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BANKS AND ECONOMIC GROWTH: IMPLICATIONS FROM JAPANESE HISTORY

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Banks and Economic Growth: Implications from Japanese History

By Yoshiro Miwa & J. Mark Ramseyer*

Abstract: In the 1950s and 60s, Alexander Gerschenkron claimed that banks facilitate economic growth among "backward" countries. In 1990s and 2000s, many theorists similarly claim that banks promote growth. Banks do so by their superior monitoring and screening capabilities, they reason. Through those capabilities, banks reduce informational asymmetries and the attendent moral hazard and adverse selection, and thereby improve the allocation of credit.

As a fast-growth but allegedly bank-centered economy, Japan plays an important part in these discussions of finance and growth. In early 20th century Japan firms relied heavily on bank debt, observers argue. Those firms with preferential access to debt outperformed the others, and those that were part of the zaibatsu corporate groups obtained that preferential access through their affiliated banks.

With data from the first half of the century, we ask whether Japanese banks performed the roles Gerschenkron and modern theorists assign them. Notwithstanding the usual accounts, we find that they did not. Japan was not a bank-centered economy; instead, firms relied overwhelmingly on equity finance. It was not an economy where firms with access to bank credit outperformed their rivals; instead, firms earned no advantage from such access. And it was not a world where the zaibatsu manipulated their banks to favor affiliated firms; instead, zaibatsu banks loaned affiliated firms little more (if any) than the deposits those firms had made with the banks. During the first half of the last century, Japanese firms obtained almost all their funds through decentralized, competitive capital markets.

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Do firms need banks, or can they make do with stock markets? Do firms need stock markets, or can they make do with banks? Alexander Gerschenkron long ago argued that economically "backward" countries could not trust decentralized capital markets to provide their largest firms sufficient funds.[1] Instead, they needed banks. More recently, finance theorists have reasoned from agency theory and the economics of information to much the same result. And the transition in eastern Europe has given the issue a programmatic touch: what should scholars tell the new finance ministers to do about banks and stock markets?

In this debate over the tie between corporate finance and economic growth, Germany and Japan have long played a major symbolic role. Together, they stand as the key examples of once-backward countries that grew with spectacular speed through bank-centered finance. Whether the tale fits Germany is not for us to say. Whether it fits Japan is, and -- alas for Gerschenkron and modern theorists -- it misses Japan by a mile. Japan did not grow through bank finance, access to bank credit did not give Japanese firms a competitive advantage, and the zaibatsu corporate groups did not use their affiliated banks to favor their manufacturing firms. Japanese firms grew instead by raising money on decentralized, competitive capital markets.

We begin by summarizing the debate over the relation between corporate finance and economic growth, and the symbolic role that Japan has played in this debate (Section I). We demonstrate how banks played almost no role in early 20th-century Japanese corporate finance (II), and how firms enjoyed no competitive advantage through any access to bank debt (III.A., B.). We conclude by showing that the zaibatsu corporate groups did not use their affiliated banks to favor their manufacturing firms (III.C.).

I. The Problem of Banks:

A. Banks and Economic Growth:

1. Gerschenkron. -- Some four decades ago, Gerschenkron -- then an economic historian at Harvard -- published what would quickly become a classic on the mechanisms of growth among "backward" countries.[2] By his account, those countries that industrialized first (like the U.S. and the U.K.) could look to market competition and stock exchanges for finance and entrepreneurship. Those that were more "backward" (like Germany and Russia) needed a different route. Rather than rely on decentralized market processes, they needed the visible hands of big banks and government.

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[1] Alexander Gerschenkron, Economic Backwardness in Historical Perspective ch. 1 (Cambridge: Harvard University Press, 1962).

[2] Gerschenkron, supra note, at ch. 1. Gerschenkron did not invent the U.K.-Germany contrast, of course. For an early discussion of the contrast in the Japanese literature, see Kamekichi Takahashi, Nippon kin'yu ron [Japanese Financial Theory] ch. 10 (Tokyo: Toyo keizai shimpo sha, 1931).

Primarily, Gerschenkron illustrated his argument with two countries. To show the role of banks, he turned to Germany. The rapid growth there, he argued, depended on strong, large banks. "The industrialization of England had proceeded without any substantial utilization of banking for long-term investment purposes," explained Gerschenkron. By contrast, in "a backward country" like Germany, the "investment banks must be conceived as specific instruments of industrialization."[3]

To show the role of government, Gerschenkron turned to Russia. The rapid growth there, he explained, relied heavily on the visible hand of the czar. The difference with Germany stemmed from the degree of under-development. Russia was so "hopelessly backward" that even banks could not foster growth. Instead, the "[s]upply of capital for the needs of industrialization required the compulsory machinery of the government."[4]

2. Gerschenkron and Japan. -- (a) Gerschenkron applied. Gerschenkron's fans did not let the theory stop at Germany and Russia. Almost immediately, they applied it to Japan. As Kozo Yamamura noted skeptically in 1972, Gerschenkron's account of Germany seemed to fit the stereotypical histories of Japan to a tee. Japan, by these accounts, was a world where "the modern banking system, strongly encouraged by the government, was extremely important in providing the necessary industrial capital and, often, entrepreneurial guidance to rapidly growing industrial firms ...." Japan, by these accounts, offered a tale begging for the Gerschenkronian formula.[5]

William Lockwood's economic history of pre-war Japan typifies the stereotypical accounts. Pre-war Japan, to Lockwood, had been a place where the "[b]ig banks and trust companies were securely locked into" the zaibatsu conglomerates. Those "banking connections were especially important in a country where a wide public securities market was lacking," he reasoned. And these "financial institutions of Japan, concentrated as they were in the hands of the government and big business, were the major source of capital for modern industry ...."[6]

Given the congruence between stereotype and theory, for many U.S. scholars Gerschenkron explained Japan's economic growth straightforwardly: Japan grew because the government guided the economy and the big banks dominated industrial finance. The government did seem to have intervened aggressively, and did claim to have intervened to promote growth. The large banks did seem to have controlled corporate finance, and did seem to have funded firms in the modern sectors. Perhaps, reasoned observers, Japan grew fast precisely because it avoided decentralized market processes.

(b) The role of government. Within economically inclined circles only half of Gerschenkron's hypothesis survives, of course. Today, any notion that Russia owed its industrialization to government intervention seems anachronistic in the extreme. As dead as the

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[3] Gerschenkron, supra note, at 14.

[4] Gerschenkron, supra note, at 17, 20.

[5] Kozo Yamamura, Japan 1868-1930: A Revised View, in Rondo Cameron, ed., Banking and Economic Development: Some Lessons of History 168 (New York: Oxford University Press, 1972). Perhaps the most involved attempt to test Gerschenkron's applicability to Japan was Henry Rosovsky, Capital Formation in Japan, 1868-1940 ch. 4 (New York: The Free Press of Glencoe, 1961).

[6] William W. Lockwood, The Economic Development of Japan: Growth and Structural Change, 1868-1938 222(Princeton: Princeton University Press, 1954).

idea may be within economics, however, in other disciplines the notion that governments can mastermind growth still thrives.

Political scientist Chalmers Johnson may be the best-known of the Japanese-bureaucrats-grew-the-economy stalwarts.[7] Yet others continue his refrain. Historian Bruce Cummings claims that "[i]n the 1930s .... the forerunners of [the modern Ministry of International Trade & Industry] provided the goals, and the banks and corporations the means, for directing and riding the product cycle (sic)."[8] And Wayne Nafziger more recently argued that "Japan followed the German pattern of state leadership in developing national productivity, close cooperation between the state and big business, [and] intimate relationships between large-scale banking and industry ...."[9]

(c) The role of banks. Even among many economically sophisticated scholars who (rightly) jettison the government's role, the banking half of Gerschenkron lives on. They may or may not recognize his name, but through agency theory they reach much the same conclusion. Potentially, moral hazard, adverse selection, and other consequences of asymmetric information wreak havoc in credit markets. Potentially, these problems become most severe when markets are new. And potentially, financial intermediaries could improve the allocation of credit by monitoring and screening activities that mitigate the informational asymmetries. As economic historian Elisabeth Paulet put it in her history of 19th century French banking:[10]

> [the modern] notion of financial intermediation as delegated monitoring (or delegated control) is closely related to Gerschenkron's account of bank involvement in firms at the early stage of industrial development.

Just as agency theory formalizes Gerschenkron's reliance on intermediaries, the modern dichotomy between the "market-dominated" U.K. and U.S. and the "bank-dominated" Germany and Japan echoes the Gerschenkronian contrast.[11] Even the usually skeptical Merton Miller

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[7] Chalmers Johnson, MITI and the Japanese Miracle: The Growth of Industrial Policy, 1925-1975 305 (Stanford: Stanford University Press, 1982).

[8] Bruce Cummings, The Origins and Development of Northeast Asian Political Economy: Industrial Sectors, Product Cycles, and Political Consequences, in Frederic C. Deyo, ed., The Political Economy of the New Asian Industrialism 44, 58 (Ithaca: Cornell University Press, 1987).

[9] E. Wayne Nafziger, Learning from the Japanese: Japan's Pre-War Development and the Third World 87 (Armonk: M.E. Sharpe, 1995).

[10] Elisabeth Paulet, The Role of Banks in Monitoring Firms: The Case of the Credit Mobilier 20 (London: Routledge, 1999).

[11] See also, e.g., Franklin Allen, Stock Markets and Resource Allocation, in Colin Mayer & Xavier Vives, eds., Capital Markets and Financial Intermediation 81, 81 (Cambridge: Cambridge University Press, 1993); Jonathan Barron Baskin & Paul J. Miranti, Jr., A History of Corporate Finance 322, 326 (Cambridge: Cambridge University Press, 1997); Charles W. Calomiris, The Costs of Rejecting Universal Banking: American Finance in the German Mirror, 1870-1914, in Naomi R. Lamoreaux & Daniel M.G. Raff, eds., Coordination and Information: Historical Perspectives on the Organization of Enterprise 257, 258-59 (Chicago: University of Chicago Press, 1995); Takeo Hoshi, Anil Kashyap & David Scharfstein, Bank Monitoring and Investment: Evidence from the Changing Structure of Japanese Corporate Banking Relationships, in R. Glenn Hubbard, ed., Asymmetric Information, Corporate Finance, and Investment 106 (Chicago: University of Chicago Press, 1990); Colin Mayer, New Issues in Corporate Finance, 32 European Economic Review 1167 (1988); Richard Sylla & George David Smith, Information and Capital Market Regulation in Anglo-American Finance, in Michael D. Bordo & Richard Sylla, eds., Anglo-American Financial Systems: Institutions and Markets in the Twentieth Century 179, 182 (Burr Ridge, IL: Irwin, 1995).

divides corporate governance regimes into "the Japanese/German bank-driven model and the U.S./British stockholder-driven model."[12] Ronald Gilson and Bernard Black contrast Japan and Germany with their "bank-centered capital markets" against the U.S. with its "well-developed stock market."[13] Raghuram Rajan and Luigi Zingales compare the "arms'-length" finance of "market-based economies like the U.S. and U.K." with the "relationship-based" finance of "the main banks of Japanese keiretsus." In an almost perfect reprise for Gerschenkron, they then assert that "the relationship-based system ... works better than an arms'-length system in relatively less developed economies ...."[14]

Non-economists, in turn, repeat the refrains of Lockwood and Cummings. "From the beginnings of industrialisation in the Meiji period," explains William Tsutsui, "corporate finance in Japan has been predominantly 'indirect.' ... [F]irms have tended to raise investment funds from financial intermediaries (especially banks) rather than by obtaining the required capital 'directly' through the sale of equities to individual savers."[15] Claims sociologist Michael Gerlach, these banks "provided, through loans, over half of Japanese companies' total external capital" during the pre-war period.[16] And business scholar Carl Kester flatly declares that "[l]ate nineteenth- and early twentieth-century Japan had essentially no securities market ...."[17]

3. Normative implications. -- Making a virtue of Gerschenkron's empirics, scholars of "transitional economies" now give the putative dichotomy between the Anglo-U.S. and German-Japanese systems a normative cast. Take Pranab Bardhan and John Roemer:[18]

> [W]e are skeptical that the option of the "real thing," Western-style capitalism is available to some of the East European countries, China, or Vietnam, however much some people in these countries may crave it. The institutions of Western capitalism ... evolved over a long period. Some of them are not easily replicable. In fact the bank-centric organization ... is a way of mitigating an historical handicap in capital market institutions. It is important to realize that it was the underdevelopment of capital markets in late 19th-century Germany that gave rise to its present system of heavy bank involvement in financing and management of industrial companies. Even in the case of Japan, ... the main bank system orginated in the highly imperfect financial markets and economic uncertainties of the immediate postwar period.

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[12] Merton H. Miller, Merton Miller on Derivatives 135 (New York: John Wiley & Sons, 1997).

[13] Ronald J. Gilson & Bernard Black, Does Venture Capital Require an Active Stock Market?, xx Journal of Applied Corporate Finance 36 (1999).

[14] Raghuram G. Rajan & Luigi Zingales, Which Capitism? Lessons from the East Asian Crisis, 11(3) Journal of Applied Corporate Finance 40, 41-42, 44 (1998).

[15] William M. Tsutsui, Banking Policy in Japan: American Efforts at Reform During the Occupation 4 (London: Routledge, 1988).

[16] Michael L. Gerlach, Alliance Capitalism: The Social Organization of Japanese Business 116 (Berkeley: University of California Press, 1992).

[17] W. Carl Kester, Japanese Takeovers: The Global Contest for Corporate Control 37 (Boston: Harvard Business School Press 1991).

[18] Pranab Bardhan & John E. Roemer, Market Socialism: A Case for Rejuvenation, 6(3) Journal of Economic Perspectives 101, 103 (1992).

Others make similar appeals. In a recent World Bank study, for example, Masahiko Aoki and Hyung-Ki Kim argue that the transitional economies will not be able to rely on capital markets for privatizing state-owned firms.[19] In the same volume, Erik Bergloef writes that such economies will instead need to rely on banks, mutual funds, and concentrated debt and equity: "[s]tock and bond markets are not going to play a major role ...."[20]

B. The Zaibatsu and Banks:

If economists and legal scholars routinely repeat the dichotomy between the German-Japanese bank-centered and U.S.-U.K. stock-market-centered traditions, those in Japanese studies go farther still. Typically, they claim that the zaibatsu families manipulated the capital market through their affiliated banks; routed loans on favorable terms to their industrial firms; and through this scheme gained a stranglehold over the Japanese economy.

1. Zaibatsu funding. -- On the use of house banks to fund internal zaibatsu production, historian and one-time ambassador Edwin Reischauer is typical. Each of the zaibatsu, he explains, was "centered around its own bank, which financed the other component parts."[21] Gerlach similarly asserts that each zaibatsu "started its own bank for the purpose of funding the activities of its group companies." By the 1930s, he concludes, "banks increasingly replaced the [top-tier parent company] and the zaibatsu families as the main sources of working capital for the group companies."[22] Lockwood argues that the "financial institutions of Japan, concentrated as they were in the hands of the government and big business, were the major source of capital for modern industry ...."[23] Business scholar Rodney Clark explains that "[e]ach zaibatsu had a bank, which acted as a money pump. Deposits from the public were channelled toward the other member companies of the group."[24] And economists Richard Caves and Masu Uekusa forthrightly declare that for the zaibatsu the "banks and financial intermediaries were principal suppliers of capital to the operating companies."[25]

According to many scholars, the zaibatsu used these internal financing patterns to extend their power. Lockwood, again, describes zaibatsu credit as a "[m]ost important ... instrument of expansion." Zaibatsu banks "held the deposits of affiliated companies ... and were at the same time their chief source of capital. They were also powerful instruments for extending control over competitors, customers, and suppliers."[26] During the prewar period, writes economist

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[19] Masahiko Aoki & Hung-Ki Kim, Overview, in Masahiko Aoki & Hung-Ki Kim, eds., Corporate Governance in Transitional Economies: Insider Control and the Role of Banks xiii (1995).

[20] Erik Bergloef, 1995. Corporate Governance in Transition Economies: The Theory and Its Policy Implications, in Masahiko Aoki & Hung-Ki Kim, eds., Corporate Governance in Transitional Economies: Insider Control and the Role of Banks 81-82 (1995).

[21] Edwin O. Reischauer, The Japanese 181 (Cambridge: Harvard University Press, 1978).

[22] Gerlach, supra note, at 115.

[23] Lockwood, supra note, at 222.

[24] Rodney Clark, The Japanese Company 42 (New Haven: Yale University Press, 1979).

[25] Richard E. Caves & Masu Uekusa, Industrial Organization in Japan 60 (Washington, D.C.: The Brookings Institution, 1976).

[26] Lockwood, supra note, at 222.

Takafusa Nakamura, the zaibatsu banks "used their clout to pull selected firms into their respective orbits."[27] And in her recent economic history of Japan, Penelope Francks explains:[28]

> Companies within each zaibatsu group depended on finance from the group's bank .... [C]ontrol over sources of finance was in many ways the key to zaibatsu organisation and to the ability of group companies to expand in capital-intensive areas. The growth of share-ownership among the wider public was very limited and the role of the stock exchange as a source of business capital has remained relatively small until quite recent times. ... [As a result, the] system made it extremely difficult for businesses outside zaibatsu control to obtain investment funds on anything like the same terms as those within and inhibited the spread of capital ownership outside the groups.

2. The tie to SCAP policy. -- Dispassionate scholars did not invent these tales. Instead, they borrowed them from the men and women in the occupation (known as office of the Supreme Commander for the Allied Powers, or SCAP) assigned to destroy the zaibatsu families. Among the academics, the key figure was Corwin Edwards, Northwestern professor and former National Recovery Administration official. As head of the "Mission on Japanese Combines," Edwards wrote the report that would justify confiscating zaibatsu wealth.[29]

The outcome of Edwards' mission was never at issue. As the report itself forthrightly began, the mission's "assignment was to recommend ... the basic objective of destroying the power of the great Japanese combines and managerial families which are collectively known as the zaibatsu." These families, Edwards asserted, had created an economy that "tends to hold down wages, to block the development of labor unions, to destory the basis for democratic independence in politics ...." Hence, they were "to be regarded as among the groups principally responsible for the war."[30]

For an essay by an economist, the report is remarkably devoid of economic logic; for a mission charged with collecting data, it is equally devoid of any new information. But if neither theoretically coherent nor empirically serious, it nonetheless established what would become the orthodoxy for decades:[31]

> [B]ank credit has been the principal source of capital for Japanese industry. The older zaibatsu -- the Mitsui, Mitsubishi, Sumitomo and Yasuda -- have relied heavily for their growth upon their affiliated banks and insurance companies.

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[27] Takafusa Nakamura, Economic Growth in Prewar Japan 205 (New Haven: Yale University Press, tr. Robert A. Feldman, 1983); see also id., at 208 (increasing concentration in the banking industry allowed "idle funds of large firms to be used for extension of zaibatsu power"); W.G. Beasley, The Rise of Modern Japan: Political, Economic and Social Change since 1850 117 (New York: St. Martin's, 2d ed., 1995) ("banking was a crucial factor in the growth of all four of these [zaibatsu] concerns. It not only gave them access to scarce capital in their formative years, but also enabled them to exercise influence, if not control, over a spread of companies stretching beyond their groups").

[28] Penelope Francks, Japanese Economic Development: Theory and Practice 250-51 (London: Routledge, 2d ed., 1999).

[29] [Corwin D. Edwards], Report of the Mission on Japanese Combines, Part I (Department of State Pub. 2628, Far Eastern Series 14, March 1946).

[30] Edwards, supra note, at iii (ital. added), vii.

[31] Edwards, supra note, at 36.

Himself a SCAP veteran, T.A. Bisson repeated many of Edwards' claims in his 1954 classic Zaibatsu Dissolution in Japan. "In Japan, under the old regime," wrote Bisson, "privileged groups had exercised despotic power in every phase of economic life. Whether one looked at agriculture, labor, industry, banking, or trade, the picture was the same." Given this semi-feudal history, "Japan has had almost no laissez-faire experience or tradition ..." And through their control over the banks, the zaibatsu families had controlled firms everywhere:[32]

> The significance of Zaibatsu dominance in commercial lending activity is underscored by the relative unimportance of private saving and security purchase by individuals in Japan, making government or private bank loans the only major source of capital funds available to the Japanese businessman.

Ever the polemicist, Bisson concluded:[33]

> [A]t the center of each of the economic empires controlled by Mitsui, Mitsubishi, Sumitomo, and Yasuda ... is a great bank with deposits running into billions of yen. From these four banks, with their associated or subsidiary trust, insurance and holding companies, radiates the corporate network which owns the factories, the mines, the shipping firms, and the commercial enterprises of Japan. Eight Zaibatsu concerns, together with the Emperor ... and some 3,500 big landlords, have held the country and its people as their economic fief.

Eleanor Hadley had worked in the occupation too. As she saw it:[34]

> Where a combine possessed financial institutions, financing (pre-1945 style) was done mainly on an intracombine basis, which gave the top-holding company further checks on company activity. By reviewing both short-term and long-term applications for credit, the combine bank and its affiliated financial institutions could also check on subsidiary activities. ... The conditions under which credit was offered applicant subsidiaries provided an additional opportunity to supervise their operations.

Citing unspecified "private information" about the Mitsui, she further explained:[35]

> Although [Mitsui] Banking certainly did not confine extension of credit to the combine alone, combine interests naturally came first. More than this, Banking gave combine firms preferential interest terms and was slow to extend credit to outsiders who challenged or might challenge an important subsidiary in a particular field.

Whether one reads scholars today or occupation officials of 50 years back, the message is clear: pre-war firms relied crucially on bank loans; the zaibatsu controlled the key, large banks; they used those banks to funnel money to their favored firms; and through those preferential credit policies, they extended their grasp over the pre-war Japanese economy. Unfortunately, none of this is true.

II. Bank Debt and Equity Finance in Pre-War Japan:

A. Large Firm Finance:

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[32] T.A. Bisson, Zaibatsu Dissolution in Japan 3, 6, 15 (Berkeley: University of California Press, 1954).

[33] T.A. Bisson, Japan's War Economy (New York: Institute of Pacific Relations vii (1945).

[34] Eleanor M. Hadley, Antitrust in Japan 29, 157(Princeton: Princeton University Press, 1970).

[35] Hadley, supra note, at 163, quoting Eleanor Martha Hadley, Concentrated Business Power in Japan 272 (Ph.D. dissertation, Radcliffe College, 1949).

1. Introduction. -- For all the talk of Japan as a bank-centered economy, large Japanese firms (and Gerschenkron's theory, after all, is a theory of large firm finance) in the first half of the century did not rely on banks. Instead, for the bulk of their funds they sold stock. Secondarily, they sold bonds and retained their earnings. Whatever the angle from which one examines the question, the answer is the same: banks played only a minor role in financing substantial pre-war Japanese firms.

In the discussion below, we realize that readers will understandably worry about sample bias. To address the issue, we explore the question from several distinct perspectives: we examine large firm balance sheets across several industries (Section A.2., below); flow-of-funds data for large firms in several industries (A.3.); the size of the stock markets (A.4.); and finance data for all firms (whether large or small) in the textile industry (B.1.), the railroad industry (B.2.), and the electric utility industry (B.3.).

2. Cross-sectional analysis. -- (a) The Imuta data. Begin with the obvious test: where did firms obtain their funds? Overwhelmingly, they relied on stock issues. Take Toshimitsu Imuta's study of 44 firms in 6 industries.[36] Imuta first identified those 187 firms that published their balance sheets in the Osaka Asahi newspaper between January and June 1898 (given the obvious sample bias, we present alternative data as well). He then excluded textile (51 firms), railroad (27 firms) and trade firms (21 firms), and of the remaining 88 firms chose 44 that were in industries with data on multiple firms. Independently of Imuta, we report data on textile and railroad firms below.

Table 1A summarizes Imuta's results: at the turn of the century, banks seldom mattered. According to the table, the firms raised 53 to 73 percent of their funds through stock issues, and another 5 to 18 percent through retained earnings. They raised 0 to 11 percent through bond issues, and only 1 to 13 percent from banks. As we note below (Tables 4-6), cotton textile firms in 1898 raised 58 percent of their funds through stock issues, 10 percent through retained earnings, 5 percent through bond issues, and 11 percent through bank loans; railroad companies in 1898 raised 91 percent through stocks, 2 percent through retained earnings, 6 percent through bonds, and 1 percent through bank loans.

(b) Our own data. Both to avoid the potential bias introduced by Imuta's decision to examine firms advertising their financials, and to see whether this reliance on equity continued into the 20th century -- for both those reasons, we independently collected balance sheet data on the largest Japanese firms in the 1920s and 1930s. We began by replicating Shoichi Asajima's study of corporate flow of funds (reported at Sec. A.3., below).[37] Asajima took four periods (1911-1919, 1919-1926, 1926-1931, and 1931-36), and collected information on how large firms funded their projects from accounting data in the Kabushiki nenkan [Stock Annual].[38] He

[36] Toshimitsu Imuta, Meiji ki kabushiki kaisha bunseki josetsu [Introduction to the Analysis of Meiji-Era Corporations] (Tokyo: Hosei University Press, 1976).

[37] Shoichi Asajima, Daikigyo no shikin chotatsu [Capital Raising Among Large Firms], in Tsunehiko Yui & Eisuke Daito, eds., Nihon keiei shi 3: Dai kigyo jidai no torai [History of Japanaese Management, 3: The Advent of the Age of the Large Firm] 219-69 (Tokyo: Iwanami shoten, 1995).

[38] Osakaya shoten, Kabushiki nenkan [Stock Annual] (Osaka: Osakaya shoten, various years). Although published by a rival company, this is a very similar volume to the source used in Jennifer L. Frankl, An Analysis of Japanese Corporate Structure, 1915-1937, 59 Journal of Economic History 997 (1999), discussed below at Sec. III.C.

defined "large" as all firms appearing in the nenkan with capital of at least 1 million yen in 1911, 5 million yen in 1919, or 10 million yen in 1926, 1931, or 1936.

We assembled data on five of Asajima's industries (unfortunately, these do not track Imuta's industry categories): textiles, mining, food and paper, chemicals, steel machinery, and sugar. Like Asajima, we used 1919, 1926, 1931, and 1936. We then added those firms in 1941 with capital of 20 million yen or more.

In Table 1B, we report the mean ratio of bank debt to gross assets for these firms, catalogued by industry and by date.[39] For most industries and years, the ratio ranges from 2 to 8 percent. Of the 25 cells in Table 1B, in only 6 is it over 10 percent, and in none is it over 20 percent. We follow that ratio with the ratio of bank debt to total capital (legal capital plus reserves, carryforwards, and current profits).[40] The number is larger, given that gross assets usually exceed total capital. Other than the few cells where firms with large losses had very small capital values, the ratios remain small.

In related research, we compare the equity/gross-assets and fixed-assets/gross-assets ratios for firms in heavy industry listed in the annual publication of the Mitsubishi Economic Research Center. Consistently, we find that the average equity ratio exceeded the fixed-assets ratio -- whether the 206 firms in 1928, the 205 in 1930, the 187 in 1933, the 195 in 1937, the 199 in 1940, or the 209 in 1943. At least on average, the firms did not need debt to finance long-term investment. Instead, they used what bank debt they had for operating expenses.[41]

(c) Funds availability. If firms did not borrow much, it was not because banks would not lend. Bankers searched hard for firms willing to borrow, and bank histories recall the frustration they felt.[42] Whether at the large banks or the small, bankers had funds for which they could not find appropriate borrowers. Among the five to six biggest banks, the loan to deposit ratio (from 1925 to 1940) fluctuated between 50 and 80 percent. Among the other banks, it fell almost monotonically from 100 percent in 1925 to under 40 percent in 1940. Among all banks, it

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[39] We translate "shakunyukin" as "bank debt," and "so shisan" as "gross assets." The categories are imprecise: some shakunyukin could be from sources other than banks, and bank debt could appear in such other categories as "tegata kariire." Tokyo shibaura denki, Tokyo shibaura denki 85 nen shi [An 85-Year History of Toshiba] 185 (Kawasaki: Toshiba, 1963).

[40] Given the practice in some Japanese firms of issuing stock at less than par but subject to call, we would have liked to be able to calculate paid-in capital as well. Unfortunately, reliable figures for paid-in capital are hard to derive from the Kabushiki nenkan. In any event, given that a firm could not issue additional shares without first obtaining full par value from existing shareholders, and given that shareholders would be liable for the full amount of par in case of insolvency, legal capital is in some ways a more relevant figure anyway.

[41] Yoshiro Miwa & J. Mark Ramseyer, Seisaku kin'yu to keizai hatten: Senzenki Nihon kogyo ginko no keesu [Policy Finance and Economic Growth: The Case of the Pre-War Industrial Bank of Japan] tab. 7, 66 Keizaigaku ronshu [Economic Review of the University of Tokyo] __ (forthcoming 2000) (University of Tokyo Facultyof Economics Discussion Paper CIRJE-J-26); Mitsubishi keizai kenkyu jo, Honpo jigyo seisaku bunseki [Analysis of Japanese Firm Performance] (Tokyo: various years). See also Tokyo shibaura, supra note, at 185.

[42] Mitsui ginko, Mitsui ginko 80 nen shi [An 80-Year History of the Mitsui Bank] 381 (Tokyo: K.K. Mitsui ginko, 1957); Yoshio Asai, 1920 nendai ni okeru Mitsui ginko to Mitsui zaibatsu [The Mitsui Bank and the Mitsui Zaibatsu in the 1920s], 11 Mitsui bunko ronso 251, 257 (1977).

hovered at 40-55 percent: 1912-14 -- 55 percent; 1915-18 -- 47; 1919-22 -- 51; 1223-26 -- 55; 1927-30 -- 48; 1931-34 -- 52; 1935-38 -- 45[43]

Not only did banks not lend heavily to firms, they did not invest heavily in stock either. Kaichi Shimura studied the identity of the invetors holding at least 1000 shares of stock in the 511 firms listed in a 1919 national investor registry. Through this, he created a data base of 8,506 investors in 379 companies -- firms responsible for 62 percent of the legal capital of all extant corportaions, and virtually all listed companies. Among these investors, he found that banks held only 3.2 percent of the stock at issue. By constrast, individuals held 76.2 percent of the stock, and non-bank corporations held the rest. Zaibatsu families held only 2 percent of the stock. Of all firms nationally, from 1930 to 1940 banks held only only 3.2-4.6 percent of the stock, and the large city banks (primarily zaibatsu banks) held only 1.3 - 2.4 percent of the stock.[44]

Fundamentally, pre-war Japanese banks were not institutions that made large, long-term investments in firms. Instead, they saw themselves as commercial banks that specialized in assorted payments functions and short-term loans. As the war intensified, the government increasingly pushed them to provide funds long-term to munitions firms, but this was not a change they voluntarily accepted. It was a change the government required. When Sumitomo CEO Masatsune Ogura became Minister of Finance in 1941, he promptly assembled the leading financeers to discuss the new corporate finance program. As he outlined it, the government would require banks to engage in "enterprise finance": to supply funds long-term for expansions in productive capacity. Japanese banks, he noted, "have generally maintained lending practices directed toward commercial finance." No longer would they be free to do so -- "for banks now to promote enterprises will require a change in the methods they have traditionally used."[45]

3. Flow of funds. -- If cross-sectional data show no evidence that big firms relied on bank debt, turn to the flow of funds -- to the question of where large Japanese firms obtained any increase in funding. Toward that end, we report Asajima's investigation of the largest Japanese firms over four periods (1911-1919, 1919-1926, 1926-1931, and 1931-36). Using the size cut-offs described above, he obtained a cohort of 123 firms for 1911-19, 111 for 1919-26, 134 for 1926-31, and 155 for 1931-36.

As Table 2A shows, the big firms seldom borrowed the extra money they needed from banks. Instead, they relied on equity. When these firms needed additional funds, for 35 to 55 percent of the amount they sold stock. For more modest amounts, they accumulated earnings and sold bonds. Even during the 1920s Japanese recession (from 1926 to 1931, per capita GNP rose 2.4 percent),[46] they turned to banks for only 14.6 percent of any extra funds they needed.

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[43] Miwa & Ramseyer, supra note, at tab. 1; Juro Teranishi, Nihon no keizai hatten to kin'yu [Japanese Economic Development and Finance] 337 (Tokyo: Iwanami shoten, 1982); Haruhito Takeda, Teikoku shugi to minpon shugi [Imperialism and Democracy] (Tokyo: Shuei sha, 1992).

[44] Kaichi Shimura, Nihon shihon shijo bunseki [An Analysis of Japanese Capital Markets] 386-90 (Tokyo: University of Tokyo Press, 1969); Bank of Japan, Honpo keizai tokei [Domestic Economic Statistics] (Tokyo: Bank of Japan, 1960).

[45] Nihon ginko ed., Nihon kin'yu shi shiryo, showa hen [Materials on Japanese Financial History, Showa Period] vol. 31, 480 (Tokyo: Publisher, 1971). Formally, Ogura had been soriji for the representative directors of the Sumitomo holding company.

[46] Kazushi Ohkawa, Nobukiyo Takamatsu & Yuzo Yamamoto, Choki keizai tokei: kokumin shotoku [Long-Term Economic Statistics: National Income] 237 (Tokyo: Toyo keizai shinpo sha, 1974).

Predictably, Table 2A masks some sectoral variation. In some industries during some periods, firms actually cut their total funding: ocean shipping during 1919-36, textiles in 1926-31, and the food and paper industry in 1931-36. Nonetheless, the picture that emerges across industries tracks the general message of Table 2A: in none of the industries did large firms use bank loans for extra funds. Table 2B disaggregates the Table 2A sample into 11 industries, and then divides the net increase in bank debt during each period by the sum of the net increases in bonds and paid-in capital. Of the resulting 44 cells, in only 8 is the ratio of the increase in bank debt to the increase in bonds and stock issues greater than .3; in only 4 is it greater than .4, a nd in only 2 is it greater than .5.

Table 1: Cross-sectional Capitalization Measures

A. Mean Capitalization of Firms, 1897

	Food	Chem.	Brick	Cement	Metals	Machines
Paid-in Capital	64.6%	71.1%	71.8%	53.1%	72.5%	66.3%
Retained Earnings	15.6	5.3	14.9	18.4	7.3	7.3
Bonds	3.4	0	0	10.3	0	0
Bank Debt	5.2	1.8	9.7	4.5	13.2	2.6
Other Debt	11.3	21.7	3.7	13.8	7.1	23.8
No. of firms	15	7	8	4	5	5
Mean assets (x 1000 yen)	196.7	206.5	57.9	340.4	253.5	596.3

Source: Toshimitsu Imuta, Meiji ki kabushiki kaisha bunseki josetsu [Introduction to the Analysis of Meiji-Era Corporations] 138 (Tokyo: Hosei University Press, 1976).

B. Mean Ratios of Bank Debt to Asset and to Total Capital, 1919-1941

	1919		1926		1931		1936		1941	
	BD/A	BD/TC	BD/A	BD/TC	BD/A	BD/TC	BD/A	BD/TC	BD/A	BD/TC
Food & paper	6.18	8.51	7.50	12.70	12.63	51.90	4.78	8.23	5.64	8.38
Chemicals	4.75	7.06	4.70	6.97	6.99	16.89	2.12	4.12	14.29	25.22
Steel mach	4.17	8.68	11.98	60.95	12.46	27.40	4.94	7.30	12.98	33.96
Mining	2.17	3.03	4.07	5.12	7.53	11.43	8.27	10.20	14.22	29.78
Sugar	0.19	0.30	1.75	4.93	8.12	27.54	7.98	20.64	1.64	3.73
n:	57		61		52		67		104	

Notes:

BD/A: Bank Debt (shakunyukin)/Assets (so shisan).

BD/TC: Bank Debt/Total Capital. For total capital, we sum legal capital (calculated at par value), reserves, carryforwards, and current profits.

Source: Osakaya shoten, Kabushiki nenkan [Stocks Annual] (Tokyo: various publishers, various years).

Table 2: Flow of Funds Measures

A. Source of Additional Funds, 1911-1936

	1911-19	1919-26	1926-31	1931-36
Equity	34.4%	48.8%	39.4%	53.6%
Earnings	33.4	4.8	-2.0	28.6
Bonds Issues	4.5	26.4	44.1	9.1
Bank Loans	4.6	6.4	14.6	-1.7
Trade Credit	6.3	11.4	-3.6	-2.6
Other Loans	16.9	2.2	7.5	13.3
Total Net Increase	2,292	4,394	2,601	2,676
No. of Firms	123	111	134	155

Note: The first six lines give the percentage of the net increase in funding over the period accounted for by a given source. The seventh line gives the total net increase in funding for the firms, in million yen. The last line gives the number of firms.

B. Ratio of Net Increase in Bank Debt to Net Increase in Bond and Stock Issues, 1911-1936

	1911-19	1919-26	1926-31	1931-36
Textiles	.046	.042	-.269	.277
Railroads	.046	.070	.321	-.112
Electrical Utilities	.106	.084	.104	-.273
Chemicals	.105	.043	.155	.016
Brick	.018	.097	-.061	.216
Mining	.085	.053	.294	.262
Paper & Food	.399	.059	.163	-.040
Ocean Shipping	-.066	.382	-.257	-.113
Steel Machinery	.355	.056	.437	-.010
Sugar	-.043	.111	.834	2.646
Others	.402	.056	.136	.279
All Industries	.118	.085	.175	-.027

Notes: In each case, we give (i) the percentage of the net increase in funding at the firms in an industry represented by the net increase in bank debt, divided by (ii) the percentage of that net increase represented by the net increase in bond issues plus paid-in capital.

Source: Calculated from data found in Shoichi Asajima, “Daikigyo no shikin chotatsu [Capital Raising Among Large Firms,” in Tsunehiko Yui & Eisuke Daito, eds., Nihon keiei shi 3: Dai kigyo jidai no torai [History of Japanaese Management, 3: The Advent of the Age of the Large Firm] 235-38 (Tokyo: Iwanami shoten, 1995).

4. Exchanges. -- Consistent with the way firms relied on stock, the turn-of-the-century Tokyo and Osaka stock exchanges thrived. Founded in 1878, by 1900 the TSE listed the bonds of 7 firms and the shares of 113. Ten years later it listed 43 bonds and 142 stocks. By 1920, those numbers had climbed to 157 bonds and 569 stocks, and by 1925 to 492 bonds and 665 stocks. Similarly founded in 1878, by 1900 the OSE listed the bonds of 1 firm and the shares of 50. Ten years later, it listed no private sector bonds but the shares of 64 firms. By 1920, those numbers had climbed to 8 bonds and 206 stocks, and by 1925 to an unspecified number of bonds and the shares of 191 firms.[47] For comparison, we include modern listing figures in Table 3.

These shareholders traded actively. During 1890, investors on the TSE contracted to sell 1.6 million shares. During 1900, they contracted for 3.7 million shares, in 1910 11.0 million, in 1920 37.5 million, and in 1925 59.8 million. On the OSE during 1890 investors contracted to sell 982,000 shares. During 1900, they contracted for 5.2 million shares, in 1910 11.2 million, in 1920 22.3 million, and in 1925 13.0 million[48].

Less so than their contemporaries at the NYSE to be sure, investors on the TSE and OSE were still impressively active.[49] Collectively, they traded stocks valued at 512 million yen in 1900, 2.09 billion in 1910, 8.13 billion in 1920, and 4.13 billion in 1925. Calculated as a percentage of GDP, these figures amounted to 21.2 percent, 53.3 percent, 51.1 percent, and 25.4 percent, respectively. As Table 3 shows, these numbers easily place them within the range of modern advanced economies.

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[47] Tokyo kabushiki torihiki jo, Tokyo kabushiki torihiki jo 50 nen shi [Fifty Year History of the Tokyo Stock Exchange] tab. 1 (Tokyo: Tokyo kabushiki torihiki jo, 1928); Osaka kabushiki torihiki jo, Daikabu 50 nen shi [50 Year History of the Osaka Stock Exchange] supp. 35 - 186 (Osaka: Osaka kabushiki torihiki jo, 1928). These numbers modestly overstate the number of firms listed on the exchange, since they count as separate entries the different classes of stock of those firms trading more than one class.

[48] Tokyo, supra note, at tab. 3; Osaka, supra note, at tab. 1.

[49] On the New York Stock Exchange, investors traded 139 million shares in 1900, 164 million in 1910, 227 million in 1920, and 454 million in 1925. See U.S. Bureau of the Census, Statistical Abstract of the United States (Washington, D.C.: Bureau of the Census, various years). The OSE data record the number of shares traded, but not their monetary value. Accordingly, we estimate that value based on the value of the shares traded on the TSE in that year.

Table 3: Modern Stock Exchanges in Selected Countries -- Listings and Turnover-Value/GDP

	No. of 1999 Listed Firms	Turnover/GDP (%) 1990	1999
U.S.	8450	31.5	159.8
U.K.	2399	28.6	86.0
Germany	741	22.1	65.2
Japan	2416	54.0	25.1
Canada	1384	12.4	64.1
Australia	1162	13.5	112.6
Korea	725	30.1	43.0
Israel	644	10.5	11.2

Source: World Bank, World Development Indicators tab. 5.2 (Washington, D.C.: World Bank, 2000).

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B. Three Case Studies:

1. Textiles. -- Both to give context to this data and to examine financing patterns at firms too small to appear in the samples above, we turn to comprehensive data on three important industries: cotton textiles, railroads, and electrical utilities. In the early 1900s, the Japanese cotton-spinning industry grew spectacularly fast. From 60 million yen in 1894 (in constant 1934-36 prices), production climbed to 167 million yen in 1904, 447 million in 1914, 657 million in 1924, and 1,104 million in 1934. By the 1920s the Japanese firms were using more raw cotton than their British competitors. Domestically, they dominated the economy. During the 1930s, the cotton spinning firms produced a quarter of all domestic manufactured goods and employed 40 percent of all factory workers.[50]

The men who began these firms sold the stock to a broad array of investors. Although the investors often came from a few towns or cities (a point that obviously facilitated trust), rarely did a single shareholder or group of shareholders dominate the firm. Kazuo Yamaguchi studied the 60-odd spinning firms operating in 1898.[51] On average, he found that the firms had 331 shareholders. The largest investor held about 8 percent of the stock, the largest five together held 24 percent, and the largest 10 held 33 percent. Only 11 percent of the firms (7 firms) had fewer than 100 shareholders, while 52 percent (32 firms) had 300 shareholders or more. In no

[50] Shozaburo Fujino, Shiro Fujino & Akira Ono, Choki keizai tokei: Sen'i kogyo [Long-Term Economic Statistics: Textiles] 246 (Tokyo: Toyo keizai shimpo sha, 1979); Yoshiro Miwa & J. Mark Ramseyer, Corporate Governance in Transitional Economies: Lessons from the Prewar Japanese Cotton Textile Industry, 29 Journal of Legal Studies 171, 178 (2000).

[51] Kazuo Yamaguchi, Meiji 31 nen zengo boseki gaisha no kabusnushi ni tsuite [Regarding Spinning Firm Shareholders at Around 1898], 15(2) [Meiji daigaku] Keiei ronshu 1 (1968).

firm did the largest shareholder hold 50 percent or more of the stock, and in only 3 firms did a single shareholder hold 20 percent of the stock or more.

Tables 4 and 5 illustrate the importance of equity issues. Table 4 gives the mean capitalization of the 52 spinning firms in 1898 with available data, and confirms the way that firms of all sizes used equity rather than bank loans. In general, they raised 58 percent of their funds through stock issues, another 10 through earnings, and 5 through bonds. Only 11 percent of their funds did they borrow from banks. Although the largest half of the firms raised the least from the banks (9-10 percent for the 27 firms with 10,000 or more spindles), even the smaller firms raised less than 20 percent from banks. Table 5 confirms the way the reliance on dispersed shareholdings had persisted over time -- even at the very outset of the industry in 1890, the firms had raised their equity from a mean 121 investors.

Table 4: Mean Capitalization of Cotton-Spinning Firms, 1898

	Number of Operating Spindles				
	5,999 or less	6,000-9,999	10,000-19,999	20,000 or more	All Firms
Paid-in Capital	186 (64)	338 (59)	451 (59)	827 (55)	469 (58)
Retained Earnings	7 (2)	11 (2)	65 (9)	226 (15)	84 (10)
Bonds	0 (0)	25 (4)	41 (5)	99 (7)	44 (5)
Bank Debt	47 (16)	78 (14)	65 (9)	153 (10)	90 (11)
Other Debt	51 (18)	123 (21)	136 (20)	188 (13)	128 (16)
No. of Firms	12	13	12	15	52

Notes: The table gives the mean per firm figure, in 1000 yen, followed by the percentage of total firm capitalization in parenthesis. Bank debt includes shakunyu kin and toza karikoshi.

Source: Toshimitsu Imuta, Meiji ki kabushiki kaisha bunseki josetsu [Introduction to the Analysis of Meiji-Era Corporations] (20) (Tokyo: Hosei University Press, 1976).

Table 5: Shareholders per Firm, by Industry, 1890-1898

	1890	1892	1894	1896	1898
Cotton-Spinning					
Shareholders:	121	172	222	280	457
Paid-in capital:	143		271	379	456
No. of firms	61		53	76	71
Railroads					
Shareholders:	939	769	669	695	1040
Paid-in capital:	3253	3711	3034	3383	3665
No. of firms:	12	13	20	26	42
Electrical Utility					
Shareholders:	255	161	119	109	107
Paid-in capital:	168	152	120	145	141
No. of firms:	8	11	20	29	45

Notes: "Shareholders" gives the mean number of shareholders, per firm. "Paid-in capital" gives the mean paid-in capital per firm, in 1000 yen.

Sources: Toshimitsu Imuta, Meiji ki kabushiki kaisha bunseki josetsu [Introduction to the Analysis of Meiji-Era Corporations] (59) (Tokyo: Hosei University Press, 1976), as supplemented by Naikaku tokei kyoku, ed., Nippon teikoku tokei nenkan (Tokyo: Naikaku tokei kyoku, various years).

2. Railroads -- By 1869, U.S. entrepreneurs had taken trains across the north American continent. They had also brought tales of these machines to Japan. Hearing their accounts, the new government was all too eager to respond. After some initial missteps it ran tracks from Tokyo to Yokohama (18 miles). By 1874 it had finished the line from Osaka to Kobe, and the Tokyo-Yokohama line carried 1.6 million passengers a year.[52]

In 1883, private entrepreneurs began running trains too. As they did, the focus in the industry increasingly shifted from the national railway to the private. In 1890, the national government owned 550 miles of track, while private firms owned 1,165 miles. By 1900, the government owned 1,059 miles and private firms 2,966, and by 1905 the government owned 1531 miles to the private firms' 3,251. In 1906, by fiat the government nationalized 2,823 miles of private track. By then, the various railroads constituted some 14 percent of all domestic investment.[53]

From the outset, the railroads relied on stock issues.[54] Within a year of starting operations, the first private railroad listed its stock on the Tokyo Stock Exchange. In 1886 another firm listed its stock, in 1887 two more, in 1888 3 more, and in 1889 another 3. During the 1890s, 23 additional railroad firms listed their stock, and through 1905 another 14. On the Osaka Stock Exchange, 8 railroads listed their stocks during the 1880s, and another 26 during the 1890s.[55]

Even more than the cotton spinning companies, the railroads sold their stock to a broad array of investors. As Table 5 shows, during the 1890s the mean number of shareholders per railroad ranged from 600 to 1,100. Toshimitsu Imuta studied shareholder lists at three of the railroads. At the largest (the Nippon), in 1881 (with 5,597 total shareholders) the lead shareholder had 9.5 percent of the stock and the largest 5 collectively held 27.5 percent; in 1886 (3,098 shareholders) the lead held 3.7 percent and the largest 5 held 14.3; and in 1898 (4,553 shareholders) the lead held 14.7 percent and the largest 5 held 22.2.[56]

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[52] J. Mark Ramseyer & Frances M. Rosenbluth, The Politics of Oligarchy: Institutional Choice in Imperial Japan ch. 9 (New York: Cambridge University Press, 1995).

[53] Ryoshin Minami, Choki keizai tokei: Tetsudo to denryoku [Long-Term Economic Statistics: Railroads and Electric Utilities] 6 (Tokyo: Toyo keizai shinpo sha, 1965).

[54] According to historian Steven Ericson, banks played a "vital contribution to the supply of ordinary share capital" in the railroad industry. Steven J. Ericson, Railroads in Crisis: The Financing and Management of Japanese Railway Companies during the Panic of 1890, in William D. Wray, ed., Managing Industrial Enterprise: Cases from Japan's Prewar Experience 121, 176-77 (Cambridge: Harvard Council on East Asian Studies, 1989). Ultimately, "the experience of Meiji railroads indicates that Gerschenkron's thesis concerning the late-comer's need for 'special institutional devices' to substitute for individual private enterprise still has relevance for the Japanese case." Steven J.Ericson, The Sound of the Whistle: Railroads and the State in Meiji Japan 382 (Cambridge: Harvard Council on East Asian Studies, 1996). In the end, however, to show the "vital contribution" of banks Ericson does no more than show that banks lent money on collateral, that they accepted stock as collateral, and that among the blue-chip stocks used as collateral for loans to individuals, railroad shares figured prominently. Even by Ericson's own account, in other words, all banks did to promote railroads was to lend money to rich investors who owned, inter alia, railroad stock.

[55] Tokyo, supra note; Imuta, supra note, at (18).

[56] Imuta, supra note, at (64)-(87). Where necessary, we have estimated the total number of shares outstanding using data from Tokyo, supra note; and Tetsudo kyoku, Meiji 32 nendo Tetsudo kyoku nempo [1899 Railway Bureau Annual Report] (Tokyo: Tetsudo kyoku, 1900).

At the Hokkaido takushoku railroad, in 1889 (with 946 shareholders) the lead shareholder (the Imperial Household Agency) held 7.7 percent, while the largest 5 held 15.4; in 1894 (694 shareholders) the Agency was still the lead shareholder with 7.7 percent, and the largest 5 held 26.9. By 1902 (1,145 shareholders), the Mitsui group held larger interests (perhaps because it found the railroad a convenient complement to its other Hokkaido investments, particularly in coal mining), and the Agency's interest had fallen to third. At the Kansai railroad, in 1888 the lead shareholder held 3.3 percent and the largest 5 held 8.4; in 1895 (1,456 shareholders) the lead held 9.0 and the largest five held 19.3; in 1906 the lead held 2.5 and the largest five held 7.6.

From these stockholders, the railroads raised virtually all their funds (Table 6). What else they needed they obtained by selling bonds. From banks, they raised only 0-3 percent.

Table 6: Capitalization of Railroad Firms, 1884-1898

	1884	1886	1888	1890	1892	1894	1896	1898
Paid-in Cap.	5163(100)	8062(100)	14997(97)	38493(95)	46737(94)	59177(88)	89011(91)	169999(92)
Ret. Earnings	0 (0)	0 (0)	231 (2)	511 (1)	775 (2)	1322 (2)	1587 (2)	3374 (2)
Bonds	0 (0)	0 (0)	0 (0)	269 (1)	1710 (3)	5778 (9)	5350 (5)	10640 (6)
Bank Debt	0 (0)	0 (0)	165 (1)	1162 (3)	580 (1)	877 (1)	2316 (2)	2190 (1)
No. firms	1	2	6	12	13	20	27	41

Notes: Current values, in 1000 yen, followed by percentage. Bank debt excludes short-term.

Source: Tetsudo kyoku, Meiji 32 nendo Tetsudo kyoku nempo [1899 Railway Bureau Annual Report] 221-37 (Tokyo: Tetsudo kyoku, 1900).

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3. Electrical utilities. -- Like textiles and railroads, electrical power was a growth business in pre-war Japan. The first commercial electrical power plant began operations in Great Britain in 1882. The first in Japan began in 1887, and from there the industry boomed. From 1 percent of gross national investment at the turn of the century, it grew to 9 percent of GNI within two decades. From 1910 to 1920, consumption of electrical power in Japan rose from 523 kilowatt-hours to 3,795. By 1930, it stood at 12,618.[57]

Although per capita consumption of electrical power lagged that of the U.S., among manufacturing firms the pace of electrification tracked the U.S. pace. From 1910 to 1920, the percentage (by horsepower) of electrically powered machines in Japan rose from 20 percent to 61, and over the next decade to 81. In the U.S., the percentage of electrically powered machines rose from 25.4 percent (1909) to 55.0 (1919) to 82 (1929).[58]

During most of this period, the Japanese electrical utility industry remained both competitive and unregulated. So competitive was it that of the 39 firms listed in the Kabushiki nenkan for 1911 and 1918 barely 15 were still in business in 1924. Only during the 1930s did the situation change: in 1932 the firms formed a cartel to stop price competition, and in 1939 the government began regulating them.[59]

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[57] Minami, supra note, at 6, tab. 14; Takeo Kikkawa, Nihon denryoku gyo no hatten to Matsunaga Yasuzaemon [Yasuzaemon Matsunaga and the Development of the Japanese Electrical Power Industry] 28 (Nagoya: Nagoya daigaku shuppan kai, 1995).

[58] The figures for Japan include "prime movers" only; the figures for the U.S. include all machinery. For Japan, see Minami, supra note, at tab. 27; for the U.S., see U.S. Bureau of the Census, Historical Statistics of the United States tabs. P 68-73, S 32-43 (New York: Cambridge University Press, 1975, 1997 CD-ROM version).

[59] Kikkawa, supra note, at 8, tabs. 1-11, 1-16; Minami, supra note, at 4. The initial regulatory statute dated from 1931.

Like the spinning and railway firms, the electrical utilities relied on stock and bond issues for their funds. As the cross-sectional figures in Table 7-A show, from 1910 to 1935 the fraction of funds from stocks fell from 83 percent to 57, while the fraction from bonds climbed from 4 to 32. Bank debt, however, hovered in the 7-13 percent range. Table 7-B tells a similar story: when firms needed extra money, they relied heavily on stock and bond issues. They turned to banks for less than a fifth of any additional funds.

Electrical utilities issued stock broadly. To explore shareholdings among the smaller firms as well as the larger, Takeo Kikkawa catalogued all 53 firms with relevant data for 1903. Only five of the firms had fewer than 30 shareholders, while 23 had 100 or more. Of the 130 firms with available data in 1911, only 22 had fewer than 30 shareholders and over half had 100 or more.[60]

The larger firms sold stock to a broad swath of investors indeed. Take the 39 firms in both the 1911 and 1918 editions of the Kabushiki nenkan (disproportionately the larger firms). They had a mean 2.9 million yen in legal capital in 1911 and 421 shareholders. By 1918, they had 5.2 million in legal capital and 842 shareholders. Or take the 15 firms in both the 1918 and 1924 editions. They had 10.8 million yen in legal capital and 1,648 shareholders in 1918, and a mean 41.5 million in legal capital and 4,552 shareholders in 1924.[61]

Broad shareholdings continued until the war. On average, the 31 firms with shareholding data in the Kabushiki nenkan for 1930 had about 7,400 shareholders. No firm had fewer than 400 shareholders, and only 4 had fewer than 1,000. The lead shareholder held a mean 17 percent of the stock, and the largest five collectively held 31 percent. In only 1 firm did the lead shareholder hold a majority of the stock, and in only 10 did it hold more than 20 percent. Of the latter 10 firms, however, six were effectively subsidiaries of other electrical utilities. If we exclude those 6, the mean equity interest of the largest shareholder drops to 11.9 percent.

As Table 7 shows, over time the industry shifted from stocks to bonds. This was particularly true among the five largest firms. During 1923-27, these firms raised only 31 percent of their funds from equity, and during 1928-31 only 14. Through bonds, however, they raised 49 and 79 percent. More surprisingly perhaps, they sold many of their bonds abroad (primarily in the U.S.) -- about 2/3 of the 1923-27 issues, and 2/5 of the 1928-31 issues.[62]

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[60] Kikkawa, supra note, at tab. 1-6.

[61] Kikkawa, supra note, at tabs. 1-1, 1-11, 1-16.

[62] Kikkawa, supra note, at tab. 1-34.

Table 7: Electric Utility Firms, 1910-1938

A. Industry Capitalization

	1910	1915	1920	1925	1930	1935
Paid-in Capital	86 (83)	305 (75)	660 (76)	1635 (61)	2306 (51)	2858 (57)
Retained Earnings	5 (5)	13 (3)	46 (5)	89 (3)	148 (3)	213 (4)
Bonds	4 (4)	45 (11)	75 (9)	661 (25)	1456 (32)	1626 (32)
Bank Debt	9 (8)	43 (11)	89 (10)	286 (11)	571 (13)	351 (7)
Number of firms	178	457	542	532	482	454

B. Source of Additional Funds per Year.

	1908-14	1915-18	1919-24	1925-30	1931-38
Paid-in Capital	34 (75)	31 (72)	183 (61)	134 (37)	98 (79)
Retained Earnings	1 (3)	4 (10)	8 (3)	12 (3)	12 (10)
Bonds	4 (9)	5 (10)	82 (28)	153 (43)	22 (18)
Bank Debt	6 (13)	4 (8)	25 (9)	60 (17)	-8 (-7)

Notes: Current values, in million yen, followed by percentage.

Sources: Calculated from Takeo Kikkawa, Nihon denryoku gyo no hatten to Matsunaga Yasuzaemon [Yasuzaemon Matsunaga and the Development of the Japanese Electrical Power Industry] tabs. 1-1, 1-3 (Nagoya: Nagoya daigaku shuppan kai, 1995).

III. Bank Debt, Firm Performance, and Zaibatsu Affiliation:

A. Introduction:

If some economists sometimes claim that pre-war Japanese firms relied heavily on bank debt, scholars in Japanese studies routinely add a strategic angle. Routinely, they draw on pre-war Japanese journalists and occupation officials to argue that the zaibatsu families used their control over banks to manipulate capital market imperfections to their private advantage. Indeed, SCAP relied on precisely that claim to justify its destruction of the zaibatsu families.

Typically, these scholars proceed in three steps. First, they argue that some firms had easier access to credit than others, and that this access gave the firms a competitive advantage in the product market. Second, they claim that the large zaibatsu groups had the market power to manipulate the allocation of credit. Third, they assert that the zaibatsu used that power in the credit market to gain control -- through their affiliated manufacturing firms -- over various product markets.

As oft repeated as the claim may be, for two reasons it is false. First, the most successful firms did not rely on bank debt (Section B., below). Second, the zaibatsu groups did not use their affiliated banks to route funds to their affiliated manufacturing firms (Section C.). As central as the claim was to occupation policy, it was sheer fiction.

B. Debt and Performance:

1. Introduction. -- To explore whether firms with favored access to bank debt performed better than those without, we regress two measures of firm performance on several measures of firm finance. On the one hand, if firms faced competitive capital markets, then by standard theory they would have chosen a capital structure that maximized shareholder returns. If so, then the level of bank debt at a firm would bear no systematic relation to firm performance, and our regressions would yield no statistically significant coefficients.

On the other hand, if the standard accounts were true, then firms with favored access to bank debt should have enjoyed a competitive advantage. If so, then firms with higher levels of bank debt should have outperformed firms with lower. Our regressions, in turn, should generate statistically significant positive coefficients on the level of bank debt at a firm.

2. The data. -- To assemble the necessary data, we first replicate Asajima's data base (described above) for six key industries (as defined by the Kabushiki nenkan): steel machinery, chemicals, textiles, food & paper, mining, and sugar. Recall that Asajima collected data for 1919, 1926, 1931, and 1936. We add 1941, and calculate for each firm the levels of equity (generally, the sum of legal capital, reserves, carryforwards, and current profits), bonds, bank debt, and gross assets.[63] In addition, we use Kabushiki nenkan data to estimate stock-market capitalization. Because the nenkan gives only high and low stock prices for a year, we take the mid-point of the two values. We then multiply that figure by the estimated number of outstanding shares (legal capital divided by the customary par value of 50 yen).

Because many analysts believe that the zaibatsu groups manipulated capital markets to their advantage, we add dummy variables for zaibatsu affiliation. More specifically, we add dummy variables for each of the four principal zaibatsu groups (Mitsui, Mitsubishi, Sumitomo, and Yasuda-Asano), a dummy for all other zaibatsu (the Furukawa, Kawasaki, Nissan, Nihon

[63] On legal capital, see note x, supra; on bank debt, see note x, supra.

Chisso, and Mori groups), and a dummy indicating whether a firm was in any of the groups (Any Zaibatsu). In identifying zaibatsu affiliation, we rely on Asajima.[64]

Table 8 gives selected summary statistics. For reference, note the trend in per capita GNP during this period (in constant 1934-36 yen):[65]

1895	139	1919	209
1900	141	1926	208
1905	145	1931	213
1910	158	1936	268
1915	160	1940	318

As the trend shows, the 1920s were years of economic stagnation in Japan.

2. The tests. -- We report below the results of several tests. First, to examine the relation between bank debt and stock prices, we divide market capitalization by firm equity. We then regress that ratio on a variety of accounting measures (Tables 9, 10A and 11). We had hoped to use Tobin's Q, but could obtain neither the market value of the firm's debt nor the replacement cost of the firm's assets.

Second, to examine the effect of bank debt on firm growth, we regress the growth in a firm's asset base from one period to the next over the firm's financials in the first period (Table 10B). In other words, we regress 1919-26 growth (defined as [1926 gross assets]/[1919 gross assets]) on 1919 financials, 1926-31 growth (similarly defined) on 1926 financials, and so forth. Last, to avoid the possibility that unobserved facets of managerial ability might correlate with levels of bank debt, we regress the change in the market-capitalization over equity for each firm on the change in its leverage and asset base (Table 11).

As explanatory variables, we focus on two financial measures. First, we use the bank-debt/gross-assets and bonds/gross-assets ratios for each firm. Second, we use a firm's total leverage, defined as 1 less the ratio of a firm's equity to its gross assets. The first variable (bank-debt/gross-assets) obviously focuses more precisely on the isssue at stake in this study. Unfortunately, the accounting category we translate as bank debt (shakunyukin) probably includes modest amounts of non-bank debt, and for some firms may exclude some amounts owed directly to banks as well. Accordingly, we use the total leverage figure as a check against the chance of such error.

For the Table 9 regressions, we segregate the data by year, while for Table 10 we pool the data sets -- a practice consistent with Jennifer Frankl's recent study of zaibatsu profitability. In Tables 9 and 11 we add industry dummies; in Table 10 we add industry dummies, and year dummies. In the interests of space, we do not report the coefficient estimates. In all regressions we calculate but do not report a constant term.

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[64] The leading alternative classifications are those of Kamekichi Takahashi, Nippon zaibatsu no kaibo [An Anatomy of Japanese Zaibatsu] (Tokyo: Chuo koron sha, 1930), and Mochikabu gaisha seiri iinkai, Nihon zaibatsu to sono kaitai [The Japanese Zaibatsu and their Dissolution] (Tokyo: Mochikabu gaisha seiri iinkai, 1951). We also ran these regressions using their classifications, and generally obtained similar results. Takahashi's classification is plausible, but we believe the SCAP classification (dating from 1946) is too far removed in time to be appropriate here.

[65] Ohkawa, et al. (1974), supra note, at tab. 32.

Table 8: Corporate Finance -- Selected Summary Statistics

A. Financial Values (Pooled Sample):

	Minimum	*Mean*	*Maximum*
Equity	1,322	47,441	572,313
Bonds	0	6,085	340,000
Bank debt	0	6,775	752,802
Gross assets	2,218	78,712	1,723,987
Total leverage	.001	.355	.941
Bank debt/gross assets	0	.071	.797
Market cap/Equity	.065	1.087	3.002

B. Zaibatsu Membership:

Mitsui	0	.076	1
Mitsubishi	0	.028	1
Sumitomo	0	.021	1
Yasuda	0	.014	1
Other	0	.049	1

C. Number of Firms:

	1919	1926	1931	1936	1941
Steel machinery	13	13	9	14	41
Chemicals	10	10	7	15	16
Textiles	14	18	20	21	23
Food & paper	6	9	9	5	8
Mining	7	6	7	9	12
Sugar	8	8	7	6	4

Note: Total leverage is equal to 1 - (equity/gross-assets).

Sources: Osakaya shoten, Kabushiki nenkan [Stock Annual] (Osaka: various publishers, various years); Shoichi Asajima, "Daikigyo no shikin chotatsu [Capital Raising Among Large Firms," in Tsunehiko Yui & Eisuke Daito, eds., Nihon keiei shi 3: Dai kigyo jidai no torai [History of Japanese Management, 3: The Advent of the Age of the Large Firm] 227-34 (Tokyo: Iwanami shoten, 1995).

Table 9: Corporate Finance -- Regressions by Year

A. Using Bank Debt/Gross Assets:

Dependent variable:	1919 MktCap/Eq	1926 MktCap/Eq	1931 MktCap/Eq	1936 MktCap/Eq	1941 MktCap/Eq
Bank dt/Gr asts	-1.343 (0.97)	-.340 (0.48)	-1.109 (2.21)	-.665 (0.80)	-.763 (3.85)
Bonds/Gr assets	2.377 (1.68)	-2.41 (3.53)	-1.120 (2.59)	-.822 (0.73)	.838 (2.07)
Gross assets	.125 (0.47)	.407 (3.08)	.190 (1.93)	.196 (2.46)	.026 (2.21)
Mitsui	.038 (0.16)	.343 (1.93)	.343 (2.27)	.184 (1.18)	.381 (3.21)
Mitsubishi	dropped	-.163 (0.31)	-.000 (0.00)	.434 (1.70)	.163 (1.36)
Sumitomo	dropped	dropped	dropped	.438 (1.04)	.420 (3.06)
Yasuda	-.201 (0.41)	-.392 (1.12)	.076 (0.26)	-.048 (0.15)	-.050 (0.30)
Other zaibatsu	.306 (0.73)	.732 (2.12)	.407 (1.59)	.254 (1.22)	.001 (0.01)
Industry dummies	yes	yes	yes	yes	yes
n:	47	56	55	61	93
Adjusted R2:	0.18	0.36	0.17	0.08	0.34

B. Using Total Leverage:

Dependent variable:	1919 MktCap/Eq	1926 MktCap/Eq	1931 MktCap/Eq	1936 MktCap/Eq	1941 MktCap/Eq
Total leverage	-.334 (0.44)	-.819 (2.19)	-.772 (3.01)	-.899 (2.41)	.230 (1.06)
Gross assets	.235 (0.87)	.403 (2.87)	.224 (2.30)	.217 (2.85)	.019 (1.38)
Mitsui	.139 (0.59)	.295 (1.56)	.367 (2.41)	.223 (1.51)	.362 (3.86)
Mitsubishi	dropped	-.012 (0.02)	.094 (0.22)	.579 (2.36)	.180 (1.35)
Sumitomo	dropped	dropped	dropped	.470 (1.19)	.449 (3.00)
Yasuda	.056 (0.13)	-.463 (1.26)	.009 (0.03)	-.108 (0.37)	.032 (0.18)
Other zaibatsu	.525 (1.28)	.643 (1.75)	.404 (1.57)	.367 (1.86)	.119 (0.84)
Industry dummies	yes	yes	yes	yes	yes
n:	47	56	55	61	93
Adjusted R2:	0.13	0.27	0.17	0.18	0.20

Notes: All regressions use OLS. We give coefficients, followed by the absolute value of the t-statistics in parenthesis. Total leverage is equal to 1 - (equity/gross-assets). In Panel A, the independent financial variables are for the same year as the dependent variable, and the coefficients for gross assets are multiplied by 100,000. In Panel B, total leverage is for the period preceding the dependent variable. Thus, where 1919-26 Growth is the dependent variable, the leverage is for 1919. Coefficients for industry dummies and a constant term were calculated but are not reported.

Sources: See Table 8.

Table 10: Corporate Finance -- Regressions on Pooled Sample

A. Market Capitalization/Equity:

Dependent variable:	Mkt Cap./Eq.	Mkt Cap./Eq.	Mkt Cap./Eq.	Mkt Cap./Eq.
Bank debt/Gross assets	-.807 (3.51)	-.841 (3.66)		
Bonds/Gross assets	-.677 (2.40)	-.704 (2.50)		
Total leverage			-.504 (3.35)	-.466 (3.07)
Gross assets	.051 (2.77)	.050 (2.70)	.054 (2.85)	.051 (2.70)
Mitsui	.280 (3.95)		.302 (4.22)	
Mitsubishi	.319 (2.24)		.431 (3.01)	
Sumitomo	.595 (2.87)		.562 (2.69)	
Yasuda	-.056 (0.41)		-.115 (0.84)	
Other zaibatsu	.301 (2.75)		.332 (3.00)	
Any zaibatsu		.268 (4.61)		.289 (4.89)
Industry dummies	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes
n	312	312	312	312
Adjusted R2:	.45	.44	.44	.43

B. Firm Growth:

Dependent variable:	Growth	Growth	Growth	Growth
Bank-debt/Gross assets	.190 (0.18)	.094 (0.09)		
Bonds/Gross assets	-1.56 (1.66)	-1.465 (1.57)		
Total leverage			-1.062 (2.06)	-.989 (1.92)
Mitsui	.016 (0.07)		.053 (0.24)	
Mitsubishi	.215 (0.39)		.320 (0.59)	
Sumitomo	.100 (0.12)		.073 (0.09)	
Yasuda	.053 (0.12)		.044 (0.10)	
Other zaibatsu	.827 (2.23)		.867 (2.34)	
Any zaibatsu		.163 (0.84)		.196 (1.01)
Industry dummies	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes
n	210	210	210	210
Adjusted R2:	.15	.15	.16	.16

Notes: All regressions use OLS. We give coefficients, followed by the absolute value of the t-statistics in parenthesis. Total leverage is equal to 1 - (equity/gross-assets). In Panel A the independent financial variables are for the same year as the dependent variable, and the coefficients on gross assets are multiplied by 100,000. In Panel B the independent financial variables are for the period preceding the dependent variable. Thus, where 1919-26 Growth is the dependent variable, the independent variables are for 1919, and so forth. Coefficients for industry dummies, year dummies, and a constant term were calculated but are not reported.

Sources: See Table 8.

Table 11: Corporate Finance --
Difference Equations with Pooled Sample

Dependent variable:	Mkt Cap./Eq. (t2 - t1)	Mkt Cap./Eq. (t2 - t1)	Mkt Cap./Eq. (t2 - t1)	Mkt Cap./Eq (t2 - t1)..
Bank dt/Gr asts (t2 - t1)	-2.950 (4.24)	-2.875 (4.21)		
Bonds/Gross asts(t2 - t1)	2.803 (3.30)	2.754 (.837)		
Total leverage (t2 - t1)			-.266 (0.37)	-.232 (0.33)
Gross assets (t2 - t1)	-.116 (1.07)	-.132 (1.29)	-.169 (1.41)	-.187 (1.65)
Mitsui	.757 (3.12)		.649 (2.49)	
Mitsubishi	-.045 (0.08)		.140 (0.21)	
Sumitomo	.969 (0.82)		.498 (0.39)	
Yasuda	.308 (0.67)		.274 (0.55)	
Other zaibatsu	.509 (1.16)		.388 (0.82)	.184 (0.61)
Any zaibatsu		.619 (2.88)		
Industry dummies	yes	yes	yes	yes
n	180	180	180	180
Adjusted R2:	.15	.15	.00	.02

Notes: All regressions use OLS. We give coefficients, followed by the absolute value of the t-statistics in parenthesis. For market capitalization/equity, bank debt/gross assets, bonds/gross assets, total leverage, and gross assets, we use the change in these values over succeeding periods. Total leverage is equal to 1 - (equity/gross-assets). The coefficients on gross assets are multiplied by 100,000. Coefficients for industry dummies and a constant term were calculated but are not reported.

Sources: See Table 8.

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3. The results. -- (a) Market capitalization. None of the regressions suggests investors found bank debt advantageous. Take the regressions using stock market capitalization (Table 9). In the regressions using bank-debt/gross-assets (Table 9A), the coefficient on bank debt is negative for all five years and significantly negative for two; in the regressions using total leverage (Table 9B), the coefficient on leverage is negative for four of the five years and significantly negative for three: firm size held constant, the more heavily a firm borrwed from banks, the lower its ratio of market capitalization to equity. The regressions on pooled data (Table 10A) confirm this ngative relation between market valuation and leverage.

(b) Growth. The regressions using firm growth (Table 10) produce similar results. In general, one would expect the more successful firms both to enjoy higher share prices and to grow more rapidly than their competitors. As a result, if bank debt does not increase share prices one would not expect it to increase growth rates either. Consistent with such an account, the coefficient of bank-debt/gross-assets is insignificant in Table 10B; the coefficient on total leverage is significantly negative.

In separate unreported regressions, we use the Table 9 year-specific data sets to regress growth rates on firm financials. We also run the growth regressions with gross assets as an

additional right-hand-side variable,[66] and run all our regressions without the zaibatsu variables. In no case do we find any evidence that either bank debt or total leverage increases either market capitalization or growth rates.

(c) Difference equations. The possibility remains, however, that leverage somehow correlates with an unobserved facet of managerial talent (or some other unobserved variation among firms). For example, Table 9 and 10 seem to suggest that leverage decreases market valuation. Yet perhaps these results reflect the fact that the least sophisticated managers disproportionately relied on bank loans, while their more sophisticated competitors raised capital through more complex avenues. If so, then the negative coefficients on bank debt and total leverage could reflect that difference in managerial talent rather than any effect of the leverage itself.

To address this potentially confounding effect, we estimate equations in first differences: we regress the change in a firm's market capitalization/equity ratio over changes in leverage. As Table 11 shows, the coefficient on total leverage is insignificant. The effect of bank debt, however, is significantly negative: all else equal, if a given firm increases its bank borrowings its market capitalization will fall.[67]

C. Zaibatsu and Firm Performance:

1. The question of zaibatsu success. -- But what of zaibatsu affiliation? Table for now the prime question -- whether the zaibatsu gave their manufacturing firms a competitive edge by routing them preferential access to funds. Start instead with the preliminary inquiry -- were the zaibatsu firms in fact more successful than their competitors? Pre-war journalists, occupation-era analysts, and contemporary historians have all claimed that they were. Yet economists who have attempted serious empirical studies report mixed results.

On the one hand, Jennifer Frankl regressed several performance measures on zaibatsu affiliation to relatively little effect. Using financial data on 130 firms for 1915, 1921, 1927, 1932 and 1937, she asked whether zaibatsu firms had higher profit-revenue ratios, price-earnings ratios, profit-asset ratios, returns to equity, or sales growth. For the principal zaibatsu (groups like the Mitsui and Mitsubishi) she obtained no significant coefficients. Only for the "new zaibatsu" (groups like Nissan, often with close military ties) did she find a significant positive connection.[68]

On the other hand, when Tetsuji Okazaki regressed profitability over zaibatsu affiliation, he discovered a stronger relationship. Okazaki used Kabushiki nenkan and individual firm accounting report data on 135 large firms from a variety of industries (unlike us, he does not restrict his sample to manufacturing firms) from 1922 to 1936, but did not distinguish among the zaibatsu groups. Using industry dummies, he found significant evidence that zaibatsu membership led to better performance in both the 1922-26 and the 1932-36 periods.[69]

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[66] We omitted gross assets from the RHS in our principal regressions because it also appears in the denominator on the LHS.

[67] Good arguments could be made that we should include time dummies, or replace the change in gross assets variable with the firm's gross assets in time 2. We have done so, but the regression results do not substantially change.

[68] Frankl, supra note.

[69] Tetsuji Okazaki, Mochikabu gaisha no rekishi -- zaibatsu to kigyo tochi [A History of the Holding Company: Zaibatsu and Corporate Governanace] (Tokyo: Chikuma shobo, 1999).

As our regressions show, we find that zaibatsu firms did outperform their rivals. First, in Table 9 the Mitsui firms had significantly higher market-capitalization-to-equity ratios in 1926, 1931 and 1941, the Mitsubishi had a significantly higher ratio in 1936, the Sumitomo in 1941, and the "other zaibatasu" (like Nissan) in 1926 and 1936. In the Table 10A regressions on pooled data, the coefficients on zaibatsu affiliation are significantly positive for all except the Yasuda. In 10B the "other zaibatsu" firms experienced significantly higher growth rates.

Given the variation among the regressions, we suspect the issue of zaibatsu performance is sensitive to the regression specifications, firms, industries, and years included. In particular, we suspect that the years covered may explain some of the differences among our, Okazaki's and Frankl's results. Although Frankl found no evidence that the traditional zaibatsu outperformed the non-zaibatsu firms, she closed her inquiry in 1937. By contrast, we obtain some of our more compelling evidence from 1936 and 1941, and Okazaki similarly finds some of his strongest results from the late 1930s.

2. The relation between zaibatsu success and banks. -- (a) The effect of finance. So, zaibatsu firms were more successful than their rivals -- the question is what to make of this. Did zaibatsu firms succeed because their affiliated banks routed them funds preferentially? As noted earlier, SCAP and the historians have argued that they did. In fact, they did not. First, as we find both in the Tables 9 and 10 regressions and in other unreported regressions without zaibatsu variables, the firms that borrowed heavily did not do well. The zaibatsu firms could not have succeeded because they borrowed, because the firms that succeeded were not the borrowing kind.

Second, zaibatsu firms did not borrow heavily anyway. To illustrate the point, we take the pooled data base, and regress bank debt on zaibatsu affiliation, gross assets, and year and industry dummies. Through this exercise, we obtain the following coefficients and t-statistics (in parentheses):

Mitsui	-8040 (1.73)
Mitsubishi	-24933 (2.55)
Sumitomo	496 (0.04)
Yasuda	-9205 (0.98)
Other zaibatsu	-20445 (2.89)

with an adjusted R2 of .56. If we use one dummy to capture membership in any of the zaibatsu, we generate a coefficient and t-statistic of -11855 (3.14), with an adjusted R2 of .56. The zaibatsu did not borrow more than other firms. Instead, they borrowed less.[70]

Third, some of the most successful pre-war enterprises were enterprises without affiliated banks. Take the Suzuki trading empire. A turn-of-the-century upstart, the Suzuki group grew with phenomenal speed. By 1917 its trading firm had sales of 1.5 billion yen to the Mitsui trading firm's 1.1 to 1.2 billion. By the mid-1920s, the group revolved around two trading firms

[70] To be sure, what they borrowed they may have obtained from affiliated firms. Yutaka Kasuga, Mitsui zaibatsu [The Mitsui Zaibatsu], in Shoichi Asajima, ed., Zaibatsu kin'yu kozo on hikaku kenkyu [A Comparative Study of Zaibatsu Financial Structure] 56-57 (Tokyo: Ochanomizu shobo, 1987), collected data for six Mitsui firms for several years: Oji Paper borrowed an average of 88 percent of its loans from other Mitsui affiliated firms (including the bank) over eight years from 1931 to 1940; Toshiba borrowed 82 percent over 10 years; Kanebo borrowed 76 percent over 3 years; Nihon Steel borrowed 74 percent 7 years; Denki kagaku borrowed 74 percent over 8 years; and Dai-Nippon Celluloid borrowed 100 percent over 3 years. What they borrowed, they may well have borrowed from the affiliated financial firms; they simply did not borrow very much.

that directly controlled 35 others and more indirectly another 30. All told, it controlled paid-in capital of 239 million yen to the Sumitomo's 188 million yen.[71] And all this it did without a bank. Or take the Nissan group, generally called one of the "new zaibatsu." From modest turn-of-the-century mining roots, it too expanded quickly. By the mid-1930s it controlled paid-in capital of 470 million yen to the Sumitomo's 380 million. Again, it did this without a bank.[72]

(b) Zaibatsu bank policy. Directly contrary to the received wisdom, moreover, the zaibatsu banks deliberately tried to limit their loans to affiliated firms. Unfortunately, firm financials only haphazardly list the identity of the lenders, and bank histories only haphazardly identify borrowers. Nonetheless, through several disparate sources we can reconstruct the following accounts.

Mitsui. From the central Mitsui firms, the Mitsui Bank took more than it lent. And from them it did take massive deposits. During 1923-34 (in semi-annual accounting periods), from its five key firms (the holding company and the trading, mining, trust, and life insurance companies) it obtained 5 to 16 percent of its entire deposit base. It then lent these firms substantially less. From 1923 to 1934, in only one six-month period (the second half of 1923) did it lend these firms more than they deposited. The lowest ratio of loans to deposits came in the first half of 1934, when these firms borrowed back only 26 percent of their deposits. The mean of the semi-annual ratios came to 71 percent. Even if we include the 17 next-tier Mitsui firms, the bank lent this group of 22 in 1939 (the only year on which we have data) only slightly more (112 percent) than the amount they collectively deposited.[73]

Because it found it so hard to locate good borrowers, by policy the Mitsui Bank restricted the deposits it took. Rightly seen as safe, during the 1920s it faced a large influx of deposits from other banks. Had it tried to route funds to affiliated firms, it would have welcomed the new money. Instead, it actively discouraged it, first by cutting the interest it paid other banks and later by simply restricting new deposits.[74]

Sumitomo. After its public stock offering in 1917, the Sumitomo Bank was no longer exclusively a creature of the zaibatsu (as of 1928, Sumitomo affiliates held 56 percent of its stock).[75] Yet already in 1902 the Bank had stipulated by contract that it would pay the Sumitomo holding company no higher an interest rate on its deposits than it paid anyone else, and demanded that the company provide security for all loans above 300,000 yen. More

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[71] Juro Hashimoto, Zaibatsu no kontsuerunka [Making Conglomerates of the Zaibatsu], in Juro Hashimoto & Haruhito Takeda, eds., Nihon keizai no hatten to kigyo shudan [Corporate Groups and the Development of the Japanese Economy] 92-93 (Tokyo: University of Tokyo Press, 1992); Haruhito Takeda, 1995. Zaibatsu no jidai [The Age of Zaibatsu] 179-80 (Tokyo: Shin'yo sha, 1995); Takeda (1992), supra note, at 274; Takahashi (1930), supra note, at 36.

[72] Masaru Udagawa, Nissan kontsuerun no tenkai [The Evolution of the Nissan Combine], in Keiichiro Nakagawa, Hidemasa Morikawa & Tsunehiko Yui, eds., Kindai Nihon keiei shi [Early Modern Japanese Management History] 204, 206 (Tokyo: Yuhikaku, rev. ed., 1979).

[73] Mitsui, supra note, at 387, 423; Asai, supra note, at 258. Only as the war escalated (and the government began actively to intervene in corporate finance) did loans to the central Mitsui firms begin to exceed their deposits.

[74] Asai, supra note, at 278-79.

[75] Takahashi, supra note, at 172.

informally, it declared that it would never lend the holding company more than 10 percent of its deposit base. Even during the boom years of World War I, it lent the company no more than 7 percent of its loans; from 1932 to 1939, it lent the holding company and its 14 central affiliated firms only 1 to 9 percent of all loans, or 0.8 to 6 percent of all deposits.[76]

Mitsubishi and Yasuda. Neither did the Mitsubishi bank lend its affiliated firms a large fraction of its total loans. From 1926 to 1937, the holding company and 8 central affiliated Mitsubishi firms borrowed (from all sources) a combined 19 to 76 million yen. For any given year, these amounts were equivalent only to 5 to 12 percent of all loans made by the Mitsubishi financial firms, or to 8 to 22 percent of all loans made by the Mitsubishi Bank.[77] Internal company documents indicate, moreover, that the Mitsubishi life insurance company (Meiji seimei) loaned no funds at all to Mitsubishi-affiliated firms.[78] Unfortunately, we lack comparable data on the Yasuda zaibatsu. Crucially, the group included relatively few non-financial firms.

(c) Restating the question. The zaibatsu firms did not succeed because of any special access to bank debt. Yet perhaps to ask why they succeeded -- perhaps that very question misstates the issues. Fundamentally, these firms did not succeed because they were zaibatsu firms; they were zaibatsu firms because they succeeded, and they succeeded for all the various reasons some firms succeed in competitive markets while others fail. More precisely, journalists and social commentators named these firms zaibatsu in the late 1920s because they were at the time making their investors very rich.

Put differently, the zaibatsu firms differed from other firms only ex post. Ex ante, in the mid-19th century many rich families resembled the Mitsui and Sumitomo.[79] In the transition to the new Meiji government, most lost their fortunes. If they survived the transition, most lost their fortunes during the next two decades.

Scholars sometimes claim that the zaibatsu succeeded because of government patronage, but even this did not distinguish the zaibatsu ex ante. True, in the 1870s the Mitsui house provided the new national and prefectural governments various exchequer and tax-collecting services, but so did the Ono and Shimada houses. In the 1920s the Mitsui and Mitsubishi bought politicians, but so did the Suzuki trading empire.

Even as late as the turn of the century, many firms resembled closely the ones that would become the zaibatsu. The Suzuki empire, for example, at the time was rapidly amassing both

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[76] Sumitomo ginko, Sumitomo ginko 80 nen shi [Eighty-Year History of the Sumitomo Bank] 242-45, 357, 362 (Osaka: Sumitomo ginko, 1979); Sawai, supra note, at tab. 4-16.

[77] Shoichi Asajima, Mitsubishi zaibatsu [The Mitsubishi Zaibatsu], in Shoichi Asajima, ed., Zaibatsu kin'yu kozo on hikaku kenkyu [A Comparative Study of Zaibatsu Financial Structure] 152-53 (Tokyo: Ochanomizu shobo, 1987); Minoru Sawai, Seinji keizai to zaibatsu [The Zaibatsu and the War-Time Economy], in Juro Hashimoto & Haruhito Takeda, eds., Nihon keizai no hatten to kigyo shudan [Corporate Groups and the Development of the Japanese Economy] tab. 4-16 (Tokyo: University of Tokyo Press, 1992). The figures exclude notes issued to the Mitsubishi trading firm. Mitsubishi borrowings increased as the government began to dominate finance during the war, but even in 1944 Mitsubishi borrowings remained less than half of all loans by Mitsubishi financial institutions.

[78] Asajima, supra note, at 154.

[79] For a discussion of the rivals to the Mitsui and Sumitomo at the time of the Meiji Restoration, see Yasuoka, supra note, at 491-500.

financial wealth and political connections. The Konoike house had built on its centuries-old sake-brewing and money-changing experience to branch into fields like shipping and financial services. By the early 20th century, it boasted one of the most powerful banks in the country.

What distinguished the Mitsui, Mitsubishi, Sumitomo and Yasuda from all these other groups was a fact only observable ex post: in the 1920s and 1930s they were doing well where the others were not. The Ono and Shimada did not survive the 1870s. The Suzuki did not survive the 1920s. The Konoike survived (merging its bank into what would become the Sanwa Bank), but with no panache. In the Japanese economy from 1870 to 1930 as in all competitive economies, many firms failed while some survived and a few thrived. What distinguished the Mitsui, Sumitomo, Mitsubishi, and Yasuda (as well as firms like Nissan) was that they were making their investors rich in the late 1920s when muckraking journalists came looking for them.

The term itself is one that journalists invented as a variation on others they were already using. In the late 19th century, military and political leaders sometimes had shown regional loyalties. When they did, journalists and commentators had called the resulting groups "hanbatsu" -- or "domainal factions." When the military tried to manipulate the government, they had written about the "gunbatsu" -- or "military factions." And when wealthy industrialists seemed to buy political influence, they coined a term for them too. "Zaibatsu" -- or "wealth factions" -- was the result.

At root, academics take (and SCAP officers took) the concept of zaibatsu far too seriously.[80] As used by its contemporaries, the idiomatic translation of zaibatsu was nothing so serious as "conglomerate," "corporate group," or even "financial clique." It was "robber baron." Although one can find an occasional reference to the term in the 1910s, as economic historian Haruhito Takeda notes its widespread use dates only from the 1930s in essays by populist journalists.[81] These writers had no analytic category in mind. Instead, they simply wanted a catchy pejorative term.

And a catchy term it was. As it caught on, business leaders increasingly found their flexibility hampered by public and government pressure. Whether on the left or on the right but particularly on the right, zealots were outraged by what they saw as zaibatsu greed. The "Blood Pledge Corps" acted first, and in 1932 shot and killed both an ex-finance minister and the Mitsui CEO. Police found another Mitsui and three Mitsubishi executives on the hit list. Two months later, renegade military officers killed the prime minister and tried to bomb the Mitsubishi Bank. By then zaibatsu leaders resisted the fascists at their peril, and they knew it.

Given this etymology, to ask why the zaibatsu succeeded invents a problem where none exists. In the second half of the 19th century, some would-be industrialists had wealth, some had drive, some had talent, and some had luck. The few with a combination of several of these attributes made money; many others lost it. Those that made it diversified their wealth into several industries, and augmented or at least protected those investments by currying favor with politicians. When they did, journalists and commentators called them the "zaibatsu."

IV. Conclusions:

[80] We table the question of whether senior SCAP officials like MacArthur actually believed what analysts like Edwards and Bisson told them, or simply found their accounts a convenient justification for doing what they had already decided they wanted to do.

[81] Takeda (1995), supra note, at 4.

Modern finance theory puts stringent demands on banks. Gerschenkron did too, of course. But behind the roles assigned banks in the current literature lies a theoretical apparatus far more involved than anything Gerschenkron himself ever described. That banks would promote economic growth is an idea he indeed pioneered. But in the four decades since, theorists have expanded that role to formidable levels.

Modern theorists assign banks a pivotal role in reducing the inefficiencies that stem from informational asymmetries in capital markets. In the words of Charles Calomiris and Carlos Ramirez, "[t]he role of intermediaries comes from the advantages of appointing specialists to transfer funds, screen applicants, monitor managerial performance and company profits, and design and enforce specific contractual covenants that discipline managers."[82]

This is a tall order. Modern banks are huge firms accustomed to operating in severely regulated environments. Big organizations in heavily regulated sectors anywhere are seldom paragons of innovation and efficiency. Bankers anywhere are seldom among the suspects one would usually round up as specialists in monitoring managerial performance or in designing contractual covenants to discipline managers.

Perhaps it is a tall order banks seldom need to fill, for perhaps the problems they face are not as severe as we sometimes think. After all, empiricists have trouble finding much evidence of informational asymmetries. Even in the life and automobile insurance markets, they find less evidence of such asymmetries than one might suppose.[83]

But table that question. Regardless of whether it is a tall order banks would do well to fill if they could, perhaps it simply is not an order they can fill. We find no evidence here that ties to a bank improve performance. In related research, we found no evidence that turn-of-the-century Japanese spinning firms did better for having bank-affiliated directors on their board.[84] Paulet finds no evidence that the key 19th century French universal bank Credit Mobilier monitored its debtors or eased liquidity constraints.[85] And Caroline Fohlin finds no connection between bank loans and investment patterns at the very heart of Gerschenkron's thesis -- in turn-of-the-century Germany. Instead, she concludes:[86]

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[82] Charles W. Calomiris & Carlos D. Ramirez, The Role of Financial Relationships in the History of American Corporate Finance, 9(2) Journal of Applied Corporate Finance 52, 54 (1996).

[83] John Cawley & Tomas Philipson, An Empirical Examination of Information Barriers to Trade in Insurance, 89 American Economic Review 827 (1999); Pierre-Andre Chiappori & Bernard Salanie, Testing for Asymmetric Information in Insurance Markets, 108 Journal of Political Economy 56 (2000).

[84] Yoshiro Miwa & J. Mark Ramseyer, The Value of Prominent Directors: Lessons in Corporate Governance from Transitional Japan (Harvard Law School, John M. Olin Program in Law, Economics & Business, Discussion Paper 267, Nov. 1999).

[85] Paulet, supra note. For the recent debate on tests for liquidity constraints -- a debate with important ramifications for the well-known Hoshi-Kashyap-Scharfstein studies of modern Japanese banking (e.g., Takeo Hoshi, Anil Kashyap & David Scharfstein, Corporate Structure, Liquidity and Investment: Evidence from Japanese Panel Data, 106 Quarterly Journal of Economics 33-60 (1991)) -- see, e.g., Steven M. Fazzari, R. Glenn Hubbard & Bruce C. Petersen, Investment-Cash Flow Sensitivities are Useful: A Comment on Kapan and Zingales, 115 Quarterly Journal of Economics 695 (2000); Steven N. Kaplan & Luigi Zingales, Do Investment-Cash Flow Sensitivities Provide Useful Measures of Financing Constraints?, 109 Quarterly Journal of Economics 169 (1997); Steven N. Kaplan & Luigi Zingales, Investment-Cash Flow Sensitivities Are not Valid Measures of Financing Constraints, 115 Quarterly Journal of Economics 707 (2000).

[86] Caroline Fohlin, Relationship Banking, Liquidity, and Investment in the German Industrialization, 53 Journal of Finance 1737, 1739 (1998).

> attachment [to a German universal bank] is not associated with dramatic reductions in firms' liquidity sensitivity of investment. ... Furthermore, firms with long-term bank relationships ... experienced no generalizable reduction in liquidity sensitivity[, and] bank attachment is not associated with high rates of investment.

Indeed, perhaps we should simply soften the dichotomy between the roles of banks and capital markets in economic growth. Recent cross-country comparisons suggest that real-world bank and stock markets grow in tandom. As Ash Demirguec-Kunt and Ross Levine put it, "countries with better-developed stock markets also have better-developed banks and nonbank financial intermediaries."[87] By the World Bank's indicators of stock market development, Japan and Germany -- those supposed bastions of relationship-banking -- rank second and third (after Hong Kong). The U.K. and the U.S. trail fourth and fifth.[88]

In the end, perhaps the bank-driven tales of German and Japanese growth describe the histories of neither. They certainly do not describe the history of Japan. Japanese firms did not grow through bank domination, firms with close ties to banks did not enjoy a competitive advantage, and the great zaibatsu groups did not use their banks in order to manipulate capital markets and skew funds to their affiliated manufacturing firms. The story of pre-war Japanese corporate finance is not a story about relationship banking. It is a story about firms that overwhelmingly raised funds through decentralized, competitive capital markets.

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[87] Ash Demirguec-Kunt & Ross Levine, Stock Markets, Corporate Finance, and Economic Growth: An Overview, 10 World Bank Economic Review 223, 224 (1996); see Ross Levine, Financial Development and Economic Growth: Views and Agenda, 35 Journal of Economic Literature 688, 717 (1997).

[88] Ash Demirguec-Kunt & Vojislav Maksimovic, Stock Market Development and Financing Choices of Firms, 10 World Bank Economic Review 341, 348 (1996).

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