

The Cost of Capital for Securities Firms in the United States and Japan

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Recent studies of international differences in capital costs have focused on industry and banks. In the 1980s U.S. firms seemed to be losing ground internationally, whether measured by semiconductor trade, industrial investment, manufacturing trade, or market share in U.S. commercial lending. This slipping competitiveness prompted economists to investigate whether U.S. industry and banks were laboring under a cost of capital disadvantage.

By contrast, the cost of capital for U.S. securities firms received little attention during the last several years because these firms appeared to perform more creditably. They defended their home turf, mounted major expansions into foreign markets, and staked out market share and profit in trading government bonds and equities abroad.¹ U.S. securities firms invested much more abroad than their foreign competitors invested in the United States. In other industries, especially banking, foreign direct investment into the United States dominated U.S. investment abroad (Table 1).²

¹The firms showed best results in trading Japanese and German government bonds in Tokyo and London, respectively, and in trading Japanese equities and equity derivatives in Tokyo. See John J. Ruocco, Maureen LeBlanc, and Patrick Dignan, "Competitiveness in Government Bond Markets," and Martin Mair, Michael Kaufman, and Steven Saeger, "Competitiveness in Equity Markets," in *International Competitiveness of U.S. Financial Firms: A Staff Study* (New York: Federal Reserve Bank of New York, 1991), pp. 130-72.

²Perhaps as a result, the public policy discussion of the securities industry has focused on ensuring that U.S. firms enjoy equal access to foreign financial markets. See, for instance, Department of the Treasury, *National Treatment Study, 1990 Update*, pp. 225-41; Staff of the Board of Governors of the Federal Reserve System and the Federal Reserve Bank of New York, *Report on Implementation of the Primary Dealers Act*, memorandum, August 15, 1989; and

Reversing the procedure of earlier studies, this article takes the respectable performance of U.S. securities firms as its rationale for exploring cost of capital differences between countries. If U.S. firms achieved some degree of success in spite of higher capital costs, then this disadvantage is clearly not a decisive one. But if the disadvantage faced by securities firms is smaller than that faced by U.S. industry and banks, then capital costs may help to explain differences in competitive outcomes.

Our investigation begins with a comparison of the capital costs faced by U.S. and Japanese securities firms in the 1982-91 period. We measure the cost of capital to five U.S. and four Japanese securities firms as the multiple that their respective stock exchanges assigned to the economic earnings of the firms. Our findings indicate that U.S. equity investors placed a lower value on a given stream of earnings of U.S. securities firms than Japanese equity investors placed on a comparable stream of earnings of Japanese securities firms. As a result, U.S. securities firms needed to earn more on a given sum of capital underpinning any line of business.

The gap in valuation of securities firms' earnings in the New York and Tokyo stock exchanges nevertheless appears to be narrower than the gaps we found between U.S. and Japanese industries and banks in our own earlier studies of cost of capital differences.³ If

Footnote 2 (continued)
"Japan, U.K. and Switzerland: Primary Dealers Act Update," memorandum, December 3, 1990.

³Robert N. McCauley and Steven A. Zimmer, "Explaining International Differences in the Cost of Capital," this *Quarterly*

U.S. securities firms carry a smaller disability in capital costs than other U.S. firms, then it makes sense that any advantages in other dimensions of competition, such as experience with derivative products or application of technology, could be decisive in overall competitive outcomes.

In seeking to explain capital cost differences, we emphasize general factors accounting for a lower Japanese cost of equity in the latter 1980s. These include higher household savings and smoother economic growth.

Our analysis also clarifies why the gap between measured equity costs in New York and Tokyo might be smaller for securities firms than for banking and other industries. On the one hand, Japanese securities firms' cost of equity may be higher than that of Japanese nonfinancial firms or banks because the market perceives a relatively severe threat to the securities firms' revenues and earnings in the ongoing trend toward financial deregulation. On the other hand, the lower equity costs for U.S. securities firms relative to other U.S. companies may be influenced by the choice of sample period. The mid-1980s were boom years for the securities business, and U.S. investors, seized with the growth possibilities created by the financial innovators and engineers of Wall Street in increasingly global markets, may have priced U.S. securities firms' earnings at a premium.

Footnote 3 (continued)
 Review, vol 14 (Summer 1989), pp 7-28, and Steven A Zimmer and Robert N McCauley, "Bank Cost of Capital and International Competition," this Quarterly Review, vol 15 (Winter 1991), pp 33-59

Measuring the cost of capital

Securities firms provide products and engage in activities of varying risk against which they must hold equity capital. The required return on this equity capital will be important in determining the commission or fee that a firm must charge for a service or the return it must earn arbitraging markets or investing on its own account. We define the cost of capital for a securities firm as the minimum required fee the firm must charge, or the return it must make, to cover the required return on the equity capital allotted to an activity.

Our definition of cost of capital for a securities firm, like our definition of the cost of capital for a bank, excludes debt costs. The reason for this exclusion is that internationally active securities firms face similar borrowing costs. For instance, Japanese firms' subsidiaries in New York should be able to finance themselves at much the same rates as U.S. firms. Indeed, this argument may be more firmly grounded for securities firms than for banks. The most important source of borrowed funds for a large securities firm is the sale and forward repurchase of securities. The secured nature of this financing technique lessens creditor demands for substantial differences in interest rates based on the creditworthiness of the borrower. Repurchase agreements have generally permitted securities firms in the United States to finance themselves at rates below interbank rates.⁴

Our definition of cost of capital for securities firms follows the definition of bank cost of capital presented in our earlier studies, and we will proceed in a similar fashion. The first step in assessing cost of capital differ-

⁴For the last year, the overnight repurchase rate has on average exceeded the federal funds rate in the U.S. money market.

Table 1

Foreign Direct Investment Flows into and out of the United States, 1985-89

(In Billions of Dollars)

	Inflow	Outflow	Ratio of Inflow to Outflow
Total	232.9	90.5	2.6
Manufacturing	110.4	45.2	2.4
Banking	9.1	0.1	109.6
Finance (except banking)	6.9	12.6	0.5

Source: "Foreign Direct Investment in the United States" and "U.S. Direct Investment Abroad," *Survey of Current Business*, vol. 70 (August 1990), pp. 54, 55, 97, 98.

Notes: Manufacturing, banking, and finance do not sum to total. Direct investment flows relating to the Netherlands Antilles and to the U.K. Caribbean Isles are subtracted from U.S. direct investment abroad and foreign direct investment in the United States, respectively. These adjustments are made because outflows to the Netherlands Antilles in this period essentially reflect repayments of Eurobonds sold through shell finance affiliates and because outflows to the U.K. Caribbean Isles reflect onlending of the proceeds of commercial paper and bond sales by U.S. finance affiliates of nonfinancial foreign corporations via tax havens in the Caribbean. The removal of these flows reduces cumulative U.S. direct investment outflows by \$20.3 billion and boosts foreign direct investment inflows by \$2.2 billion for both the total and the finance component.

ences is to estimate the required return on equity—the “cost of equity”—to securities firms in the United States and Japan. Our analysis of a small sample of key publicly traded firms suggests that Japanese securities firms enjoy a substantial cost of equity advantage over U.S. firms.

The second step is to show how differences in the cost of equity translate into differences in the cost of capital. Because securities firms, unlike banks, do not have uniform international capital requirements, this step requires care. One complication is that both observed and required shareholder-equity-to-asset ratios of Japanese securities firms are higher than those of U.S. securities firms.

The cost of equity

We define the cost of equity as the ratio of a firm's sustainable profits to the market value of its equity. We cannot observe sustainable profits, but we can observe reported profits for a sample of firms and make adjustments to them. In addition to making reported profits better reflect economic profits, these adjustments make the stated profit measures internationally comparable.

Our sample of firms for the United States is necessarily limited to those whose shares have been publicly traded throughout the sample period. First Boston and Shearson-Lehman are thus excluded because their public shareholders were bought out by their respective parents, Credit Suisse and American Express; Goldman Sachs, Drexel, and Prudential-Bache are excluded by virtue of their private ownership. That leaves Merrill Lynch, Morgan Stanley, and Salomon Brothers of the “bulge bracket,” or lead underwriter, firms and Bear Stearns and Paine Webber of the remaining top ten firms. The selection of Japanese securities firms is quite obvious in light of their dominant status: Daiwa, Nikko, Nomura, and Yamaichi, the so-called Big Four.

The sample period runs from 1982 to 1991. The nine and one-half fiscal years covered cannot be synchronized across the two countries. For all U.S. firms except Bear Stearns and Paine Webber, fiscal years correspond to calendar years and the 1991 observation covers only the first half.⁵ For the Japanese firms, the half year covers October 1988 to March 1989, an accounting period that permitted their fiscal years to be aligned with general practice in Japan. Because Bear Stearns and Morgan Stanley made their initial public offerings in October 1985 and March 1986, respectively,

⁵For Bear Stearns, data for fiscal years ending in April through 1987 and in June from 1988 on are aggregated with the other firms' data for the previous December. For Paine Webber, data for the fiscal year ending in September are aggregated with the other firms' data for the following December through 1986, in 1987 the firm switched to fiscal years ending in December

1985 is the first sample year for each (Morgan Stanley's public offering price is taken to be its December 1985 price). Altogether, this study's cost of equity calculations rely on forty-three observations of U.S. securities firms' share prices, earnings statements, and balance sheets and forty corresponding observations for Japanese securities firms.

We adjust reported profits for the following:⁶

depreciation—stated earnings are lowered to offset the upward bias introduced when depreciation expenses are based on historical cost during a period of inflation;

equity/inflation—the increase in the nominal value of shareholder equity necessary to maintain the real value of shareholder equity is subtracted from stated profits;

crossholding—the undistributed profits associated with equity shares held by Japanese firms are consolidated into income; and

restructuring charges—U.S. firms' restructuring charges are spread out over three years.

The crossholding adjustment is performed for Japanese securities firms but not for U.S. securities firms even though both hold significant amounts of equities. The reason for the asymmetry in this adjustment is that U.S. firms mark their equities to market, while Japanese firms do not. Over time, U.S. firms' marked-to-market equity values reflect retained earnings on equity holdings insofar as these earnings are embodied in share prices. Japanese firms not only value their equity holdings at historical cost, but also hold and rarely realize large and growing stakes in their investment accounts for strategic purposes. It is this combination of low turnover and historical cost accounting that requires the crossholding adjustment.

Taken together, the adjustments performed on the raw observed ratios of after-tax earnings to market capitalization narrow the differences between the U.S. and Japanese firms significantly (Table 2).⁷ Making

⁶Compare the adjustments to bank profits in Zimmer and McCauley, “Bank Cost of Capital,” pp. 36-42

⁷The rows do not sum for U.S. firms in the years 1984, 1988-90, and the average owing to our constraining the cost of equity to be non-negative. This constraint adds 0.4 percentage point to the average cost of equity. Excluding firm-years of computed negative cost of equity would yield an average cost of equity of 8.6 percent. Treatment of the industry as a single firm—adding earnings across firms in a given year and comparing the total with summed market capitalizations—results in an average cost of equity of 7.4 percent

allowances for inflation's erosion of depreciation expenses and of shareholders' equity reduces U S securities firms' earnings to a greater extent than their Japanese counterparts' earnings, largely because of the higher rate of inflation experienced in the U S economy in the sample period Spreading out U S firms' extraordinary reserves should in principle simply smooth their cost of equity but in practice this adjustment interacts with share price movements to widen the gap a bit.

The crossholding adjustment narrows the gap substantially, a finding in line with previous work on differences in equity valuations in the two markets.⁹ The crossholding adjustment for Japanese securities firms in the late 1980s is more consistent than for Japanese banks, especially city banks, in the same period. Because the city banks came under pressure to meet new international capital standards and responded in

part by realizing massive gains on crossheld shares, the crossholding adjustment actually subtracted earnings in the three fiscal years to March 1990⁹ In the same period, Japanese securities firms, acting like their corporate customers, tended to eschew realizing gains on equities in their investment portfolios—and thereby avoided the taxes associated with such realizations.

The resulting cost of equity series show some volatility but carry a clear message (Chart 1) The Japanese securities firms in our sample face an average cost of equity of 5.1 percent in the sample period as against 7.8 percent for the U S. securities firms Such a difference is unlikely to be without implications for international competition. At the same time, the advantage of Japanese securities firms is smaller than that enjoyed by Japanese banks (3.1 percent compared with 11.9 percent for U S. banks)¹⁰ or Japanese industrial firms (4.5 percent compared with 11.2 percent for U S.

⁹See James M. Poterba, "Comparing the Cost of Capital in the United States and Japan: A Survey of Methods," this *Quarterly Review*, vol. 15 (Winter 1991), pp. 20-32, and references contained therein

⁹Zimmer and McCauley, "Bank Cost of Capital," p. 40

¹⁰Zimmer and McCauley, "Bank Cost of Capital," p. 42

Table 2

Summary of Adjustments to Cost of Equity

(Cross-Firm Averages in Percent)

U.S. Firms	Profit/ Market Capitalization	Adjustments				Cost of Equity
		Depreciation	Equity/ Inflation	Cross- Holding	Restructuring	
1982	10.01	-0.98	-1.72	0	0.21	7.51
1983	11.57	-0.97	-1.55	0	0.02	9.07
1984	3.67	-1.00	-1.77	0	0.94	1.90
1985	8.30	-0.69	-1.14	0	-0.25	6.22
1986	10.74	-0.73	-1.23	0	-0.17	8.62
1987	13.55	-1.57	-1.96	0	0.78	10.80
1988	12.37	-1.44	-2.25	0	-0.26	8.57
1989	8.28	-1.39	-2.35	0	0.97	6.79
1990	3.31	-1.71	-2.16	0	3.02	4.77
1991	19.30	-1.21	-1.94	0	-2.34	13.82
Averages	10.11	-1.17	-1.81	0	0.29	7.81
Japanese Firms	Profit/ Market Capitalization	Depreciation	Equity/ Inflation	Cross- Holding	Restructuring	Cost of Equity
1982	5.12	-0.10	-0.77	1.66	0	5.91
1983	5.43	-0.08	-0.22	1.18	0	6.30
1984	6.31	-0.08	-0.72	1.15	0	6.66
1985	5.28	-0.05	-0.65	0.84	0	5.42
1986	3.81	-0.02	-0.04	0.43	0	4.18
1987	3.98	-0.02	-0.04	0.56	0	4.47
1988	3.61	-0.02	-0.16	0.48	0	3.91
1989	4.51	-0.02	-0.48	0.34	0	4.35
1990	7.37	-0.03	-1.16	0.60	0	6.78
1991	3.06	-0.05	-1.17	0.76	0	2.60
Averages	4.85	-0.05	-0.54	0.80	0	5.06

Sources: Annual reports, Toyo Keizei Inc., *Japan Company Handbook*, Federal Reserve Bank of New York staff estimates

industry).¹¹

These findings are consistent with managers' actions in the 1980s. Consider the match between the observed pattern of fund-raising in the equity markets and the pattern of absolute and relative advantage in equity costs of U.S. and Japanese firms across industry. First, the absolute advantage of Japanese firms in equity costs in 1985-89 was reflected in the contrasting behavior of nonfinancial corporations in the United States and Japan. U.S. nonfinancial corporations retired (net) \$500 billion while their Japanese counterparts issued ¥11.4 trillion, or \$80 billion, net.¹² Second, particularly low equity costs help explain why Japanese banks raised more equity than any other industry in Japan,¹³ although capital regulation also played a role. (U.S. banks were constrained by regulation from joining their corporate customers in share repurchases.) Finally, the

¹¹McCauley and Zimmer, "Explaining," p. 12

¹²Margaret Hastings Pickering, "A Review of Corporate Restructuring Activity, 1980-90," Board of Governors of the Federal Reserve System Staff Study, no. 161, May 1991, and Bank of Japan, flow of funds data in *Economic Statistics Monthly*

¹³Robert Zielinski and Nigel Holloway, *Unequal Equities: Power and Risk in Japan's Stock Market* (Tokyo: Kodansha International, 1991), pp. 184-86

U.S. securities industry stood out as an issuer of new equity in the 1980s. Bear Stearns, Morgan Stanley, and others made initial public offerings,¹⁴ and Goldman Sachs, Shearson Lehman, and Paine Webber sold equity to Sumitomo Bank, Nippon Life, and Yasuda Trust, respectively. Moreover, the issues of the U.S. firms clustered in the mid-1980s, when our measured cost of equity was most favorable.

Allocating equity to financial activities

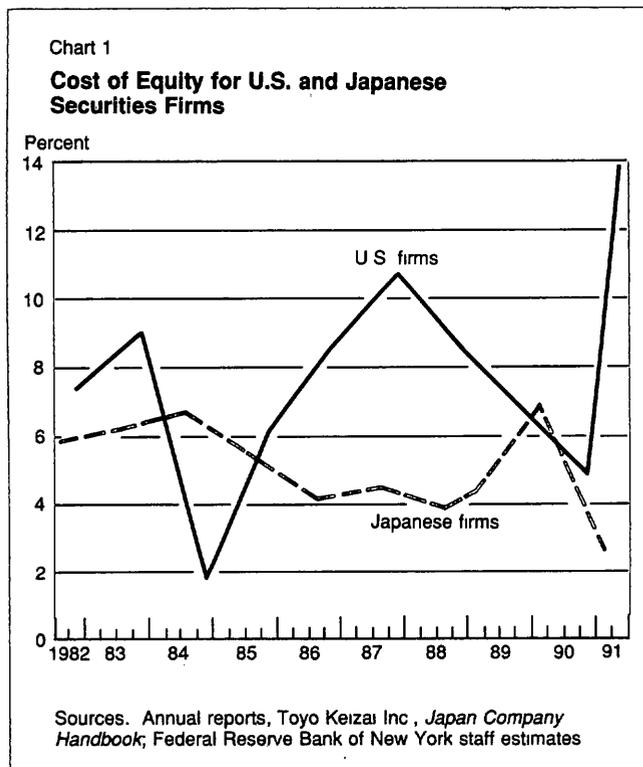
The required fee or return on a given product or activity is determined by the required return on equity and by the amount of equity allotted to the product or activity. If both a U.S. and a Japanese securities firm allot the same equity to a given product or activity, then the required fee or return will be an equal fraction of each firm's cost of equity. Any difference in the cost of equity is then reproduced in the cost of capital for the product or activity.

If U.S. securities firms lever up their shareholders' equity with more assets than Japanese securities firms, it might seem safe to conclude that they allot less equity to a given activity than does their competition. This conclusion does not follow, however. At the outset, it is easy to overstate the difference in leverage because U.S. accounting standards leave securities sold under agreements to repurchase on the balance sheet, while Japanese accounting takes them off. Even if one adjusts for this discrepancy, however, Japanese securities firms remain less leveraged, whether measured at book or market value (Table 3, lines 5 and 7).

To some extent, Japanese securities firms' lower leverage offsets the higher risk of their assets. By historical accounting, U.S. and Japanese securities firms have 3 to 4 percent of their assets invested in equities. By market value, however, the Japanese firms have almost twice the equity (Table 3, lines 1 and 2). Still, a different mix of equities in assets does not provide a full account of the leverage difference. If equity holdings are subtracted from shareholders' equity, Japanese firms remain significantly less leveraged (Table 3, line 6).

Even the remaining difference in leverage need not imply that Japanese firms allocate more equity to a given activity *in a given market*. The lack of international coordination in the regulation of the securities business must be recognized. Securities firms in Japan must hold shareholders' equity equal to 10 percent of assets. Despite the application of this standard to both domestic and foreign firms operating in Tokyo, U.S. firms have complained that so high a capital require-

¹⁴Chris J. Muscarella and Michael R. Vetsuypens, "A Simple Test of Baron's Model of IPO Underpricing," *Journal of Financial Economics*, vol. 24 (1989), pp. 125-35



ment is restrictive¹⁵ Whatever the weight of this contention, U.S. and Japanese firms in Tokyo require the same equity in a given activity to, say, arbitrage between cash and futures markets in stock.

In New York the subsidiaries of Japanese securities firms are not bound by Japanese capital standards but need only satisfy U.S. Treasury and Securities and Exchange Commission capital requirements. Indeed, the Big Four's U.S. subsidiaries operate with leverage more like that of U.S. firms than that of their parents (Table 4, Table 3, line 5) When in New York, these firms do as New Yorkers do.

The overall difference in leverage, therefore, can be ascribed largely to differences in capital requirements and in the geographical mix of business. Indeed, capital

¹⁵Foreign securities firms have faced the same capital requirements as Japanese firms since the mid-1980s. See U.S. Treasury, *National Treatment Study 1986 Update*, p. 78, and Report on Primary Dealers Act, Attachment 3, Summary of Public Comments, pp. 7-8

Table 3

Selected Balance Sheet Characteristics of U.S. and Japanese Securities Firms
(Percent)

	Japanese Firms	U.S. Firms
Equity holdings in perspective		
1 Equity portfolio/total assets (security holdings at book value)	3.0	3.7
2 Equity portfolio/total assets (security holdings at market value)	6.9	3.7
3 Equity portfolio/shareholder equity (security holdings at book value)	26.3	87.4
4 Equity portfolio/shareholder equity (security holdings at market value)	44.5	87.4
Leverage		
5 Shareholder equity/total assets (security holdings at book value)	11.7	4.3
6 Shareholder equity less equity holdings/total assets less equity holdings (security holdings at book value)	9.0	0.38
7 Shareholder equity/total assets (security holdings at market value)	14.7	4.3

Sources: Annual reports, Toyo Keizai Inc., *Japan Company Handbook*, Federal Reserve Bank of New York staff estimates. Notes: Data are averages for 1986-89. Assets for Japanese firms include gensaki and repurchase agreements. For Daiwa, Nikko, and Yamaichi, the market value of securities portfolio is estimated from net assets at market value less unconsolidated shareholder equity from the *Japan Company Handbook*. For Nomura, whose annual reports detail the market value of securities, this difference overstates unrealized gains on securities by an average of 6 percent, with a range of 1 to 9 percent. Unrealized gains on Daiwa's, Nikko's, and Yamaichi's equity holdings alone are estimated as the product of the difference above and .905.

requirements better explain the differences in leverage than the degree of leverage of either U.S. or Japanese firms since firms in both countries tend to hold capital in excess of requirements.

Similar leverage within a market makes for cost of capital differences that reflect cost of equity differences. Given that a 10 percent equity-to-asset ratio is required in Japan, if U.S. firms face a required return on equity of 10 percent while Japanese firms face a required return of 5 percent, then the former need to earn 1 percent on assets in Tokyo while the latter can get away with ½ percent. If the capital requirement works out to 2 percent in the U.S. market, then the U.S. firm needs to earn 20 basis points per annum on its assets while the Japanese firm needs to earn only 10 basis points. In this manner the cost of equity differences carry over into cost of capital differences.

Explaining cost of capital differences for securities firms

The findings so far raise two questions: Why do Japanese securities firms claim an advantage in the cost of equity over their U.S. counterparts? And why is the advantage smaller than that found for Japanese nonfinancial firms and banks?

Macroeconomic explanations for U.S.-Japanese differences¹⁶

Japanese securities firms share in the relatively low equity costs that characterized the whole Japanese corporate sector in the latter 1980s. These low costs are traceable in large part to macroeconomic factors. Even though the international mobility of capital increased in the 1980s (as evidenced by substantial crossborder transactions in equity), capital costs were far from equalized across countries and national factors still played a predominant role. In Japan, higher household savings made for lower equity costs. In addition, smoother growth in Japan, resulting in part from successful macroeconomic policy, meant lower risk in profits, and lower risk in profits meant lower cost of equity.

Safety net differences between U.S. and Japanese securities firms

We have argued elsewhere that the risk faced by investors in the equity of banks depends on the nature of the safety net provided by officials of various countries to their banks. Investors in the shares of securities firms also face systematically different risks owing to national differences in safety-net characteristics. In particular, investors in Japanese securities firms have more reason

¹⁶Macroeconomic explanations of U.S.-Japanese cost of capital differences are discussed at length in McCauley and Zimmer, "Explaining," pp. 16-20

to suppose that their downside risk is substantially lessened by the possibility of government intervention than do investors in the shares of U.S. securities firms.

Potential investors trying to imagine the worst that might happen to the value of their shares in a securities firm are liable to conjure up different scenarios for losses in Japanese and U.S. securities firms. If they are considering investing in shares of a Japanese firm, they may well call to mind the distress of Yamaichi Securities in the 1960s; if they are considering investment in a U.S. firm, they may readily recall the bankruptcy filing of Drexel in 1990.

The essential features of Yamaichi's difficulties may be related briefly: losses on stock market holdings impaired the firm's capital; customers withdrew liquidity, the Bank of Japan worked with the Ministry of Finance to pursue a rescue plan involving largely unsecured advances by the Bank of Japan; eventually Yamaichi recovered and repaid the loans over four years.¹⁷

The essential features of Drexel's difficulties may be related with equal brevity. losses on junk bonds and bridge loans impaired the firm's capital, providers of wholesale funding withdrew liquidity, the Securities and Exchange Commission worked with the Federal Reserve Bank of New York to achieve an orderly reduction of the balance sheets of the registered broker-dealer and the government securities subsidiaries, the firm sought protection from its creditors under Chapter 11 of the Bankruptcy Code, and the fate of unsecured

¹⁷Appendix to statement of E. Gerald Corrigan, President of the Federal Reserve Bank of New York, in *Deposit Insurance Reform and Financial Modernization*, Hearings before the Senate Committee on Banking, Housing, and Urban Affairs, 101st Cong., 2d sess. (Washington, D.C. Government Printing Office, 1990), pp. 82-86, reprinted as "How Safety Nets Work," *Central Banking*, Autumn 1990, pp. 61-63.

creditors, like that of holders of the firm's (untraded) equity, remains unclear at this juncture.¹⁸

The striking contrast between these two episodes, of course, provides no certain guide to how a troubled securities firm would be handled in the future. Certainly the contexts of the official actions differed. Generally low share prices reflected general economic weakness in Japan in 1962, while Drexel's difficulties came late in an economic upswing. Nevertheless, market participants may well view the equity of a major U.S. securities firm as subject to one more risk than that of a major Japanese securities firm.

Market measures of risk

Market measures of risk show Japanese securities firms to be, if anything, a bit riskier than their U.S. counterparts. Because Japanese securities firms are much less leveraged than U.S. firms, they should exhibit lower stock betas, given equal riskiness of assets.¹⁹ But in fact the stock betas of Japanese security firms have averaged 1.46 over the period 1987-91, as compared with 1.29 for U.S. securities firms over the period 1986-91, and the difference is even more striking for

¹⁸Christopher Byron, "Drexel's Fall: The Final Days," *New York*, March 19, 1990, pp. 32-38.

¹⁹Starting with the relationship

$$b_a = w \times b_e + (1-w) \times b_d,$$

where

b_a = asset beta
 w = equity/asset ratio
 b_e = equity beta
 b_d = bond beta,

we have $db_a/dw = w^{-1} \times \{b_d - b_e + [(1-w) \times db_d/dw]\}$

Given that b_d and db_d/dw are small and of opposite sign, we have $db_a/dw < 0$. If we further assume that bond betas are generally negligible, we have $db_a/dw = -b_e/w$.

Table 4

Shareholders' Equity as a Share of Total Assets for U.S. Affiliates of Japanese Securities Firms (Percent)

Date	Daiwa	Nikko	Nomura	Yamaichi	Average
September 1985			5.91		5.91
September 1986	1.38		2.30		1.84
September 1987	1.05	2.96	1.48	2.45	1.99
September 1988	0.92	2.90	2.00	1.84	1.92
March 1989	0.99	2.22	1.57	0.90	1.42
March 1990	0.85	1.64	1.38	0.92	1.20
March 1991	1.17	1.90	1.41	0.96	1.36
Period average	1.06	2.32	2.29	1.41	1.77

Source: Annual reports

Note: For Nomura and Yamaichi, March figures for 1989 and 1990 are averages of September 1988 and September 1989 and September 1989 and September 1990, respectively.

years other than 1990 (Tables 5 and 6).

Financial deregulation and the insecurity of Japanese securities firms' earnings

Investors in the Big Four's shares may well perceive a risk of more concern than bankruptcy or the shares' exaggerated response to general market movements. Prospective deregulation is widely viewed as a threat to the firms' revenues, and the risk of an adverse change in the rules can boost the measured cost of equity for Japanese securities firms relative to Japanese firms in general. In addition, if investors anticipate a decline in the profitability of Japanese securities firms, then the current relation of their earnings to the market valuation of their shares will tend to overstate their cost of equity unless the stock market is very myopic. Evidence suggests that investors in the shares of the Big Four securities firms do fear lower profitability going forward.

Japanese securities firms resemble U.S. securities

firms in the mid-1970s in their dependence on equity commissions as a source of revenue. U.S. securities firms drew about half of all revenues from equity commissions when they were liberalized in May 1975 (Chart 2). Since then, the share of commissions in industry revenues has fallen below a fifth. By contrast, the large Japanese securities firms have depended and continue to depend on equity commissions for about half of their revenue (Chart 3).

Investors need only extrapolate a trend to foresee that these revenues will shrink over the medium term. The Japanese authorities have been reducing equity commission rates gradually (Chart 4). Over the last decade, commission rates fell at an annual rate of 1 percent for trades of 1 million yen (about \$7000), 1.6 percent for trades of 10 million yen (\$70,000), 5.5 percent for trades of 100 million yen (\$700,000), 13.4 percent for trades of 1 billion yen (\$7 million), and 18.9 percent for trades of 10 billion (\$70 million).

Table 5

Relation of U.S. Securities Firms' Share Returns to Returns on the Standard and Poor's 500 Index

Period	Merrill Lynch			Morgan Stanley			Salomon Brothers		
	Beta	Standard Error	R ²	Beta	Standard Error	R ²	Beta	Standard Error	R ²
1986-91	1.30*	0.085	.45	1.14	0.088	.38	1.44*	0.089	.48
1986	0.81	0.19	.26	1.17	0.21	.45	1.64*	0.21	.56
1987	1.29	0.15	.60	1.30	0.17	.53	1.55*	0.20	.55
1988	0.88	0.15	.40	0.87	0.20	.27	1.33	0.21	.45
1989	2.09*	0.23	.61	0.88	0.25	.19	1.06	0.22	.33
1990	1.45	0.24	.41	1.06	0.22	.32	1.31	0.20	.47
1991 (26 weeks)	1.67	0.34	.50	1.37	0.36	.38	1.61	0.38	.43

Source: Standard and Poor's

Note: Data are weekly.

*Beta is significantly different from one on a two-tailed test at 5 percent significance

Table 6

Relation of Japanese Securities Firms' Share Returns to Returns on the TOPIX Index

Period	Daiwa			Nikko			Nomura			Yamaichi		
	Beta	Standard Error	R ²	Beta	Standard Error	R ²	Beta	Standard Error	R ²	Beta	Standard Error	R ²
1987-91	1.62*	0.09	.57	1.34*	0.09	.50	1.42*	0.07	.62	1.44*	0.09	.55
1987	2.07*	0.21	.68	1.53*	0.21	.53	1.63*	0.16	.70	1.79*	0.22	.59
1988	2.79*	0.27	.69	2.44*	0.24	.66	1.99*	0.21	.63	2.53*	0.23	.71
1989	2.03*	0.27	.54	1.99*	0.25	.55	1.68*	0.22	.53	1.89*	0.26	.52
1990	1.05	0.13	.58	.91	0.11	.56	1.10	0.12	.64	.98	0.11	.61
1991 (25 weeks)	2.05*	0.28	.71	1.33	0.31	.45	1.95*	0.19	.82	1.39	0.24	.60

Source: Daiwa and Dow Jones Tradeline International.

Note: Data are weekly.

*Beta is significantly different from one on a two-tailed test at 5 percent significance.

Note that liberalization of commissions hurts the securities firms more than the liberalization of interest rates ever hurt Japanese banks. Competition among the banks for borrowers kept the spread between average deposit rates and prime lending rates fairly narrow by international standards. Regulation of commission rates proved much more effective in protecting the revenues of the securities firms.

Reinforcing the trend toward commission deregulation was a 1988 regulation that shrank the Big Four's share of equity brokerage. The Ministry of Finance was reported to have advised securities firms not to perform more than 30 percent of daily trading in any single share. This guidance, aimed at excesses associated with thematic promotions of the Big Four, contributed to a decline in their share of equity brokerage from 60 percent in 1981 to 46 percent in the middle of the decade to 33 percent at the end of the decade.²⁰ As a

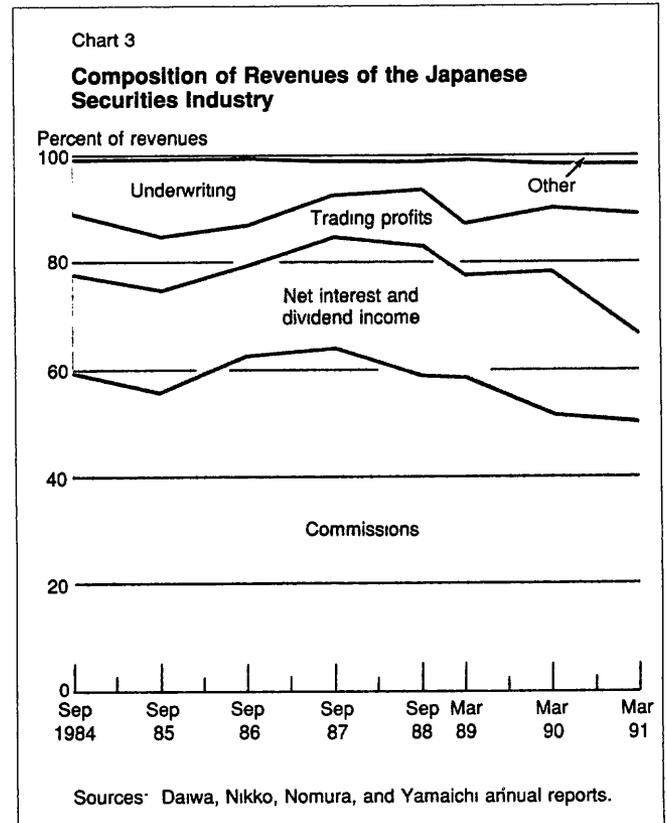
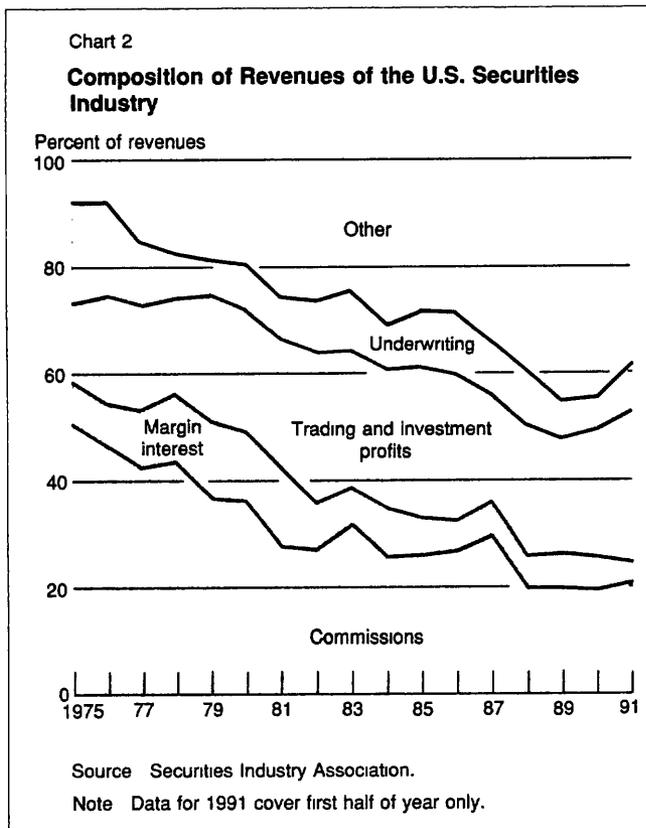
²⁰Satoshi Takeuchi, "Big Four's Transaction Share No Longer So Big. 30% Cap on Trade Volume Hobbles Strategy to Promote Selected Issues," *Japan Economic Journal*, October 28, 1989, p. 2. The article notes that "the guidelines emerged after the U.S. government's special body on stock trading, the Brady Commission, sharply criticized the Big Four's oligopolistic control [and] accused the Big Four of manipulating stock prices by conducting concerted

result of commission cuts and lost market share, Big Four commissions showed little of the buoyancy of the trading value of Japanese equities (Chart 5). Note that the value of share turnover on the Tokyo Stock Exchange reflected not only the performance of share prices but also the clear downward trend in share volume from the beginning of 1988.

Further analysis of the Big Four commission income confirms the erosion of their revenue base in the midst of the boom market of the late 1980s. We relate the log of annual commission income for each of the Big Four for 1983-91 to a time trend and to the log of the value of shares traded on the Tokyo Stock Exchange. The estimated coefficient for time suggests that when the value of trades on the Tokyo Stock Exchange is held constant, commission revenue tends to decline 4.7 percent per year. This rate lies within the spectrum of rates of decline for regulated commissions over the decade, as outlined above—1 percent to 18 percent—and is close to the rate of decline for commissions associated with

Footnote 20 (continued)

buying operations based on specific themes." See *Report of the Presidential Task Force on Market Mechanism* (Washington, D.C. Government Printing Office, 1988), p. 1-8.



an 80 million yen trade. Allowing for 10 percent growth in trading value and other, noncommission revenues, investors may readily foresee commission income dropping to less than a quarter of the Big Four's revenues over the next fifteen years.²¹

The Big Four's commission income is quite responsive to the stock market's performance. Our regression analysis suggests that a 10 percent rise in the value of stock market trading yields a 7.1 percent increase in Big Four commission revenues (Table 7). Big Four commissions did not respond one-for-one to the value of trading because rising share prices tended to push transaction values along the declining schedule of commissions and because their market share was declining.

Investors in the shares of Japanese securities firms must pay attention to the larger agenda of deregulation that includes a reconsideration of the Article 65 barriers between securities and banking businesses. Already

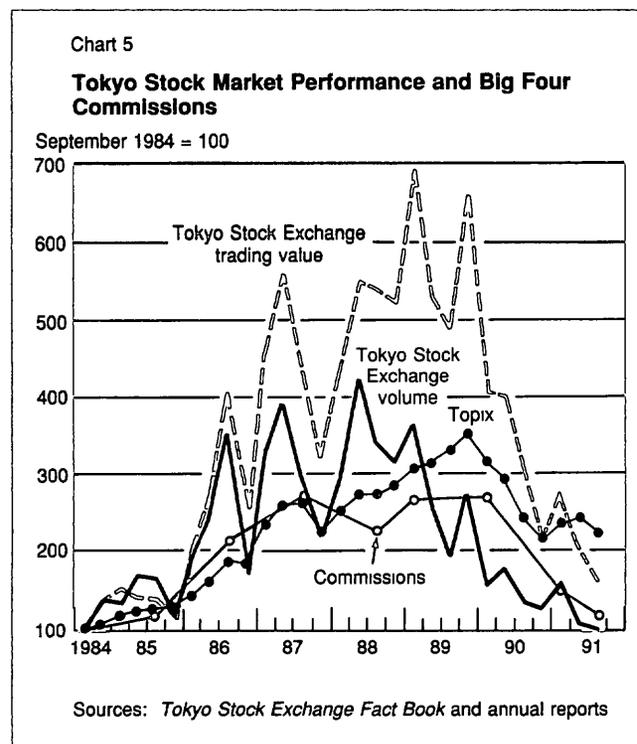
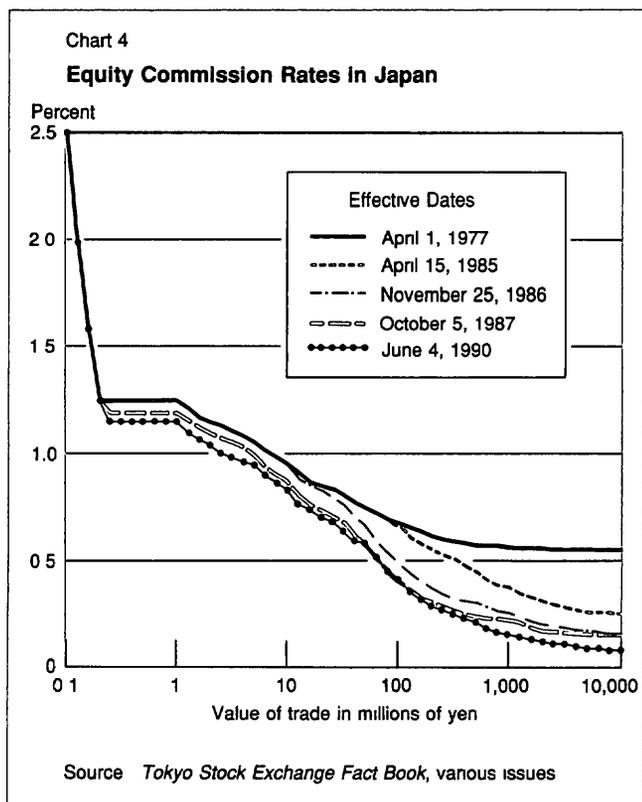
the Japanese city banks have equity stake-outs in smaller securities firms that could be capitalized upon were Article 65 repealed or modified to permit bank entry into brokering Japanese shares. Even if the change in the law now thought most likely will not permit banks to broker shares, investors nevertheless will have borne the risk that a more sweeping deregulation poses to securities firms' revenues and profits.²²

Finally, investors may perceive that the entry of foreign securities firms may present a threat to the commission revenue of the large Japanese securities firms. Foreign firms have brought well-developed technical trading tactics and more critical research to their bidding for institutional trades. With these advantages, they have raised their share of trading on the Tokyo Stock Exchange from 1.5 percent in 1986 to 5.4 percent in 1989 and 7.3 percent in the first half of 1990.²³

²¹If trading value rises at 10 percent per annum, if the elasticity of commissions with respect to trading value is .71, and if deregulation continues to put a 4.7 percent per annum drag on commissions, then commissions will grow at 2.1 percent per annum. If other revenues start off equal to commissions and grow at 10 percent per annum, then it will take fifteen years for commissions to fall to a quarter of revenues. In other words, $(1.021)^x = (1/4)$, solving for x, we have fifteen

²²"While the entry of the banks into certain areas of securities business is now a foregone conclusion, the speed with which such reforms will be implemented, the scope of the banks' new businesses, the form which entry will take, and the new questions surrounding the banks' ability to expand aggressively while international capital adequacy requirements still seem a problem for them, all combine to suggest a picture which is not as black as originally perceived" (Alicia Ogawa, "Daiwa Securities," S G Warburg Securities, March 26, 1990, p. 12)

²³*Business Week*, July 9, 1990, p. 60. In *National Treatment Study, 1990*, p. 236, the U.S. Treasury cites the "market power" of the Big



One measure of the loss of franchise value of the Japanese securities firms is the ratio of market value to book value. These firms' market-to-book ratio has declined as commissions have been reduced (Chart 6). Note that the spate of public share offerings in late 1985 and early 1986 by U.S. securities firms, including Bear Stearns and Morgan Stanley, were well timed by this measure.

The possibilities of additional commission cuts, Japanese bank competition, and further penetration by foreign firms all represent risks that investors in Big Four shares take into account. It is understandable if investors in the shares of the Big Four discount current earnings somewhat to allow for cheaper stock trading for Japanese households and institutions.²⁴ As a result of the Big Four's problematic growth prospects, the measured cost of equity for these firms may be higher than that of Japanese firms in general.

Industrial organization

Another factor jeopardizing the earnings of the Japanese security firms is the peripheral position of the Japanese security firms in the country's industrial organization. A Japanese city bank is at or near the

Footnote 23 (continued)

Four to account for the minimal shares accorded foreign firms in underwriting syndicates in Tokyo. In underwriting carve-outs of U.S. firms, however, U.S.-based underwriters have played important roles. See Ted Fikre, "Equity Carve-Outs in Tokyo," this *Quarterly Review*, vol. 15 (Winter 1991), pp. 60-64.

²⁴A major rating firm cited "concerns about future profitability in light of structural changes that are currently taking place in the domestic Japanese financial market," including "lower domestic equity brokerage commission rates and ongoing discussions about financial reforms," in warning investors of possible downgradings. Standard and Poor's *Credit Week*, May 13, 1991, p. 19.

Table 7

Regression Analysis of Japanese Securities Firms' Commission Income September, 1984-91

Dependent variable	Natural Log of Commission
Independent variables	
Time	- 0.47 (.012)
Natural log of Tokyo Stock Exchange trading value	.713 (.050)
Intercept	9.31 (.146)
R ²	.87
Degrees of freedom	33

Note: Standard error of coefficients is given in parentheses.

center of a *keiretsu*, a network of firm affiliations that approximate a cross-section of the economy. This arrangement affects the cost of equity directly through the stock market: extensive cross shareholding within the *keiretsu* may stabilize and perhaps even elevate share prices. Indirectly, the *keiretsu* structure assures steadier business flows and provides implicit guarantees of assistance to troubled members, benefits that in turn help to stabilize profit flows.

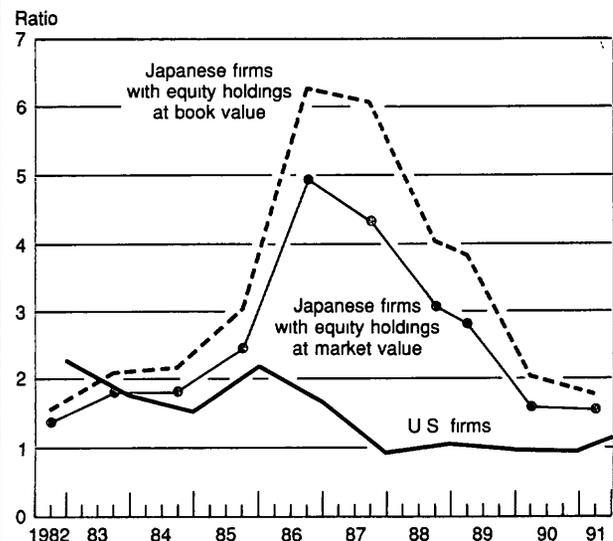
The peripheral position of the Big Four securities firms is evident in the reference work *Industrial Groups in Japan*.²⁵ Three of the Big Four appear only once each and no group affiliation is given. By contrast, nine of the eleven Japanese banks examined in our study of bank cost of capital anchor well-defined industrial groups.

Even the exceptional Japanese securities firm broadly conforms to the pattern. Nikko Securities is listed as associated with the Mitsubishi group, but the affiliation is described as weak. The aggregate equity stake in Nikko held by Mitsubishi group companies, measured against the overall concentration of shareholdings in the securities firm, supports that charac-

²⁵Eighth ed. (Tokyo: Dodwell Marketing Consultants, September 1988), pp. 34-35, 49, 128, 304, 306, 506, 512.

Chart 6

Ratio of Market to Book Value for U.S. and Japanese Securities Firms



Sources: Annual reports; Toyo Keizai Inc., *Japan Company Handbook*; and Federal Reserve Bank of New York staff estimates.

terization The Mitsubishi group's aggregate holding of Nikko's equity amounts to no more than a third of the top ten shareholders' collective stake. By contrast, the Mitsubishi group's holding of Mitsubishi Bank's shares bulks much larger, almost two-thirds of the top ten shareholders' stake.²⁶ Only 13 of the 128 firms in the Mitsubishi group show lower group "influence" ratios than does Nikko Securities. Moreover, Nikko has no directors from Mitsubishi group companies while Mitsubishi Bank has two

Reversing the perspective to examine financial firms' holdings of equities confirms that securities firms remain much less well connected than Japanese banks. The securities firms channeled part of their strong flow of retained earnings during the boom years of the 1980s into accumulating equity stakes. As a result, securities firms increased their strategic share of exchange-listed firms faster than banks did in the 1980s, especially if "most of the increase in bank equity ownership" was "not ... for stable share-owning purposes [but rather] for short-term investment purposes."²⁷ In March 1990, almost four-fifths of Nomura's equity holdings by value were held in the investment account, such shares "are acquired for the Company's operating purposes and are rarely sold under a Company policy."²⁸ Still, Japanese banks' stake in firms listed on the Tokyo Stock Exchange remains about ten times deeper than that of Japanese securities firms (Table 8).

At the firm level, examination of the securities firms' major holdings in Japan's top companies shows the holdings to be fewer and more concentrated than those of the banks. Although some observers contend that "Nomura is actively building its own keiretsu of nonindustrial companies in a variety of sectors including real

estate, insurance, distribution, research, training, and advertizing,"²⁹ Nomura has not broken into the top tier of ownership of firms traded in the first section of the Tokyo Stock Exchange. A search of the top eight or ten shareholders in each of the 1254 firms listed on the Tokyo Stock Exchange's first section found only thirty-three shareholdings of the Big Four securities firms (Table 9). Nomura accounted for half of these, but its holdings were quite concentrated in financial firms, including the shares of two of its own major shareholders, Daiwa Bank and Toyo Trust. By contrast, the other 3 securities firms were not represented among the top shareholders of any of their own top shareholders. Whatever the differences among the major securities firms, none of them has holdings approaching the near cross-section of corporate Japan owned by the city banks.

The usefulness of the limited equity stakes that the Big Four do possess is suggested by their role as underwriters for 22 out of 24 of the firms in which they hold major shareholdings. In all but two cases for which an underwriter is listed, the securities firm with the equity stake is at least co-lead underwriter, usually main underwriter, and often sole underwriter. This strong pattern suggests that equity stakes cement business relations and consequently underscores the threat to underwriting income arising from expanded powers for banks.

Combined with prospective deregulation, the more central position of banks in the structure of corporate networks renders the earnings of the securities firms insecure. If banks are allowed to enter the wholesale securities markets, corporations may well favor their banks in the face of roughly comparable pricing of prospective deals. For this reason, underwriting revenues could be particularly at risk.

A comparison of the responses to Yamaichi's distress

²⁶Mitsubishi group companies held 8.8 percent of Nikko Securities' shares, while the top ten held 26.4 percent. Mitsubishi group companies held 18.8 percent of Mitsubishi Bank's shares, while the top ten held 29.5 percent.

²⁷W. Carl Kester, *Japanese Takeovers* (Boston: Harvard Business School Press, 1991), p. 207.

²⁸Nomura Securities Company, *Annual Report 1990*, p. 23.

²⁹Richard W. Wright and Gunter A. Pauli, *The Second Wave* (New York: St. Martin's Press, 1987), p. 71. Martin French, "Japan's Great Finance Plan," *Asiamoney*, July-August 1991, p. 35, also suggests that Nomura might establish itself at the center of a major industrial group. The article also associates Daiwa Securities with the Sumitomo group and Yamaichi Securities with the Fuyo group.

Table 8

Share of Tokyo Stock Market Owned by Japanese Securities Firms and Banks

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Securities firms	1.6	1.7	1.7	1.8	1.9	2.1	2.3	2.3	2.0
Banks	17.5	18.0	17.7	17.4	18.4	19.3	19.8	21.3	21.3

Source: Tokyo Stock Exchange

and the troubles of a well-connected automobile maker highlights the greater risk attendant on the securities firms' relatively peripheral position (although the sheer size of Yamaichi's problem may have had something to do with the difference in handling the two cases) While the automobile firm Mazda was helped through a period of distress by its main bank and affiliated companies,³⁰ Yamaichi had to resort directly to the government

Conclusions

U.S. securities firms must clear a higher cost of equity hurdle in pricing their products and services than their

Japanese counterparts. Higher capital requirements in Japan may put U.S. firms at a particular disadvantage in competing there.

Factors contributing to lower costs for Japanese firms in the 1980s were higher household savings and smoother economic growth. In addition, a comparison of the experience of troubled securities firms in the United States and Japan suggests a wider safety net in Japan that may lower equity costs.

Japanese securities firms seem to have a smaller cost of equity advantage over their U.S. counterparts than Japanese nonfinancial firms and banks have over their respective counterparts. In part, Japanese investors bear a risk of lower earnings for Japanese securities firms in a deregulated environment, and this risk

³⁰Richard Pascale and Thomas P. Rohlen, "The Mazda Turnaround," *Journal of Japanese Studies*, vol. 9 (Summer 1983), pp. 219-63

Table 9

Japanese Securities Firms' Equity Stakes in Firms Listed on the Tokyo Stock Exchange First Section

Securities Firm	Sector	Firm	Percent Stake	Underwriter Status				
				Sole	Main	Co	Sub	Not
Nomura	Financial	Daiwa Bank	3.1		X			
		Toyo Trust	6.9		X			
		Dai-Tokyo Fire & Marine	9.2	X				
		Chiba Bank	1.7		X			
		Osaka Securities Finance	17.0	X				
		Japan Securities Finance	3.4					
		Kokusai Securities	32.5					
		Sanyo Securities	8.1					
	Nonfinancial Manufacturing	Hokko Chemical	4.9	X				
		Nissho (medical equipment)	1.4				X	
		Toyo Denki, Seizo (railroad equipment)	2.4	X				
		Retail trade Sogo (department store)	3.9		X			
		Communications Nippon Television Network	4.3	X				
		Construction Nissan Construction	2.1		X			
Nikko	Transport	Daiwa Danchi	6.5			X		
		Hitachi Transport	0.8		X			
	Financial	Fishing Hoko	5.1	X				
		Tokyo Securities	33.6					
		Toyo Securities	6.4					
		Maruman Securities	4.9					
		Kosei Securities	4.1					
		Japan Securities Finance	5.0					
		Manufacturing Tateho Chemical	4.2		X			
		Ikegai (machine tools)	1.7	X				
Daiwa	Manufacturing	Nissan Nohrin Kogyo (plywood)	4.2		X			
		Kyodo Printing	2.5				X	
		Nippon Conveyor	1.8		X			
	Retailing Construction	Nihon Matai (food containers)	3.8		X			
		Senshukai	3.5		X			
		Morimoto	3.5	X				
Yamaichi	Financial	Nippon Trust Bank	1.6		X			
		Kita-Nippon Bank	4.1		X			
		Taiheiyō Securities	4.1					

Source: Toyo Keizai Inc., *Japan Company Handbook—First Section*, Winter 1990

Notes: Nomura comprises Nomura Securities and Nomura Land and Building, and Nikko comprises Nikko Securities, Nikko Building, and Nikko Investment Trust. No underwriters are listed for the securities firms in which the Big Four own stakes.

boosts their measured cost of equity. In addition, the distance of Japanese securities firms from corporate networks of mutual support may render their shares

more risky than the shares of firms secure within such networks.