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WHITHER THE *KEIRETSU*, JAPAN'S BUSINESS NETWORKS?

How were they structured? What did they do? Why are they gone?

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INTRODUCTION

The title of this volume and the papers that fill it concern business "groups," a term suggesting an identifiable collection of actors (here, firms) within a clear-cut boundary. The Japanese *keiretsu* have been described in similar terms, yet compared to business groups in other countries the postwar *keiretsu* warrant the "group" label least. The prewar progenitor of the *keiretsu*, the *zaibatsu*, however, could fairly be described as groups, and, in their relatively sharp boundaries, hierarchical structure, family control, and close ties to the state were structurally similar to business groups elsewhere in the world. With the break-up by the U. S. Occupation of the largest member firms, the purging of their executives, and the outlawing of the holding company structure that held them together, the *zaibatsu* were transformed into quite different business entities, what we and other literature call "network forms" of organization (Podolny and Page, 1998; Miyajima, 1994).

Our purpose in this chapter is to discuss Japan's business groups, widely known as the *keiretsu*. It is our view, supported by wide-ranging and consistent evidence, that the Japanese postwar *keiretsu* system is mostly a thing of the past. In the face of powerful forces of institutional and economic change, the groups have "withered away," such that they no longer represent a significant feature of the Japanese economic landscape, despite having been so from the 1950's to the early 2000's. While our colleagues' chapters treat business groups in other, mostly emerging economies as in general "alive and well," our review of the *keiretsu* is essentially retrospective.

The layout of the paper is as follows: We give an overview of the horizontal and vertical keiretsu; how they differ from business groups in other countries; where they came from; how

they were structured; their benefits and liabilities for individual firms and the Japanese economy as a whole; why they have largely died out; and whether they—the vertical groups in particular—might be revived.

What are the *keiretsu* and where did they come from?

The term, "*keiretsu*," has been applied to a variety of Japanese enterprise forms. All are clusters of independently managed firms whose intertwined activities were reinforced by governance mechanisms such as presidents' councils, partial cross-ownership, and personnel exchanges.

The two principal "*keiretsu*" types that have garnered the most attention from scholars, business journalists, and practitioners are, first, the "horizontal" (also called financial –*kinyuu*—*keiretsu* or enterprise groups—*kigyou shudan*) *keiretsu*; and, secondly, the vertical manufacturing *keiretsu* composed of a manufacturer and its affiliated suppliers.

Less analyzed and discussed have been the distribution *keiretsu*--the dedicated retail networks of large manufacturers such as Matsushita, Shiseido, and Fuji Photo Film (Shimotani, 1995). Other corporate clusters sometimes referred to as *keiretsu* are department stores linked with railroads and amusement parks, and bank/non-bank financial clusters.

We begin with some historical consideration of how the postwar *keiretsu* groupings evolved from the prewar *zaibatsu*.

From zaibatsu *to* keiretsu

The "*zaibatsu*" were multi-layered and industrially diversified business entities coordinated from the top by a family-controlled headquarters or holding company. Like the

business groups of the developing world today, the prewar *zaibatsu*, beginning around 1910, acquired pyramidal structures, such that, through chains of cascading equity ties, a small number of family owners acquired control over large segments of the Japanese economy. The most prominent prewar *zaibatsu* were Mitsubishi, Mitsui, Sumitomo. Originating as integrated firms, they expanded rapidly after the Meiji Restoration—the coup d'etat that deposed the Shogun and ended 200 years of Tokugawa feudalism—and expanded again with the military buildup in the 20th century.

These spurts of growth contributed to their evolution into the distinctive *zaibatsu* business group form. For example, the Mitsubishi *zaibatsu* began spinning off its internal business divisions of shipbuilding, mining, banking, insurance and the trading company into separate legal corporations between 1917 and 1920. It was thus transformed from a single integrated corporate entity into the pyramidally-organized business group form of holding company overseeing an array of legally distinct affiliated businesses. The *zaibatsu* headquarters owned and controlled the capital stock of multiple affiliated businesses and was in turn wholly owned by the Iwasaki family. With close ties to the state and leading politicians, they and the other *zaibatsu* families were also an integral part of the prewar power structure.

By 1937, the "big three" *zaibatsu* were in control of 12% of a total corporate capital in Japan, rising to 23% by the end of the war. The ten largest *zaibatsu* then accounted for 35%.

The postwar era: the emergence of enterprise groups-- the horizontal *keiretsu*

As part of its general program of economic democratization, the Supreme Command of

the Allied Powers under General Douglas MacArthur widely redistributed the stock of the component companies of the confiscated former *zaibatsu*. In this relatively brief period of dispersed shareholding in the Japanese economy a number of enterprises fell prey to hostile takeover. That experience spurred the member enterprises of the big three former *zaibatsu* to weave a defensive circle-like web of cross-shareholdings, which, similar in function to the prewar holding company structure, guaranteed that the group held the majority of an affiliated firm's stock, a buffer against takeover that remained in place across most of the postwar era.

Linked together by cross-shareholdings, executive transfers, preferential trade and lending, and the regular encounters of chief executives in *shacho-kai* or presidents' councils, the member firms of the former Mitsui, Mitsubishi and Sumitomo *zaibatsu*, were reunited. The modern big-six horizontal *keiretsu* came into being when the former *zaibatsu* were joined in the 1960's and early 70's by the looser-knit bank-centered groups formed around Fuji, Sanwa and Dai-Ichi Kangyo banks. However, even the bank-centered groups had some *zaibatsu* lineage. The Fuyo (Fuji Bank) group subsumed the prewar Yasuda *zaibatsu*, while the Furukawa *zaibatsu* was absorbed into the DKB group.

In common economics parlance, "horizontal" refers to relationships among competitors within an industry. The "horizontal" or *yoko* (meaning lateral or nonvertical) *keiretsu* were diverse in industry makeup owing to the "one-set principle" that guided their prewar *zaibatsu* design. In contrast to the hierarchical ordering of the vertical *keiretsu*, the big-six groups were communities of equals. Still, they had their leaders: large commercial ("city") banks served as nerve center and general coordinator of the group. The bank typically hosted the monthly

presidents' council meeting and orchestrated the activities of the member firms through its lending, equity, and board connections. The large trading companies (*sogo shosha*) had similarly lead roles in the early postwar decades, but as their function in the economy as broker of commodity flows declined, so did their influence over group affairs (Yoshino and Lifson, 1986). A major manufacturer such as Mitsubishi Heavy Industries provided the third branch of a leadership triumvirate.

*The presidents' council (*shacho-kai*)*

The one formal governance structure associated with each horizontal *keiretsu* was the *shacho-kai*, or presidents' council, a regularly convening association of the presidents (*shacho*) of member firms. Emerging soon after the SCAP break-up of the *zaibatsu* and purge of senior management as an information-sharing and mutual support device for the new generation of executives taking the helm of former member firms, the Presidents' councils were, until the mid-nineties when membership turnover increased markedly.

While lists of big-six presidents' council members are publicly available (see Table 1 for the 1993 list), the internal deliberations of the councils were not revealed. Participants painted the councils as mere social gatherings or, at most, forums for the discussion of broad economic issues; in no way governance or management devices for coordinating strategy or monitoring member firms. Yet council membership marks a company as a centrally positioned member of a horizontal group. Research also has shown them having significant net effects on the performance of member firms.

TABLE 1 ABOUT HERE

The vertical *keiretsu*

The second major *keiretsu* form was the manufacturing or supply chain groups: suppliers, subcontractors, and distributors organized in the vertical division of labor around a large industrial firm such as Matsushita, Nippon Steel, or Toyota.

There is no counterpart to the *shacho-kai* in the vertical *keiretsu*. The "cooperative associations" (*kyoryoku-kai*) of suppliers maintained by manufacturers are sometimes cast in that role (Miwa and Ramsayer, 2006; Sako, 1996), but these are very loose organizations that typically encompass *keiretsu* and unaffiliated suppliers alike (Guillot and Lincoln, 2004).

Otherwise, the ties binding firms within the horizontal and vertical *keiretsu* are generally the same: cross-shareholding, personnel transfers, and preferential business. Given their vertical supply chain logic, the personnel transfers have been of broader scope and a greater source of cohesion than in the horizontal groups. Exchanges of engineers and other trained personnel ensured coordination of development and production processes between customer and supplier. Oft-noted, in addition, are the *shukko* transfers from higher to lower tier firms that reduced the former's redundant labor while enabling it to claim adherence to permanent employment norms.

Much scholarly and journalistic writing on the vertical *keiretsu* sees the close, cooperative, and flexible relations typical of these networks facilitating responsiveness, coordination, and learning among the affiliated firms. Unlike the "arms-length" and adversarial supplier relations typical of the American auto industry, *keiretsu* suppliers supported one another by, for example, assisting in the development of products, parts, processes, and people. While an

older school of Japanese "dual economy" thought saw the parent manufacturers in such vertical networks exploiting the smaller and dependent up- and down-stream firms as risk buffers, later scholarship based on better evidence described the partnership between supplier and the assembler as one of risk-sharing: each party supporting the other by absorbing some portion of its costs and risks (Asanuma and Kikutani, 1992; Okamuro, 2008).

The horizontal and vertical groups as overlapping networks

Often portrayed as distinct phenomena, the horizontal and vertical *keiretsu* were intertwined and overlapping networks, as Figure 1 depicts. The Toyota group is a vertical *keiretsu* aligned chiefly with the Mitsui horizontal group, as is Nissan within Fuyo, NEC in Sumitomo, Furukawa in DKB, etc. By the same token, where vertical *keiretsu* spanned horizontal group boundaries, they served to bridge or tether them. Toyota Motor was a Mitsui *Nimoku-kai* member (technically an "observer"). Daihatsu, however, is a Toyota affiliate that maintained a seat on the Sanwa *Sansui-kai*. Similarly, Hitachi's membership on the presidents' councils of the Fuyo, DKB, and Sanwa groups exerted "gravitational pull" on those three clusters, drawing them together in network space.

FIGURE 1 ABOUT HERE

Processes of group formation

A part from their descent from the prewar *zaibatsu*, the *keiretsu* emerged from a combination of centrifugal and centripetal processes. Independent firms fell into the orbit of a group through banking and trading relationships that grew tighter over time. Regional proximity

also gave rise to affiliation. Manufacturers in Aichi Prefecture inhabited a Toyota- centric world. Matsushita's lean toward Sumitomo derived from common Osaka location. Sometimes a bank- or customer-led bailout of an independent company brought it into the *keiretsu* web of exchange and control. Daihatsu was an independent maker of minicars that joined the Toyota *keiretsu* after a rescue and turnaround by Toyota in 1967. Stand-alone firms were also occasionally made *keiretsu* members chiefly in order to serve as "*ukezara*" (saucers) catching the overflow of redundant group firm employees (Lincoln and Ahmadjian, 2001).

The centrifugal process of *keiretsu* formation is that of an integrated firm divesting internal divisions that became independently managed but affiliated companies (Shimotani, 1997). The spin-off might be coerced: SCAP's break-up of the prewar *zaibatsu* and their subsequent re-constitution as horizontal *keiretsu* forms or Toyota's spin-off in the late 1940's of (then) Nippondenso and Toyota Motor Sales in response to financial crisis and pressure from main banks, Mitsui and Tokai (Ito, 1995; Sako, 2006:100).

Another kind of divisional spin-off highlights the interface between the *keiretsu* system and the postwar Japanese economy's distinctive patterns of innovation and entrepreneurship. Many *keiretsu* expanded through a process of established firms generating new product ideas, forming divisions to commercialize them, then hiving off the divisions as separate companies expected to grow and thrive on their own, all the while maintaining a measure of parent firm support and control. The strong cultures and tight functional integration typical of the Japanese corporation did not allow the internal product division the kind of autonomy afforded their counterparts in a Hewlett Packard or Johnson and Johnson (Itoh, 1995; Sako, 2006; Yoshihara et

al., 1981). The spin-off of the division as a *keiretsu* affiliate provides a substitute "quasi-intrapreneurial" environment from which parent and spin-off might both derive benefit. Such *keiretsu*-ization of innovation and entrepreneurship (Gerlach and Lincoln, 2001), however, has been criticized in recent years as a leading reason for Japan's failure to acquire a strongly entrepreneurial culture of new firm creation (Chesbrough, 2006).

Who are the members?

Given the fluid network organization of Japan's business groups, listing all the members—a relatively straightforward exercise in other countries—is a difficult, if not impossible, task. That, however, has not stopped scholars and journalists from trying. Classifications and directories abound—many published by for-profit marketing and consulting firms (see citations to Dodwell Marketing Consultants; *Kaisha nenkan*; *Keiretsu no kenkyuu*; and *Kigyou keiretsu soran* in the References). Miwa and Ramsayer (2006) rightly criticize *keiretsu* research for its overreliance on such listings, which impose arbitrary cut-offs on continua such as equity ownership or main bank debt shares in order to dichotomously differentiate "member" from "nonmember" firms.

For the horizontal *keiretsu*, the directories generally begin with presidents' council lists, adding firms whose equity, banking, trade, and other ties signified close association with the council members. Clearly, firms seated on the councils were "members" if any firm was. The problem was the noncouncil firms. By such criteria as main bank dependence some noncouncil firms tilted strongly toward a particular group (e.g, Matsushita's Sumitomo leanings). Others by the same criteria were much more weakly so inclined (e.g., Honda toward Mitsubishi). Portraits

of the *keiretsu* as peaks and valleys in the undulating landscape of Japanese corporate ties can capture such subtle differences. The "group" concept really cannot.

If it is difficult to determine what firms belong to which, if any, groups, it is equally difficult to estimate the shares of the Japanese economy those *keiretsu* groups control. Consequently, estimates vary widely, and all are suspect. Ito (1992:188), for example, calculated that the big-six groups account for 5% of the Japanese labor force and 16% of total sales, while Pempel (1998:70) estimates that they comprise 0.1% of all Japanese companies but 25% of postwar GNP and 75% of the value of shares on the Tokyo Stock Exchange.

Keiretsu *as clusterings of the Japanese intercorporate network*

A superior alternative to the directory classifications is an empirical cluster analysis of the concrete ties among companies economy-wide. Several analysts (Scott, 1986; Gerlach, 1992b) have used network clustering algorithms to empirically infer groupings in the Japanese corporate network. Table 2 presents the results of Lincoln and Gerlach's (2004: Ch. 3) application of the CONCOR algorithm to data on the networks of trade, lending, equity, and director transfer ties among the 50 largest financials, 200 largest industrials, and 7 largest trading companies in the Japanese economy as of 1978. In this methodology, *keiretsu* materialize as blocks or clusters of firms that occupy structurally equivalent positions in the network. We present the 1978 results because, of blockmodels generated by Lincoln and Gerlach every 3-4 years from 1978 to 1998, the analysis for that year gives the clearest picture of *keiretsu* groupings. In each succeeding period, the empirically derived clusters were less sharply drawn and corresponded less well to such external criteria as president's council affiliations. By the

mid- to late-nineties, the CONCOR portrait of the large firm network became one of general *keiretsu* dissolution, whether of the big-six horizontal groups or such historically high-profile vertical groups as Nissan, Toyota, Nippon Steel, Hitachi, and Matsushita.

TABLE 2 ABOUT HERE

The scope of firm and group: diversification strategy and the *keiretsu*

A defining strategic attribute of business groups in emerging economies, product-line diversification distinguishes the post-war *keiretsu* as well, but in ways that differ markedly between the horizontal and vertical groups. The *zaibatsu*, as noted, were crafted in accordance with a "one-set" principle:" each group includes one large firm from every major sector—financial, distribution, extractive, and the leading manufacturing industries. In the tightest-knit *zaibatsu*—Mitsubishi and Sumitomo— but not the looser "bank-centered groups--Fuyo, Dai-ichi Kangyo, Sanwa-- adherence to the one-set rule mostly excluded industry competitors. Moreover, the amount of intra-group commercial trade was relatively low (see Japan Fair Trade Commission, 1992), despite the brokerage and procurement role of the group trading company and, at the margin, a tendency for group firms to favor one another's products (Kirin beer consumed at Mitsubishi gatherings, Asahi quaffed at Sumitomo affairs). Most important was the group firms' dependencies on group banks for investment capital and brokerage services.

The interplay between internal organization and diversification strategy is particularly notable in the case of the vertical groups. Usually cast as a large manufacturer and its chains of upstream suppliers and downstream distributors, the ancillary firms clustered around a parent manufacturer also served to expand the latter's product market scope. The Toyota Group is a

conspicuous case in point. Toyota Motor has been a relatively small corporation specialized in the assembly of sedans, a sharp contrast with the extensively diversified and divisionalized General Motors (on Japanese diversification strategy see Sako, 2006; Odagiri, 1992; Yoshihara et al., 1981). But through its partnerships with *keiretsu* affiliates, Toyota broadened its product line to include trucks (produced by Hino), minicars (produced by Daihatsu), and other specialty vehicles (Shioji, 1995). This pattern was just one of several ways in which the *keiretsu* took on some of the strategic and operational functions that in the U. S. and elsewhere remained the domains of individual firms.

THE ECONOMIC CONSEQUENCES OF *KEIRETSU*

The question of economic consequences can be addressed at two levels: (1) the effects of keiretsu affiliation on the viability and performance of individual firms; and (2) the benefits and liabilities of the keiretsu system for the economy as a whole. Most of our attention is on the first question, but the two are clearly intertwined, and it is useful to begin with some consideration of an issue often raised regarding business groups in emerging economies: do they fill gaps created by market imperfections and undeveloped institutional infrastructure?

Macro effects: The functions of the *keiretsu* in the developing postwar economy

As in other economies, Japan's business groups initially functioned to remedy certain market and institutional deficiencies. High dependence for investment capital on bank loans provided by group commercial ("main") banks or trade credits provided by trading partners gave the group an "internal capital market" function. The group *sosha*'s (trading company) brokerage and procurement roles afforded scale and coordination economies in a balkanized and

convoluted distribution system. The absence of mature producer goods markets supply infrastructure in the 50's forced manufacturers to found and support and coordinate suppliers of critical components and materials (Odaka et al., 1988). As noted, the lack of venture capital and other facilitating structure and culture of entrepreneurship was met by *keiretsu* networks internalizing innovation and entrepreneurship through the creation and spin-off of new product divisions that remained within the borders of the group (Gerlach and Lincoln, 2001).

Micro effects: Keiretsu affiliation and the performance of firms

Most students of business groups are ultimately interested in their impact on the performance of member firms and, by extension, the economy as a whole. Much discussion of the question appears in the *keiretsu* literature. Three competing positions can be identified: (1) the *keiretsu* do nothing; (2) the *keiretsu* have positive economic effects; (3) the *keiretsu* have negative economic effects.

Did the horizontal groups do anything?

The claim of no economic consequence in the maturing postwar Japanese economy was quite often made regarding the horizontal keiretsu. In this camp, if public statements be any guide, have been a multitude of Japanese businesspeople and politicians. This was particularly true at the pinnacle of Japanese economic power-- the late 80's-- when the *keiretsu* phenomenon was eyed suspiciously by the West as a "structural" (nontariff) impediment to trade and investment in Japan (see Imai, 1990).

A more scholarly story of the irrelevance of the groups is that they were historical and cultural residues: the *zaibatsu* names persisted in the postwar era as did ongoing but

inconsequential *shacho-kai* meetings, but neither had much economic relevance. Moreover, Japan's Anti Monopoly law, it was said, precluded council involvement in the business affairs of member firms. Western scholars by and large accepted the view that the presidents council were no governance or management device, tempting as it might be to view the council as a group-wide "board of directors" or "control tower" akin to the prewar *zaibatsu* holding companies (Caves and Uekusa, 1978).

Horizontal groups as oligopolists

Yet sizable qualitative as well as quantitative bodies of evidence have shown that groups have reall consequences for their affiliate firms. Early treatments by industrial organization economists (Caves and Uekusa, 1976; Hadley, 1970), viewing the problem through an antitrust lends, cast the horizontal groups as colluding oligopolists. Caves and Uekusa suggested that in their intragroup *keiretsu* firms practice efficient pricing but in their business dealings with outsiders they exploited their collective market dominance. The evidence that big-six firms were both less profitable and grew more slowly than independent firms was hard to reconcile with that theory, so, apart from Japan's peculiar tradition of Marxist economics, few scholars since have framed the *keiretsu* question in "monopoly capital" terms (Miwa and Ramsayer, 2006).

Horizontal groups as efficient corporate forms and governance structures

This same evidence of financial underperformance was also at odds with a crop of 1980's theories that attributed the transaction and agency cost efficiencies of business groups and networks (Aoki, 1988; Dore, 1983; Goto, 1982; Imai and Itami, 1984; Thurow, 1988). In the terminology of Oliver Williamson (1985), groups were "hybrid" forms: economizing both on

market (weak or absent price mechanisms) and organizational failures (e.g. bureaucratic rigidities). Close monitoring by *keiretsu* partners was claimed to improve the quality of Japanese corporate governance, relative to the U. S. system of dispersed ownership. Although the proportion of one affiliate's stock owned by any one other was typically small (limited ownership by banks being limited to 5% until 1997), the proportion held by the group as a whole could be substantial—enough, as noted, to prevent a predator from amassing a controlling stake. Moreover, banks and trading companies were perceived to act as group-assigned "delegated monitors," scrutinizing and intervening in the behavior of client firms to a degree disproportionate to their transaction volumes or equity stakes (Lincoln and Gerlach, 2004; Sheard, 1994).

What the horizontal groups really do: risk-sharing and resource-shifting

Interventions by the horizontal *keiretsu* in the affairs of affiliate firms to realign financial fortunes, alter strategic orientation, and restructure managements are well documented by a rich case study and journalistic literature. In the 1970's, Sumitomo Bank orchestrated a rescue of the ailing Mazda Motors. Sumitomo Bank provided new loans, dispatched managers, cautioned other group members not to sell their Mazda shares, negotiated lower prices for steel and other inputs, and even encouraged Sumitomo executives to buy Mazda cars (Hoshi and Kashyap, 2001; Pascale and Rohlen, 1983). Using similar methods, the Mitsubishi group rescued member Akai Electric from bankruptcy a decade later (Kester, 1991). In 1982, members of the Mitsui group stepped in to avert an embarrassing scandal at the group department store, Mitsukoshi. The retired CEO of Mitsui Bank, a Mitsukoshi board member, led a successful

attempt to oust Mitsukoshi's president and restore Mitsukoshi's reputation and profitability (Gerlach, 1992a).

A significant body of quantitative evidence likewise shows *keiretsu* and main bank interventions to be effective in averting bankruptcy and restoring troubled affiliates to growth and profitability. A pioneering study of a sample of financially distressed firms found main bank and big-six ties to be associated with faster recovery in (Hoshi, Kashyap, and Scharfstein, 1991). Complementary studies by Kaplan and Minton (1994), Kang and Shivdasani (1995), and Morck and Nakamura (1999) show that shortfalls in performance on the part of client firm generally trigger transfers of executives from *keiretsu* banks to the board of the client firm and that, following such transfers, the firm experiences an improvement in profitability, growth, and other performance outcomes.

The downside to horizontal group interventions: A drag on strong firms and the economy as a whole

Yet Lincoln, Gerlach, and Ahmadjian (1996; see also Lincoln and Gerlach, 2004: Ch. 5) show that big-six affiliations benefit poor-performing companies at the expense of their high-performing counterparts. Their result is consistent with a number of arguments for the economic functionality of the *keiretsu* groups. Nakatani (1984) and Aoki (1984) proposed a risk-pooling or insurance rationale for the existence of the groups: member firms a premium or agency fee, which supplies the pool of funds from which bailouts and turnarounds are financed. The charge, however, might better be described as a tax, for it falls primarily, not on the firms most at risk of failure and thus in need of rescue, but on their healthiest brethren.

During the "lost decade" of the 90's when Japan seemed wholly incapable of getting its economic house in order, such interventions (sometimes orchestrated through a private sector "convoy" set in motion by government ministries) was strongly criticized as spawning a legion of unfit "zombie" companies while preventing fit firms and banks from recovering and weakening the economy as a whole (see Katz, 1998; Sugawara, 1998).

The performance effects of the vertical keiretsu: all upside?

There is somewhat less hard quantitative evidence on the performance consequences of the vertical *keiretsu* than regarding the horizontal *keiretsu*, the likely reason being data availability. Nonetheless, numerous case and survey studies hail the advantages in efficiency and innovation terms of the close, trusting, and collaborative buyer-supplier relationships typical of the Toyota *keiretsu* and other vertical industrial groups (Asanuma, 1989; Dyer, 1996; Womack et al., 1990).

Indeed, more than the horizontal *keiretsu*, the vertical *keiretsu* have been widely viewed as economically rational business groupings, not mere holdovers from Japan's economic "adolescence" (Katz, 1998). Drawing on Williamson's transaction cost theory, Asanuma (1989) and others have argued that the kinds of high-trust, tacit knowledge-sharing, implicit contracting styles found in the vertical *keiretsu* play an efficient governance role in the presence of specific asset investments—the product or process is relatively new, unique, customized and embedded in an extant set of interfirm relationships). A study by Nagaoka et al (2008) shows that Japanese automakers are most likely to turn to *keiretsu* suppliers as opposed to independent suppliers when the complexity and specificity of the part sourced are high.

Have Japan's vertical *keiretsu* performed what arguably has been *the* primary function of horizontal *keiretsu*, as well as business groups around the world; namely, to share or pool the members' risks (Khanna and Yafeh, 2005)? Both qualitative and quantitative evidence says they do. By extending trade credits and setting price and volume in purchases of materials and components a customer firm can easily manipulate the earnings and profits of a dependent supplier (Lincoln and Gerlach, 2004: Ch. 5; Okamuro, 2008; Schaede, 2008). The steep annual price reductions that Toyota imposes on its suppliers over the life of a vehicle model are much noted (Womack et al., 1990). But also well-documented is Toyota's practice of working worked extensively with its suppliers to ensure that they can meet its demands and still succeed in business. Moreover, Toyota's interventions to discipline the management and improve the performance of its suppliers are well chronicled (Ahmadjian and Lincoln, 2001). A careful quantitative study by Okamuro (2001) finds that the suppliers to all the major Japanese automakers are buffered from the demand fluctuations that the automakers must absorb. The variance in the suppliers earnings is consistently lower than that of manufacturers and the greater the dependence of the supplier and equity ownership by the customer the more this is true.

Lincoln and Gerlach (2004: Ch. 5) approach the analysis of risk sharing in the vertical groups with a somewhat different design. Measuring risk-sharing/resource-shifting interventions as faster-than-average profit and growth regressions to the mean, they find significant evidence of intervention in the Nissan and Hitachi groups, not in the Toyota and Matsushita groups.

They see these results as consistent with Hitachi and Nissan's past reputations for paternalistic and "wet" supplier relations, contrasted with the "drier" and *kibishi* (tough, harsh)

supply chain management for which Matsushita and Toyota are known. Lincoln and Gerlach suggest that faster regression to the mean of profit rates and sales growth) may be testimony to clumsier—less hands-on and fine-grained—monitoring. Prior to its acquisition by Renault, Nissan was criticized for its combination of lax and "wet" supplier management (Pascale and Rohlen, 1983). Unlike Toyota's supplier relations regime in which never permitted suppliers to drift into inefficiency, Nissan's suppliers, by contrast, might descend far into a downward spiral before the parent company took notice and moved to bail the supplier out and then without significant restructuring to keep the firm on track. Morck and Nakamura observe a similar pattern in the interventions of main banks directed at group and nongroup firms. Main bank moves to rescue clients outside their groups required stronger signals of distress (liquidity crunches, declines in stock prices), involved more restructuring of the target, and produced a steeper return to normalcy.

THE "WITHERING AWAY" OF *KEIRETSU*

The evidence of *keiretsu* breakdown since the 2980's is substantial. Lincoln and Gerlach (2004) performed a series of blockmodel (network clustering) analyses of the largest 257 financials, industrials, and trading companies in the Japanese economy every two to three years from 1978 to 1998. In the first period, they observe sharply-etched clusterings that correspond well to the usual intuitive images and classifications of horizontal and vertical groups (for example, by president's council or commercial directory classification). By the late 90's, however, identifiable *keiretsu* clusters are much more difficult to discern, and companies

presumed linked by name (e.g., Mitsubishi) or presidents' council are no longer adjacent in the network space but are often far apart. Analyses of specific ties-- cross-shareholdings, in particular-- likewise document the unraveling of the *keiretsu*. The sell-off of cross-shareholdings by major banks and insurance companies (again, the erstwhile leaders of the horizontal *keiretsu*) and their replacement with foreign institutional shareholders did significant violence to the cohesion and definition of the groups (Ahmadjian and Robinson, 2001). Older vertical groups such those formed around older firms in declining industries by the end of it were essentially nonexistent: Nippon Steel most conspicuously, Hitachi to a lesser degree.

More fine-grained regression analyses reported by Lincoln and Gerlach (2004: Ch. 4) likewise show fraying of specific intercorporate ties (president's council, trade, lending, cross-shareholding, and director transfer) through this period of time and accelerating in the late 90's. Finally, they find substantial evidence that *keiretsu* risk-sharing intervention diminishing as the "lost decade" of the nineties progressed. Lincoln and Guillot (2008), furthermore, find *keiretsu* affiliations figuring less and less in Japanese electronics firms' choice of strategic alliance partner, particularly when the alliance aim was R&D. On the other hand, vertical (but not horizontal) *keiretsu*-based alliances formed to achieve capacity reduction and other manufacturing and distribution economies actually accelerated in the late nineties, a time of major economic restructuring.

Why the decline?

What are the reasons for the unraveling of the groups? They number more than we can

adequately address. More thorough treatments can be found in Lincoln and Gerlach (2004) and Schaede (2008). We focus on the following developments: globalization, technological change, financial consolidation, accounting rule change, and corporate governance reform.

Banking consolidation

The wave of major bank consolidations at the end of the 90's wrought a dramatic and sweeping change in the Japanese financial landscape. Bank mergers have a lengthy history in Japan, but what was distinctive in the late 1990s merger wave was the scale of the financial institutions involved and the enormity of their problems. Early in the decade two important bank mergers took place: Mitsui Bank and joined with Taiyo-Kobe Bank in 1990 to form Sakura, and Mitsubishi merged with Bank of Tokyo in 1996. A later series of mergers linked the trust banks of the big-six groups to their counterpart city banks. These were dwarfed, however, by a late nineties succession of mega-mergers that fundamentally altered the structure of Japanese banking and its interface with the big-six horizontal groups.

In August, 1998, three of Japan's largest banks (two at the helms of major horizontal groups) -- Fuji, Dai-ichi Kangyo, and Industrial Bank of Japan – announced plans to merge into Mizuho Bank, a financial behemoth whose ¥140 trillion in assets made it half again the size of the world's next largest institution, Deutsche Bank. On October, 1999 came the news that Sumitomo Bank and Sakura (Mitsui) would merge. The implications for Japan's postwar business group structure were huge: together, these two bank mergers reduced from six to four the commercial "city" banks, long the institutional leadership and public face of the horizontal *keiretsu*.

The merger of the banks was followed by a consolidation of their *keiretsu* industrial

partners. Kawasaki Steel of the DKB group and Nippon Kokan (NKK) of Fuyo announced in 2000 an alliance in distribution, maintenance and materials purchasing. A month later, Fuyo trader Marubeni announced with DKB counterpart Itochu a consolidation of steel operations in China, prompting rumors that merger plans were afoot. Tie-ups between Mitsui and Sumitomo industrial companies also took place. Mitsui Chemical and Sumitomo Chemical announced a merger in the Fall of 2001, labeled by the business press: "…*the first alliance on such a scale beyond the boundaries of zaibatsu business groups in the manufacturing industry.*"

Accounting rule change

Revision of financial reporting requirements was another reform initiative aimed at increasing the transparency of Japanese firms and forcing responsiveness to shareholder interests. In their financial reports for the FY 1999 (ending March 31, 2000) public firms were required for the first time to provide consolidated accounts that included results from affiliates over which they had "de facto" control, even were the equity stake small. Under the old accounting rules, companies could hide both liabilities and assets in partner firms (the oft-noted "tunneling" practice of business groups around the world). The accounting change curtailed such *keiretsu* practices as moving personnel (*shukko*) to affiliates or the bailouts and restructurings that further depend on clandestine resource transfers.

A major spur to the unraveling of a signature keiretsu tie was an April 1, 2001 accounting rule change, requiring corporations to report assets at market, rather than book, value. The new rules showed many banks to be much worse off than they had appeared and insufficiently capitalized to support their lending. In anticipation of the change, banks rushed dump cross-held

shares. The impact on the horizontal groups was dramatic. Figure 2 is taken in from the NLI (Nippon Life Insurance) Research Institute report on cross-shareholding trends within the big-six horizontal groups (Kuroki, 2001). While intragroup equity ties were relatively stable up to 1999, marked declines are evident from 1999 to 2000 (particularly steep in the case of Mitsubishi).

FIGURE 2 ABOUT HERE

Corporate governance reform

Also geared to improving managerial accountability were proposals to change the structure and composition of boards of directors (Ahmadjian, 2003). An amendment to the Commercial Code in 1994 required the addition of an outside auditor to the board to ensure independent oversight of corporate finances. Another amendment in 1997 removed legal strictures on stock options, thereby making available an incentive mechanism popular in the US and thought to be effective in aligning the interests of management with those of shareholders.

Beyond these regulatory changes, a number of large companies announced plans to reduce the size of their boards in order to speed decision-making and end the practice of routinely granting director status to high-ranking executives. Under the new rules implemented in the commercial code in April, 2003, firms could choose between the traditional system of internal auditors or adapting the U. S. model of outside directors and an audit committee. In 1997, Sony, having reduced its board from 38 to 10 in 1997, switched to the U. S. system and increased its outside directors from three to five. Large boards had played an integral role in the *keiretsu* system of executive exchanges and interlocking directorates.

Technological change

The vertical *keiretsu* were weakened by these forces and more. Foreign investors pressed companies to sell off shareholdings in affiliates. Vertical *keiretsu* experience and Japanese-style supply chain management more broadly had been seen as a "relational" capability, leveraged by Japanese manufacturing firms into superior efficiency, quality, reliability, flexibility and development speed (Dyer, 1996; Nishiguchi, 1994; Womack et al., 1991). The competitive advantage bestowed by *keiretsu*-style supply management diminished in the 90's. One reason was the advent of "modular" manufacturing, which requires less integration/articulation/customization of production stages (Sturgeon, 2006). To lower costs. Japanese automakers increasingly put in multiple models standardized parts and assemblies that they sourced from large suppliers, including one another. Moreover, supply chain software and online procurement systems, enabled companies to automate away some of the hands-on and face-to-face communication and monitoring tasks that under the *keiretsu* system had bound customer to supplier. Moreover, the globally-conspicuous success of the Japanese "lean production" paradigm, comprising just-in-time, continuous improvement, total quality, *and* tight supply chain coordination, itself factored in vertical *keiretsu* decline. For decades, Japan's competitors had been absorbing the lessons of that model, such that Japanese-style operations management had become the global standard and so afforded the Japanese less advantage than in the past.

Finally, exchange rate fluctuations, labor and transportation costs, and local content rules together drove Japanese manufacturers to move production abroad and in so doing drop domestic *keiretsu* suppliers for new-found foreign ones. Manufacturers like Toyota found they could transfer their home-grown *keiretsu* capabilities in cultivating high-trust, long-term

partnerships with foreign suppliers.

Delegitimation

Less easily documented is the general cultural and political "delegitimation" of the *keiretsu* phenomenon that picked up speed in the late nineties. When Nissan's Ghosn undertook to dismantle the Nissan supply *keiretsu*, he was much criticized in the Japanese press and by politicians for his harsh and "un-Japanese" tactics. But as his turnaround of Nissan succeeded, Ghosn's methods were vindicated, public opinion shifted, and "wet" *keiretsu*-style supplier relations became less a sacred cow.

A related shift in the winds was that banks and trading partners that refused to bail out distressed affiliates found themselves rewarded, not punished as in the past, by the stock market (Lincoln and Gerlach, 2004). Inspired, perhaps, by Prime Minister Koizumi's reform efforts at the national level, even local government came around. In 2002, the Nagoya Regional Tax Bureau presented Toyota Motor with a tax bill for undeclared income. The Bureau ruled that the extraordinarily high prices Toyota had paid a struggling supplier, Toyota Boshoku, were transparent subsidies, not operating expenses. In an earlier era, government agencies, whether local or national, would have tolerated, if not tacitly supported, *keiretsu* risk-sharing interventions of this sort.

Keiretsu redux?

There have been press reports in recent years that the vertical *keiretsu* are coming back (Web Japan, 2005). Chiefly these call attention to the formation of new cross-shareholdings between some manufacturers and their suppliers. Most surprising, given the company's complete

elimination of *keiretsu* ties during Carlos Ghosn's restructuring drive, was the news that Nissan was again taking equity ties in its suppliers. Even Honda, famous among Japanese automakers previously for its lack of a supply *keiretsu*, was forging equity bonds with its principal suppliers. Toyota, too, was hiking stakes in affiliate companies, as discussed in more detail below.

The primary reason for the renewed interest in vertical cross-shareholdings was manufacturers' fear that strategically important suppliers might succumb to foreign control. With the rise in foreign investment and general liberalization of M&A rules, Japanese companies were turning, as in the early postwar period, to the cross-shareholding defense. Companies also defended the new cross-shareholdings on the ground that tighter coordination with partner firms was mandatory for survival in an intensely competitive global economy.

Perhaps the return of defensive cross-shareholding is a first step toward reviving the vertical *keiretsu*, whose claim to economic rationality was always stronger than the horizontal groups' and had yet to "wither away" to the same degree. But a closer look at the moves in this direction on the part of two prominent companies raises doubts. In the early 2000's, Toyota Motor, as earlier noted, and Matsushita Electric Industrial sharply hiked their equity stakes in several closely affiliated firms. Toyota converted three of its weaker affiliates—Daihatsu, Hino, and Kanto Auto Works-- into formal subsidiaries or *kogaisha*, meaning parent company ownership of greater than 50%. Again, Toyota's concern was foreign takeover, a possibility made greater by the sell-off in the late 90's of Toyota Group shareholdings by the Group's principal banks, Mitsui, Sanwa, and Tokai. In addition, some Toyota affiliates—Daihatsu and Hino—had been performing subpar, and Toyota wanted a freer hand in turning them around (Shirouzo, 1999).

Matsushita went farther, converting five out of six of its affiliated Matsushita Group

companies into wholly-owned subsidiaries while maintaining a controlling 52.4% stake in JVC (Naito, 2002). President Kunio Nakamura, widely credited with having turned around Matsushita an in an aggressive restructuring drive, commented to the press that, while competition among the seven Matsushita companies had in the past made the group more competitive, slower economic growth and the fierce price competition in the /electronics industry had rendered the *keiretsu* model of independently managed overlapping businesses unaffordably costly and therefore obsolete.

We submit, however, that the actions taken by Toyota and Matsushita were steps toward the *destruction* of the *keiretsu* form, not the reinforcement or recreation of it. *Keiretsu* organization is by definition network organization—a web of overlapping, reciprocated, direct and indirect ties, which enables loose but broad coordination among a set of independently-managed firms. While some vertical keiretsu were giving way to "arms-length" procurement markets, the Toyota, Matsushita, and other groups were evolving in the opposite direction: toward centrally managed, bureaucratically divisionalized corporate organization.

CONCLUSIONS

Japan's horizontal and vertical *keiretsu* postwar business groups have been organized in loose and flexible network fashion, a configuration quite different from the sharply bounded and centrally coordinated structures of business groups in other countries. Despite that loose organization of mostly autonomous companies, the groups were capable of considerable coordinated action, which in the early postwar period and ensuing high-growth era seemed to have beneficial consequences in terms of filling gaps in Japan's still-maturing economy,

monitoring and sharing risks of member firms, and, in the vertical groups, achieving a degree of efficient supply chain articulation that became the envy of manufacturers worldwide. Now, however, as a consequence of globalization, internal reform and re-regulation, financial and consolidation and other forces, the horizontal groups are, for most intents and purposes, defunct. The vertical manufacturing keiretsu, too, despite always having had a better claim to economic rationality than the horizontal groups, have vanished, at least as the bona fide network organizations they were in the 70's and 80's. True, the 2000's have seen some restoration of equity relationships and other cooperative pacts between parent manufacturers and their principal suppliers and other *keiretsu* partners. But these are either narrowly geared to takeover protection, or the control and coordination by the parent manufacturer has reached a degree that the emergent organizational form can hardly be called "*keiretsu*" in the network sense used here. Japan, it appears, is less a network economy than it was in the past, as the evolution of its industrial organization has since moved down two divergent paths: (1) more arms-length market-like relations on the one hand and (2) greater internalization of diversified business activities within a hierarchically coordinated corporate structure on the other. The Japanese economy retains its distinctive features, to be sure, but in the structuring and management of its business organizations it is now much closer to the Anglo-American West.

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Figure 1. How horizontal and vertical *keiretsu* interconnect
(Note: firms within a rectangle are shacho-kai *members)*

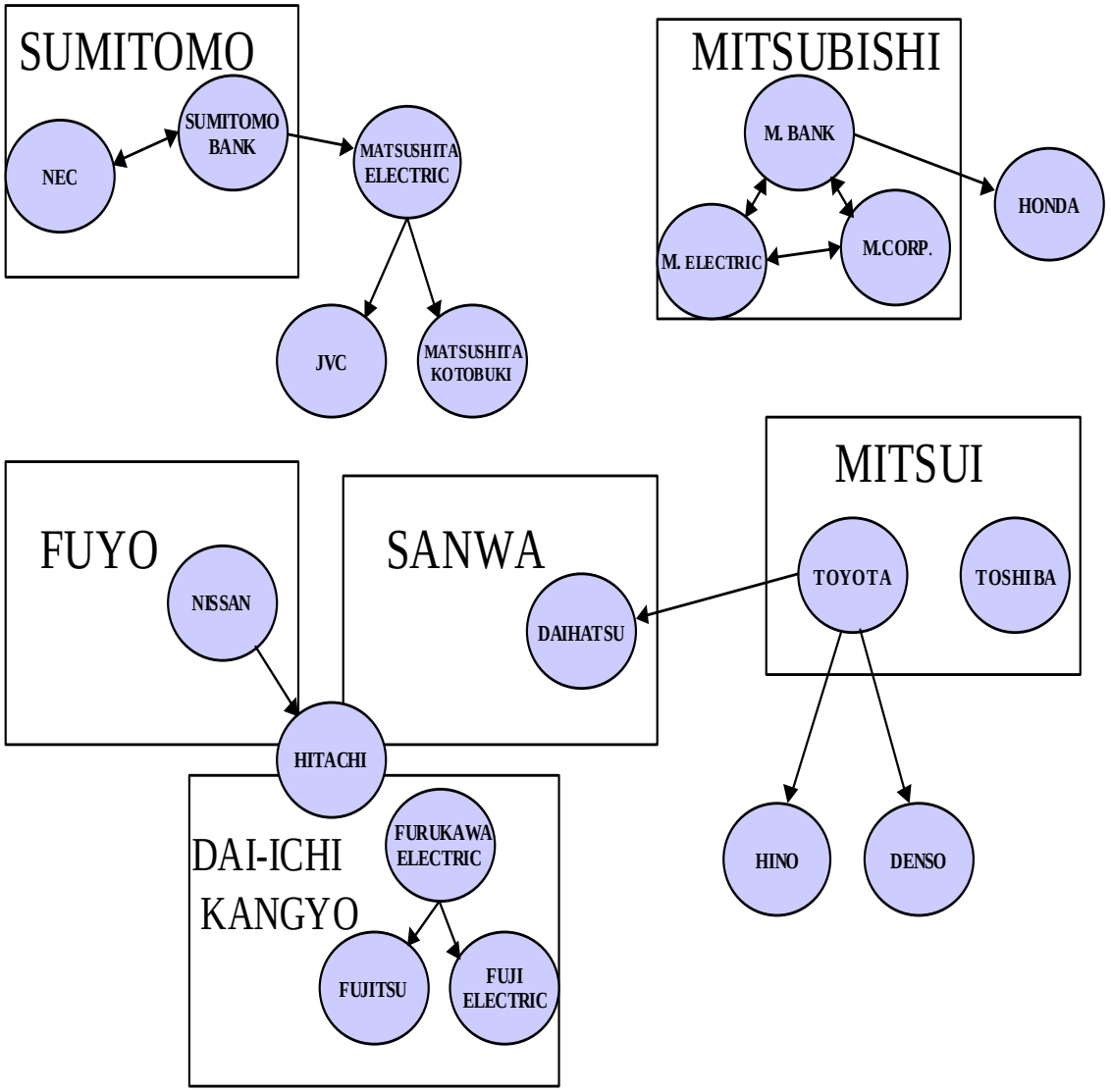


Table 1. List of member companies of presidents' councils (shacho-kai) of six major horizontal keiretsu groups (March 31 1993). Source: Japan Fair Trade Commission, 1993.

Industry	Mitsui *Nimoku-kai* 1980:24 firms 1993:26 firms	Mitsubishi *Kinyokai*: 1980:28 firms 1991:29 firms	Sumitomo*Hakusui-kai*: 1980:21 firms 1991:20 firms	Fuyo *Fuyo-kai* 1980: 29 firms 1991:29 firms	Sanwa group (Sansui-kai: 1980:40; 1991:44 firms)	DKB *Sankin-kai* 1980: 43 firms 1991: 45 firms 1993: 46 firms
Finance	Mitsui Bank Mitsui Trust Mitsui Mutal Life Taisho Marine & Fine	Mitsubishi Bank Mitsubishi Trust *Meiji Mutual Life* TokioMarine & Fire	Sumitomo Bank Sumitomo Trust Sumitomo Mutual Life Sumitomo Marine & Fire	Fuji Bank Yasuda Trust Yasuda Mutual Life Yasuda Fire & Marine	Sanwa Bank Toyo Trust *Nippon Life*	Dai-ichi Kangyo Bank Asahi Mutual Life Fukoku Mutual Life Nissan Fire & Marine Taisei Fire & Marine Nippon Kangyo Kakumarau Securities
Commerce	Mitsui & Co. *MitsukoshiDepartment Store*	Mitsubishi Corp.	Sumitomo Corp.	Marubeni	Nichimen Nissho Iwai *Iwatani International* *Takashimaya*	Itochu Nissho Iwai Kanematsu Kawasho Seibu Department Store *Itoki (post 91)*
Forestry			Sumitomo Forestry			
Mining	Mitsui Mining *Hokkaido Colliery & Steamship*		Sumitomo Coal Mining			
Construction	*Mitsui Construction* *Sanki Engineering*	*Mitsubishi Construction*	Sumitomo Construction	*Taisei*	*Obayashi* *Toyo construction* *Sekisui House* *Zenitaka(post 1980)*	*Shimizu*
Foodstuffs and Beverages	Nippon Flour Mills	Kirin Brewery		Nissin Flour Milling Nichirei Sapporo Breweries	Itoham Foods *Suntory (post 1980)*	
Textile products				Nisshinbo Industries Toho Rayon	*Unitika*	
Paper and pulp	Oji Paper			Sanyo-Kokusaku Pulp		Honshu Paper
Chemical products	Mitsui Toatsu Mitsui Petrochemical Toray Industries *DenkiKagaku Kogyo (post 91)*	Mitsubishi Kasei MitsubishiGas Chemical	Sumitomo Chemical Sumitomo Bakelite	Showa Denko K K Kureha Chemical Nippon Oil & Fats	Teijin Tokuyama Soda Sekisui Chemical Ube Industries Hitachi Chemical Tanabe Seiyaku Fujisawa Pharmaceutical Kansai Paint	Denki Kagaku Kogyo Kyowa Hakko Kogyo Nippon Zeon Asahi Denka Kogyo Sankyo Shiseido Lion Asahi Chemical
		Mitsubishi Petrochemical *Mitsubishi*				

		Monsanto *Mitsubishi Plastics* Mitsubishi Rayon				
Petroleum refining		Mitsubishi Oil		Toden	Cosmo Oil	Showa Shell Sekiyu
Rubber products		Asahi Glass			Toyo Tire & Rubber	Yokohama Rubber
Ceramic, stone, clay & glass products	Onoda Cement	Mitsubishi Mining & Cement	Nippon Sheet Glass Sumitomo Cement	Nihon Cement	*Osaka Cement* *Kyocera*	Chichibu Cement
Iron and steel	Japan Steel Works	*Mitsubishi Steel Mfg*	Sumitomo Metal	NKK	Kobe Steel Nisshin Steel Nakayama Steel Works Hitachi Metals	Kobe Steel Kawasaki Steel Japan Metals&Chemicals
Non-ferrous metals	Mitsui Mining & Smelting	Mitsubishi Metal *Mitsubishi Aluminum* *Mitsubishi Cable*	Sumitomo Metal Mining Sumitomo Light Metal Sumitomo Electric		Hitachi Cable	Nippon Light Metal Furukawa Furkawa Electric
Gen'l machinery & apparatus		*Mitsubishi Kakoki*	Sumitomo Heavy Industries	Kubota Nippon Seiko K K	NTN	Niigata Engineering Iseki Ebara
Electric machinery and apparatus	Toshiba	Mitsubishi Electric	NEC	Hitachi Oki Electric Industry Yokogawa Electric	Hitachi *Iwatsu Electric* Sharp *Nitto Electric*	Hitachi Fuji electric *Yasukawa Electric* Fujitsu *Nippon Columbia*
Transportation and equipment	Toyota Motor Mitsui Engineering & Shipbuilding Ishikawajima-Harima (post 91)	Mitsubishi Heavy		Nissan Motor	Hitachi Zosen *ShinMeiwa Industry* Daihatsu Motor	Kawasaki Heavy Ishikawajima-Harima Isuzu Motors
Precision machinery		*Mitsubishi Motors* *Nikon*		Canon	*Hoya (post 80)*	Asahi Optical
Real estate	*Mitsui Real Estate Development*	*Mitsubishi Estate*	*Sumitomo Realty & Development*	Tokyo Tatemono		
Railways and road transport				Tobu Railway Keihin Electric Express	*Hankyu* *Nippon Express*	
Water transport	*Mitsui O S K Lines*	*Nippon Yusen*		Showa Line	*Navix Line*	*Kawasaki Kisen*
Warehouse	*Mitsui Warehouse*	*Mitsubishi Warehouse*	*Sumitomo Warehouse*			*Shibusawa Warehouse*
Services					*Orix*	*Orient Co. (post 80)*
Other					*Nittsu (pre 1991)*	*Korakuen Stadium Co.* *Nittsu (pre 1991)*

Table 2. CONCOR partitioning of 259 Japanese firms, 1978.

DKB & REGIONAL BANKS

1A1a: Dk:1, In:7

DAI-ICHI KANGYO	Dk	Banking
KYOWA	In	Banking
BANK YOKOHAMA	In	Banking
TAIYO KOBE	In	Banking
TOKAI	In	Banking
BANK OF TOKYO	In	Banking
DAIWA	In	Banking
SAITAMA	In	Banking

CITY, TRUST, & LONG-TERM CR

1A1b:Fu:2,Sa:2,Su:2,Mb:2,Mi:1,In:4

YASUDA TRUST	Fu	Banking
FUJI	Fu	Banking
SANWA	Sa	Banking
TOYO TRUST	Sa	Banking
SUMITOMO	Su	Banking
SUMITOMO TRUST	Su	Banking
MITSUBISHI TRUST	Mb	Banking
MITSUBISHI	Mb	Banking
MITSUI TRUST	Mi	Banking
CHUO TRUST	In	Banking
IN.BANKJAPAN	In	Banking
NIPPON CREDIT	In	Banking
LTCREDIT	In	Banking

INSURANCE & REGIONAL BANKS

1A2a: Mi:2, In:1

TAISHO MARINE & FIRE	Mi	Banking
MITSUI	Mi	Banking
BANK FUKUOKA	In	Banking

1A2b: Mb:1, In:1, Su:1

TOKIO MARINE & FIRE I	Mb	Insurance
NIPPON FIRE & MARINE	In	Insurance
SUMITOMO MARINE & F	Su	Insurance

1B1a: In:2

HOKURIKU	In	Banking
HOKKAIDO TAKUSHOKU	In	Banking

1B1b: Fu:1, Mi:1, In:2

YASUDA FIRE & MARINE	Fu	Insurance
TOYOTA MOTOR	**Mi**	**Auto**
CHIYODA FIRE & MARIN	In	Insurance
NICHIDO FIRE & MARINE	In	Insurance

1B2a: In:4

SHIZUOKA	In	Banking
ASHIKAGA	In	Banking
JOYO	In	Banking
CHIBA	In	Banking

MUTUAL BANKS

1B2b: Dk:1, In:7

NISSAN FIRE & MARINE	Dk	Banking
BANK HIROSHIMA	In	Banking
GUNMA	In	Banking
HYOGO SOGO	In	Banking
NISHI-NIPPON SOGO	In	Banking
KINKI SOGO	In	Banking
TOKYO SOGO	In	Banking
NAGOYA SOGO	In	Banking

MATSUSHITA GROUP

2A1a: In:10

NIKKO SECURITIES	In	Securities
DAI-TOKYO FIRE & MAR	In	Insurance
YAMAHA CORP.	In	Gen. Manuf.
PIONEER ELECTRONIC	In	Electronics
TOTO	In	Ceramics
MATSUSHITA DENKO	In	Electronics
VICTOR COMPANY OF J	In	Electronics
MATSUSHITA-KOTOBUK	In	Electronics
MATSUSHITA REGRIGEI	In	Electronics
MATSUSHITA COMMUNI	In	Electronics

TRADING COMPANIES

2A1b: Mb:2, Mi1:, Sa:1, Dk:3, In:3

MITSUBISHI ELECTRIC	Mb	Electronics
MITSUBISHI CORP	Mb	Trade
MITSUI AND CO	Mi	Trade
NICHIMEN	Sa	Trade
KANEMATSU GOSHO	Dk	Trade
SHISEIDO	Dk	Chemicals
ITOCHU (C. Itoh)	Dk	Trade
GUNZE	In	Textile
NGK INSULATORS	In	Ceramics
YAMAHA MOTOR	In	Automobile

TOYOTA

2A2a: Sa:2, In:9

DAIHATSU MOTOR	Sa	Automobile
NISSHO IWAI	Sa	Trade
FUJI FIRE & MARINE INSUI	In	Banking
KANTO AUTO WORKS	In	Automobile
NIPPONDENSO	In	Electronics
AISIN SEIKI	In	Automobile
TOYOTA AUTO BODY	In	Automobile
TOYODA AUTOMATIC LOO	In	Machinery
AICHI STEEL WORKS	In	Heavy metal
HINO MOTORS	In	Automobile
NOMURA SECURITIES	In	Banking

M I T S U I

2A2b: Dk:2, Mi:9, Fu:1, In:17

SANKYO	Dk	Pharm.
ISEKI	Dk	Machinery
OJI PAPER	Mi	Paper
MITSUI TOATSU CHEMICA	Mi	Chemicals
MITSUI MINING AND SMEL	Mi	Light metal
(CHICHIBU) ONODA CEME	Mi	Ceramics
MITSUI ENGINEERING & S	Mi	Shipyard
MITSUI PETROCHEMICAL	Mi	Chemicals
MITSUI MINING	Mi	Mining
THE JAPAN STEEL WORKS	Mi	Heavy metal
TOSHIBA	Mi	Electronics
CANON	Fu	Prec.Equip
DAICEL CHEMICAL	In	Chemicals
CENTRAL GLASS CO.	In	Chemicals
NIPPON PAPER (JUJO PAF	In	Paper
FUJIKURA	In	Light metal
BROTHER INDUSTRIES	In	Machinery
ALPS ELECTRIC CO.	In	Electronics
OMRON TATEISI ELECTRC	In	Electronics
FUJI PHOTO FILM	In	Chemicals
SONY	In	Electronics
MORINAGA MILK INDUSTR	In	Food
NIPPON OIL	In	Oil
PRIMA MEAT PACKERS	In	Food
KYOKUYO	In	Fishing
KOA OIL	In	Oil
ARABIAN OIL	In	Mining
TOYO SEIKAN KAISHA	In	Light metal
TOPPAN PRINTING	In	Gen. Manuf.

S U M I T O M O

2B1a: Su:10, Sa:1, In:22

SUMITOMO CORP	Su	Trade
SUMITOMO CHEMICAL	Su	Chemicals
SUMITOMO METAL INDU	Su	Heavy metal
SUMITOMO METAL MINII	Su	Light metal
SUMITOMO HEAVY INDU	Su	Machinery
SUMITOMO LIGHT META	Su	Light metal
NIPPON SHEET GLASS	Su	Ceramics
NEC	Su	Electronics
SUMITOMO EL. Ind	Su	Light metal
SUMITOMO (OSAKA) CEI	Su	Ceramics
COSMO OIL	Sa	Oil
DAIWA SECURITIES	In	Banking
KOKUYO CO.	In	Gen. Manuf.
SHIONOGI & CO.	In	Pharm.
KOMATSU	In	Machinery
DAIKEN TRADE & INDUS	In	Gen. Manuf.
TOKYO SANYO ELECTRI	In	Electronics
DAIKIN INDUSTRIES	In	Machinery
ASAHI BREWERIES	In	Food
SANKYO ALUMINUM IND	In	Light metal
MARUDAI FOOD	In	Food
RENGO	In	Paper
MAZDA MOTOR	In	Automobile
DAIKYO OIL	In	Oil
DAISHOWA PAPER MFG.	In	Paper
TOMEN (TOYO MENKA)	In	Trade
EZAKI GLICO	In	Food
TDK CORP.	In	Electronics
HOUSE FOOD INDUSTRI	In	Food
MATSUSHITA ELECTRIC	In	Electronics
SANYO ELECTRIC	In	Electronics
SUZUKI MOTOR	In	Automobile
KOYO SEIKO	In	Machinery

DKB & SANWA (NIPPON STEEL)

2B1b: Dk:5, Sa:4, Mi:2, Fu:1, In:15

ASAHI CHEMICAL	Dk	Textile
KAWASAKI HEAVY	Dk	Shipyard
HONSHU PAPER	Dk	Paper
ISHIK.-HARIMA HEAVY	Dk	Shipyard
DENKI KAGAKU KOGYO	Dk	Chemicals
UBE INDUSTRIES	Sa	Chemicals
NISSHIN STEEL	Sa	Heavy metal
NAKAYAMA STEEL WOR	Sa	Heavy metal
UNITIKA	Sa	Textile
NIPPON FLOUR MILLS	Mi	Food
TORAY INDUSTRIES	Mi	Textile
KUBOTA	Fu	Machinery
NIPPON STEEL	In	Heavy metal
KANEBO	In	Textile
TOYOBO	In	Textile
KURARAY	In	Textile
TOKYO STEEL MFG. CO.	In	Heavy metal
TOYO KOHAN CO.	In	Heavy metal
BRIDGESTONE	In	Rubber
TOKYU CAR CORP.	In	Transport
KAO CORP.	In	Chemicals
FUJI KOSAN	In	Oil
NITTO BOSEKI CO.	In	Textile
DAIDO STEEL	In	Heavy metal
FUJI HEAVY	In	Automobile
TOSOH	In	Chemicals
KANEKA (KANEGAFUCHI	In	Chemicals

F U Y O (N I S S A N)

2B2a1: Fu:9, In:13

NIHON CEMENT	Fu	Ceramics
SAPPORO BREWERIES	Fu	Food
OKI ELECTRIC INDUSTRY	Fu	Electronics
TOA NENRYO KOGYO	Fu	Oil
NIPPON REIZO K.K.	Fu	Food
MARUBENI	Fu	Trade
NISSAN MOTOR	Fu	Automobile
SANYO-KOKUSAKU PULP	Fu	Paper
NIPPON SEIKO K.K.	Fu	Machinery
YAMAICHI SECURITIES	In	Banking
RICOH	In	Prec.Equip
SNOW BRAND MILK	In	Food
YAMAZAKI BAKING	In	Food
SHOWA ALUMINUM CORF	In	Light metal
TOPY INDUSTRIES	In	Transport
FUJIYA	In	Food
NISSAN DIESEL MOTOR	In	Automobile
ZEXEL (DIESEL KIKI)	In	Machinery
NISSAN SHATAI	In	Automobile
AICHI MACHINE INDUSTR	In	Automobile
TAKEDA CHEMICAL	In	Pharm.
DAI NIPPON PRINTING	In	Gen. Manuf.

(H I T A C H I)

2B2a2: Sa:12, Fu:4, Dk:3, In:9

HITACHI	Fu	Electronics
SHOWA DENKO K.K.	Fu	Chemicals
NIPPON KOKAN K.K.	Fu	Heavy metal
NISSHINBO INDRUSTRIES	Fu	Textile
FUJI ELECTRIC	Dk	Electronics
NIPPON ZEON CO.	Dk	Chemicals
NIIGATA ENGINEERING	Dk	Machinery
SHARP	Sa	Electronics
HITACHI CABLE	Sa	Light metal
HITACHI CHEMICAL	Sa	Chemicals
HITACHI ZOSEN	Sa	Shipyard
HITACHI METALS	Sa	Heavy metal
ITOHAM FOODS	Sa	Food
TOKUYAMA SODA	Sa	Chemicals
SEKISUI CHEMICAL	Sa	Chemicals
NTN TOYO BEARING CO.	Sa	Machinery
TANABE SEIYAKU	Sa	Pharm.
KOBE STEEL	Sa	Heavy metal
TEIGIN	Sa	Textile
NIPPON SUISAN KAISHA	In	Fishing
NISSAN CHEMICAL	In	Chemicals
TOSHIN STEEL	In	Heavy metal
YODOGAWA STEEL WORI	In	Heavy metal
JAPAN SYNTHETIC RUBB	In	Chemicals
NIPPON MINING	In	Light metal
KURABO INDUSTRIES	In	Textile
DOWA MINING CO.	In	Light metal
DAIWABO CO.	In	Textile

S A N W A

D K B

2B2b1: Dk:10, Fu:1, Sa:1, In:19

KAWASAKI STEEL	Dk	Heavy metal
SHOWA SHELL SEKI	Dk	Oil
FUJITSU	Dk	Electronics
FURUKAWA ELECTF	Dk	Light metal
KYOWA HAKKO KOC	Dk	Chemicals
NIPPON LIGHT MET/	Dk	Light metal
YOKOHAMA RUBBEI	Dk	Rubber
LION	Dk	
ISUZU MOTORS	Dk	Automobile
EBARA	Dk	Machinery
NISSHIN FLOUR MIL	Fu	Food
FUJISAWA PHARMA	Sa	Pharm.

M I T S U B I S H I

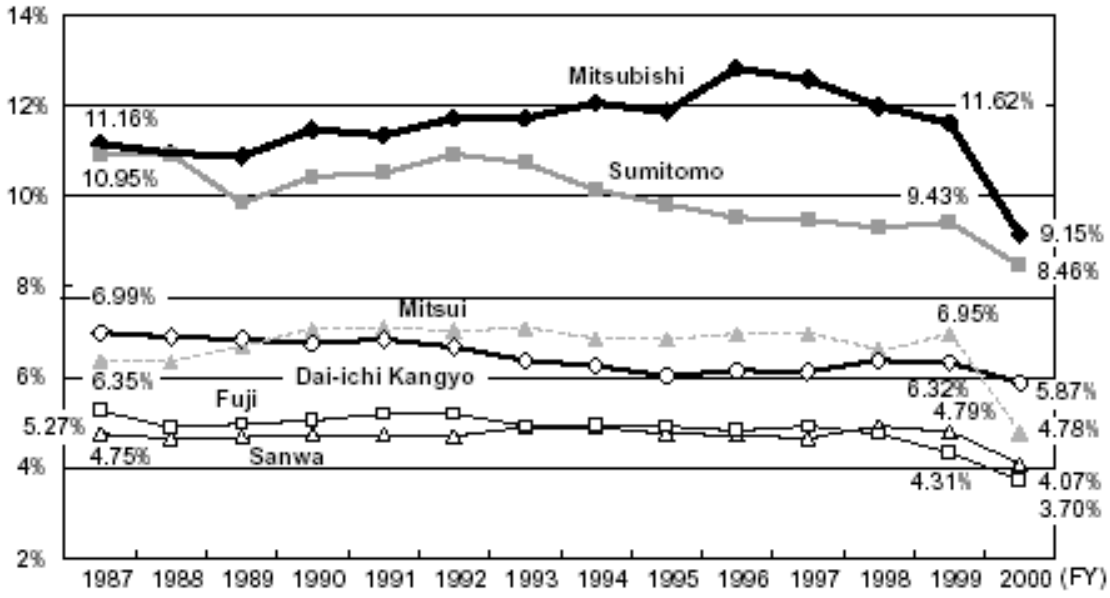
2B2b2: Mb:11, Sa:1, In:12

MITSUBISHI HEAVY	Mb	Shipyard
MITSUBISHI OIL	Mb	Oil
MITSUBISHI PETRO(	Mb	Chemicals
MITSUBISHI MATERI	Mb	Light metal
KIRIN BREWERY	Mb	Food
MITSUBISHI MINING	Mb	Ceramics
MITSUBISHI RAYON	Mb	Textile
MITSUBISHI GAS CH	Mb	Chemicals
MITSUBISHI PAPER	Mb	Paper
ASAHI GLASS	Mb	Ceramics
MITSUBISHI CHEMIC	Mb	Chemicals
TOYO TIRE & RUBBI	Sa	Rubber
NICHIRO GYOGYO K	In	Fishing
NIPPON MEAT PACK	In	Food
HONDA MOTOR	In	Automobile
MORINAGA & CO.	In	Food
KIKKOMAN	In	Food
AJINOMOTO	In	Food
NIHON NOSAN KOG	In	Food
NISSHIN OIL MILLS	In	Food
DAINIPPON INK AND	In	Chemicals
SHIN-ETSU CHEMIC	In	Chemicals
NISSHIN FOOD PRO	In	Food
KONISHIROKU PHO	In	Chemicals
KAYABA INDUSTRY	In	Automobile
SHOWA SANGYO	In	Food
MARUHA (TAIYO FIS	In	Fishing
TOYO INK MFG	In	Chemicals
MEIJI MILK	In	Food
MEIJI SEIKA KAISHA	In	Food
Q. P. CORP.	In	Food

Note: Mi = Mitsui, Mb= Mitsubishi, Su= Sumitomo, Fu= Fuyo, Sa= Sanwa, Dk=DKB, In = council independen
(Vertical group names are in parentheses)

FIGURE 2:

Trends in cross-shareholding within the big-six horizontal groups



Source: NLI Research Institute