3).

[Insert Table 6 about here.]

IV. Conclusions

Under plausible conditions, concentrated shareholdings could either raise or lower a firm's profitability. If so, then the optimal ownership structure will vary from firm to firm. Given competitive capital, product, and labor markets, the firms that survive will disproportionately be those that select ownership structures suited to them. If investors equalize on the margin, regressions of profitability on equilibrium ownership concentration will then yield no significant results.

By using the zaibatsu dissolution program as an exogenous shock to the pre-war ownership equilibrium, we test this logic. Where most scholars have focused on the relation between ownership concentration and profitability in equilibrium, however, we examine the dynamics by which firms respond to such shocks. More particularly, we examine the process by which firms undid the occupation-induced changes and chose ownership patterns closer to the pre-war equilibrium.

Consistent with theory, we find that firms subject to the dissolution program did indeed restructure their shareholdings through the 1950s. Where listed firms were apparently able to restructure their ownership quickly by 1953, the unlisted firms took more time. As they did restructure their ownership, however, the earlier correlation between ownership concentration and profitability disappeared. We do not know why so many scholars since Demsetz-Lehn have observed a correlation between profitability and ownership concentration under apparently equilibrium conditions. Suffice it to say that our results are consistent instead with Demsetz-Lehn's.

Some observers have predicted that Japanese firms developed strong ties to banks in the 1950s to overcome the adverse effects of the zaibatsu dissolution program. In fact, the opposite occurred. Between 1953 and 1958, ex-zaibatsu firms reduced their debt. They did not need a banking substitute for the earlier shareholdings for a simple reason: they restructured their shareholdings themselves.

Table 1: Selected Summary Statistics

	n	mean	min.	max.
A. Ex-Zaibatsu Firms:				
1953				
Profits/Equity	199	.103	-.730	.576
Top 5 shareholdings	202	.291	.012	1
Leverage	201	.660	.153	1.253
Gross assets (million yen)	201	6,112	33	97,100
Exchange listed	202	.861	0	1
1958				
Profits/Equity	206	.068	-.290	.346
Top 5 shareholdings	205	.332	.065	1
Leverage	206	.657	.108	.935
Gross assets (million yen)	206	13,900	225	152,000
Exchange listed	220	.773	0	1
1958-1953 Differences				
53-58 top 5 difference	188	.020	-.725	.693
58-53 leverage difference	187	.002	-.341	.304
B. All Other Firms:				
1953				
Profits/Equity	438	.111	-.969	.622
Top 5 shareholdings	442	318	.019	1
Leverage	443	.643	.029	1.032
Gross assets (million yen)	443	2,190	32	35,100
Exchange listed	443	.707	0	1
1958				
Profits/Equity	504	.083	-.416	.467
Top 5 shareholdings	513	.368	.039	1
Leverage	515	.655	.000	1.228
Gross assets (million yen)	515	4,876	129	7,160
Exchange listed	565	.623	0	1
1958-1953 Differences				
53-58 top 5 difference	392	.023	-.543	.682
58-53 leverage difference	393	.002	-.463	.743

Sources: Nihon keizai shimbun sha, ed., **Kaisha nenkan [Corporations Annual]** (Tokyo: Nihon keizai shimbun sha, 1954, 1959).

Table 2:
Change in Ownership Concentration, 1953-1958

A. All Firms	*Dependent Variable: 58-53 Top 5 Difference*			
Fraction of shares sold	.063	.060	.047	.049
	(2.28)	(2.20)	(1.63)	(1.69)
Top 5 shareholdings	-.494	-.486	-.513	-.507
	(15.21)	(15.13)	(15.52)	(15.39)
Leverage	.064	.074	.100	.104
	(1.56)	(1.82)	(2.26)	(2.36)
Gross assets (x1000 yen)	-3.42	-3.47	-4.07	-3.90
	(4.28)	(4.39)	(4.82)	(4.65)
Exchange listed	-.062	-.065	-.074	-.075
	(3.92)	(4.18)	(4.57)	(4.65)
Profits/Equity		-.187		-.104
		(2.59)		(1.32)
Industry dummies	no	no	yes	yes
Constant	yes	yes	yes	yes
Adj. R^2	.29	.30	.31	.31
n	574	571	559	556

B. Listed and Unlisted Firms	*Dependent Variable: 58-53 Top 5 Difference*			
Fraction of shares sold	.218	.017	.177	.000
	(2.85)	(0.62)	(2.24)	(0.00)
Top 5 shareholdings	-.469	-.494	-.436	-.550
	(7.30)	(12.95)	(6.47)	(13.79)
Leverage	-.057	.129	-.038	.162
	(0.58)	(2.97)	(0.34)	(3.48)
Gross assets (x1000 yen)	-8.60	-3.29	-.157	3.86
	(1.03)	(4.54)	(1.81)	(5.03)
Profits/Equity	-.256	-.135	-.069	-.024
	(1.78)	(1.59)	(0.42)	(0.26)
Industry dummies	no	no	yes	yes
Constant	yes	yes	yes	yes
Adj. R^2	.34	.29	.36	.32
n	126	445	123	433
Firms involved:	Unlisted	Listed	Unlisted	Listed

Notes: The table gives the coefficients, followed by the absolute value of the t-statistics in the line below. Coefficient for gross assets is multiplied by 10^9.

Sources: Nihon keizai shimbun sha, ed., **Kaisha nenkan [Corporations Annual]** (Tokyo: Nihon keizai shimbun sha, 1954, 1959).

Table 3:

Profitability Among Ex-Zaibatsu Firms, 1953 and 1958

	Dependent Variable: Profits/Equity	
	1953	1958 .
Top 5 shareholdings	.112	.032
	(2.07)	(0.27)
Leverage	-.236	.007
	(3.20)	(0.20)
Gross assets (x1000 yen)	.212	.311
	(0.26)	(1.34)
Exchange listed	.025	.015
	(0.85)	(0.94)
Industry dummies	Yes	Yes
Constant	Yes	Yes
Adj. R^2	.16	.18
n	195	201

Notes: The table gives the coefficients, followed by the absolute value of the t-statistics in the line below. Coefficients for gross assets are multiplied by 10^9.

Sources: Nihon keizai shimbun sha, ed., **Kaisha nenkan [Corporations Annual]** (Tokyo: Nihon keizai shimbun sha, 1954, 1959).

Table 4:
Ownership Concentration and Profitability, All Firms

A. 1953

	Dependent Variable: Profits/Equity		
Top 5 shareholdings	.007	.206	
	(0.24)	(2.21)	
(Top 5 shareholdings)^2		-.220	
		(2.45)	
Top5-0to5			.101
			(0.05)
Top5-5to25			.105
			(0.92)
Top5-over25			-.016
			(0.42)
Leverage	-.176	-.173	-.175
	(4.52)	(4.47)	(4.50)
Gross assets (x1000 yen)	.549	.834	.694
	(0.70)	(1.06)	(0.87)
Exchange listed	-.002	-.005	-.003
	(0.14)	(0.33)	(0.24)
Industry dummies	Yes	Yes	Yes
Constant	Yes	Yes	Yes
Adj. R^2	.10	.11	.10
n	618	618	618

B. 1958

	Dependent Variable: Profits/Equity.		
Top 5 shareholdings	-.005	.009	
	(0.30)	(0.14)	
(Top 5 shareholdings)^2		-.015	
		(0.23)	
Top5-0to5			-13.477
			(1.88)
Top5-5to25			.056
			(0.64)
Top5-over25			-.012
			(0.57)
Leverage	-.034	-.033	-.031
	(1.47)	(1.43)	(1.37)
Gross assets (x1000 yen)	.234	.247	.283
	(0.99)	(1.02)	(1.15)
Exchange listed	-.013	-.013	-.012
	(1.64)	(1.65)	(1.54)
Industry dummies	Yes	Yes	Yes
Constant	Yes	Yes	Yes
Adj. R^2	.17	.17	.17
n	689	689	689

Notes: The table gives the coefficients, followed by the absolute value of the t-statistics in the line below. Coefficients for gross assets are multiplied by 10^9.

Sources: Nihon keizai shimbun sha, ed., **Kaisha nenkan [Corporations Annual]** (Tokyo: Nihon keizai shimbun sha, 1954, 1959).

Table 5:

Ownership Concentration and Profitability, 1953 Subsamples

A. All Firms	*Dependent Variable: 1953 Profits/Equity*			
Top 5 shareholdings	.266	.044	.708	-.147
	(0.66)	(0.34)	(1.80)	(0.48)
(Top 5 shareholdings)^2	-.089	.030	-.857	.173
	(0.14)	(0.20)	(2.48)	(0.57)
Leverage	-.104	-.252	-.001	-.114
	(1.02)	(5.19)	(0.01)	(0.96)
Gross assets (x1000 yen)	.082	2.85	84.1	.070
	(0.11)	(2.12)	(2.09)	(0.01)
Industry dummies	yes	yes	yes	yes
Constant	yes	yes	yes	yes
Adj. R^2	.23	.18	.18	-.14
n	89	375	56	98
Subsample:	Listed Postwar	Listed Prewar	Unlisted Postwar	Unlisted Prewar

Notes: The table gives the coefficients, followed by the absolute value of the t-statistics in the line below. Coefficients for gross assets are multiplied by 10^9.

Sources: Nihon keizai shimbun sha, ed., **Kaisha nenkan [Corporations Annual]** (Tokyo: Nihon keizai shimbun sha, 1954, 1959).

Table 6:

Leverage and Ownership Concentration, 1953 and1958

	Dependent Variable		
	58-53 leverage difference	1953 Leverage	1958 Leverage.
Fraction of shares sold	-.046	.065	.000
	(1.77)	(2.34)	(0.00)
Top 5 shareholdings	-.047	.125	.124
	(1.60)	(4.09)	(4.29)
Gross assets (x1000 yen)	.071	.735	1.31
	(0.09)	(0.87)	(3.20)
Exchange listed	.003	.007	-.020
	(0.18)	(0.45)	(1.43)
Industry dummies	Yes	Yes	Yes
Constant	Yes	Yes	Yes
Adj. R^2	.03	.14	.07
n	559	621	693

Notes: The table gives the coefficients, followed by the absolute value of the t-statistics in the line below. Coefficients for gross assets are multiplied by 10^9.

Sources: Nihon keizai shimbun sha, ed., **Kaisha nenkan [Corporations Annual]** (Tokyo: Nihon keizai shimbun sha, 1954, 1959).

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