

Chapter 3

Financing Long-Term Investments

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Financing Long-Term Investments

Developing improved technology requires long-term investment. This is true of all the activities involved in technological advance—research, development, commercialization, and acquisition of new capital equipment. All these undertakings have a better chance of success when there is a steady commitment of money, often for several years before the investment begins to pay off.

Much has been said about the short planning horizons of American business managers compared with the longer term view taken by foreign competitors, especially the Japanese. Because Japan's economic success shows most clearly what long-term investment can accomplish, this section concentrates mostly on Japan, although examples from other countries (e.g., Germany and South Korea) would be equally appropriate.

Several explanations have been offered for the Japanese propensity to take the long-term view, and for the American focus on shorter term returns. One is, simply, national culture and, by extension, business culture. But this is less an explanation than an observation. A factor with more explanatory power is the remarkable growth of the Japanese economy since World War II, and the comparatively sluggish growth, on average, of the post-1960s American economy. American firms, doing most of their business domestically, faced potential growth rates whose mean was close to overall economic growth—3 percent per year or so, in real terms. Japanese manufacturers, however, were also looking outward, and had not only their own rapidly growing market to expand into, but the U.S. market as well. When markets are expanding at a rapid clip, investment for greater market share over the long term can reap more rewards than playing for short-term gains. Conversely, economic stagnation, recession, or even sluggish growth can work to the detriment of long-term investors and make winners out of short-term profit takers.

Japan's rapid economic growth in the postwar period and its government's effectiveness in promoting swift recovery from the oil shocks and recessions of the 1970s and 1980s partially explain the penchant of Japanese managers to focus on the long term. Likewise, sluggish growth explains some, but not all, of America's managerial myopia. Another deter-

mining factor is the financial environment. If a focus on short-term returns and profits is hurting American firms in competition with Japanese and German firms—and this is widely accepted as true—then it follows either that U.S. managers persist in ill-judged strategies in the face of evidence to the contrary, or that there is something about such strategies that is rational, viewed from the perspective of the managers. To achieve any long-lasting changes in the strategic behavior of American firms, it is necessary to understand how the American financial environment fosters short-term strategies, and how the Japanese financial environment resists such pressures.

A major part of the answer lies in the terms on which capital is provided, which includes, but is not limited to, its cost. By common consent, Japanese firms have deep pockets and patient capital. Patient capital is, almost by definition, low-cost capital, or it behaves like low-cost capital. And there is substantial evidence that Japanese businesses have enjoyed lower cost capital than American firms over most of the postwar period. Moreover, the financial climate has encouraged relatively heavy investment in things like R&D and fixed capital to an even greater extent than differences in simple cost of capital suggest. The question is why.

Today, when Japanese national income per capita is among the world's highest and Japanese corporations are swimming in profits, it may be hard to remember that, not so long ago, capital was relatively scarce in Japan. The Japanese personal savings rate has been extraordinarily high throughout the postwar period. But initially, incomes were low, so the total amount saved was not very great. On the other side of the ledger, demands for capital were high, mainly to feed the appetite for investment capital of a rapidly industrializing economy but also to finance frequent deficits in the national government budget. The workings of free capital markets do not explain the low cost of capital to Japanese firms during those years. The wide gap between American and Japanese capital costs, through the mid-1970s at least, was a result of government regulation of the Japanese financial market.

Today, after years of deregulation, Japanese financial markets have become more open, and real

interest rates, many suggest, have converged somewhat with American ones. Yet even if interest rates were the same, the risks to business in making long-term investments might still be lower in Japan. **That is, in large part,** because both debt and equity financing are provided on a less risky, more long-term basis in Japan (and Germany) than in the United States, in effect lowering the cost of capital to Japanese firms even if the cost of funds (interest rate paid on debt capital, for example) were the same as America's.

INTERNATIONAL CAPITAL COSTS

An often-repeated argument holds that if money flows freely between nations there should be no difference in the cost of capital based on the national identity of firms. Investment capital, regardless of its origin, will seek investments that are expected to yield the highest return, and investors will seek the best terms from creditors. If there are enough of both (that is, if no investor or creditor has inordinate market power), capital flows should be sensitive only to risk. This argument presumes, logically, that there is no difference in risk based on nationality. And indeed, one study concludes that there is no persistent difference in real short-term interest rates between the United States and Japan (the nation most often alleged to enjoy favorable terms on capital provision).¹

There are many flaws in this kind of argument. Short-term interest rates are not a very relevant basis for comparison, and comparisons of other real rates do show a difference between Japan and the United States. For instance, the real lending rate in the United States in the 1980s was higher than that of Japan by 1.1 to 4.8 percentage points, averaging 2.6

percentage points.² But a more fundamental flaw is the failure to take into account the difference between cost of funds—interest rates or the cost of equity—and the cost of capital, which is influenced by corporate tax rates, the economic depreciation of the investment and its tax treatment, and other fiscal incentives for investment.³ Numerous studies have documented the gap—sometimes several percentage points—between Japanese and American capital costs over the past two or more decades.⁴ Jorgenson and Kuroda, for example, estimate that Japan's lower capital costs have been a very important contributor to the increasing international competitiveness of Japanese firms over the postwar period, excepting the years 1973, 1978, and 1989 (figure 3-1).⁵

The most thorough study, comparing capital costs of the United States, Japan, West Germany, and the United Kingdom, calculated capital costs for various types of investment, including research and development, new plants, and machinery and equipment. The study concluded that American and British capital costs for all types of investment were substantially higher than those of Japan and West Germany over the period 1977 to 1988 (figures 3-2 to 3-4). Specifically, each year from 1977 to 1988, the cost of capital in America averaged 3.4 percentage points higher than the cost of capital in Japan for investments in machinery and equipment with a physical life of 20 years; 4.9 percentage points higher for a factory with a physical life of 40 years; and 8 percentage points higher for a research and development project with a 10-year payoff lag.⁶

The impact of differences this great is profound. Even small disparities can be important and have long-lasting effects. A 1-percentage-point difference

¹National Science Foundation, *The Semiconductor Industry*, Report of a Federal Interagency Staff Working Group (Washington, DC: Nov. 16, 1987), p. 36. This point is quite debatable, even on short-term rates. The NSF study does not mention which short-term rates were compared, and other studies have concluded that there are substantial differences in short-term interest rates.

²The prime lending rate in the United States, and the lending rate in Japan, according to *International Financial Statistics*. The rates were deflated using GDP deflators, from the Organization for Economic Cooperation and Development.

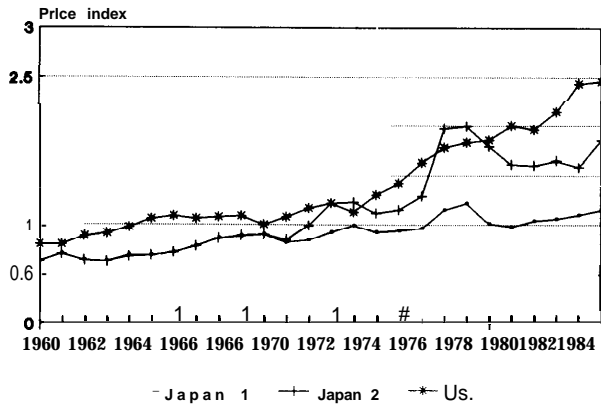
³Robert N. McCauley and Steven A. Zimmer, "Explaining International Differences in the Cost of Capital," *Federal Reserve Bank of New York Quarterly Review*, summer 1989, pp. 7-28.

⁴For example, see "U.S. and Japanese Semiconductor Industries: A Financial Comparison," Chase Financial Policy for the Semiconductor Industry Association, June 9, 1980; George N. Hatsopoulos and Stephen H. Brooks, "The Gap in the Cost of Capital: Causes, Effects, and Remedies," *Technology and Economic Policy*, Ralph Landau and Dale Jorgenson (eds.) (Cambridge, MA: Ballinger Publishing Co., 1986); Albert Ando and Alan J. Auerbach, "The Cost of Capital in the U.S. and Japan: A Comparison," Working Paper No. 2286, National Bureau of Economic Research, Inc., June 1987; and Dale W. Jorgenson and Masahiro Kuroda, "Productivity and International Competitiveness in Japan and the United States, 1960-1985," paper presented at the Social Science Research Council Conference on International Productivity and Competitiveness, Stanford, CA, Oct. 28-30, 1988.

⁵Dale W. Jorgenson and Masahiro Kuroda, "Productivity and International Competitiveness in Japan and the United States, 1960-1985," paper presented at the Social Science Research Council Conference on International Productivity and Competitiveness, Stanford, CA, Oct. 28-30, 1988.

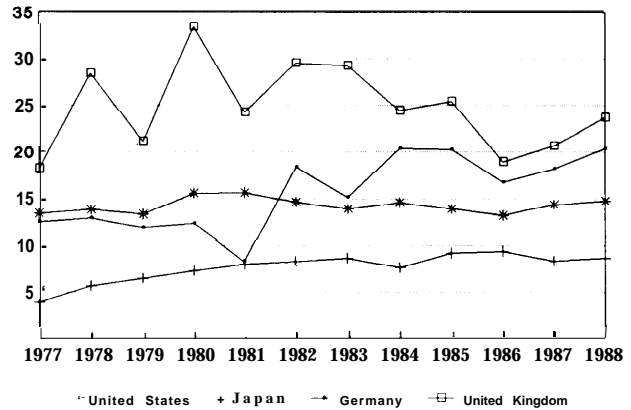
⁶McCauley and Zimmer, op. cit., p. 16.

Figure 3-1--Capital Input Prices, United States and Japan



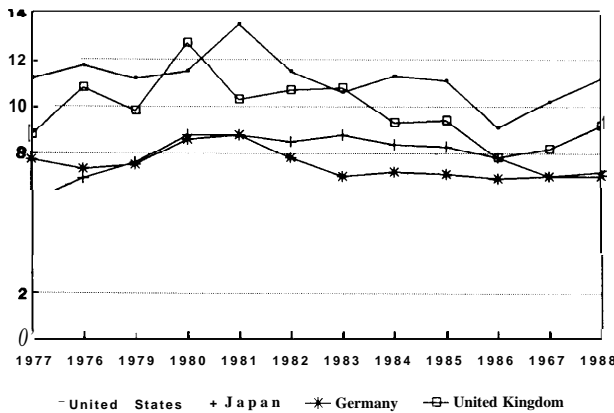
SOURCE: Dale W. Jorgenson and Masahiro Kuroda, "Productivity and International Competitiveness in Japan and the United States, 1960 -85," paper presented at the Social Science Research Council Conference on International Productivity, Stanford, CA, Oct. 28-30, 1988.

Figure 3-3-Comparative Capital Costs: R&D, 10-Year Payoff



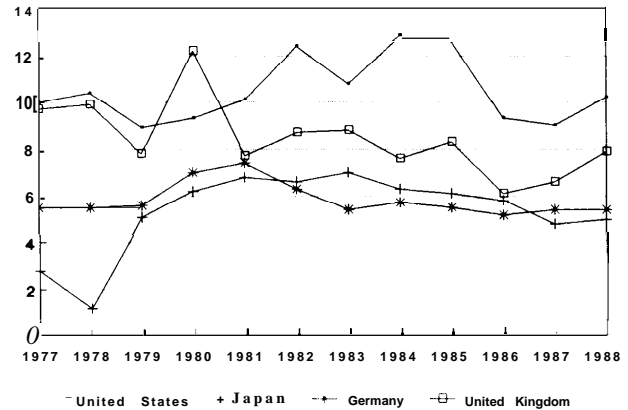
SOURCE: Robert N. McCauley and Steven A. Zimmer, "Explaining International Differences in the Cost of Capital," *Federal Reserve Bank of New York Quarterly Review*, summer 1989, table 2.

Figure 3-2-Comparative Capital Costs: Equipment and Machinery, 20-Year Life



SOURCE: Robert N. McCauley and Steven A. Zimmer, "Explaining International Differences in the Cost of Capital," *Federal Reserve Bank of New York Quarterly Review*, summer 1989, table 2.

Figure 3-4-Comparative Capital Costs: Factory, 40-Year Life



SOURCE: Robert N. McCauley and Steven A. Zimmer, "Explaining International Differences in the Cost of Capital," *Federal Reserve Bank of New York Quarterly Review*, summer 1989, table 2.

in the after-tax cost of capital can result in differences in capital stock of 7 to 13 percent in the long run.⁷ Even if American and Japanese capital costs were the same today—which they are not—markedly lower costs in previous decades in Japan would still favor the Japanese firms.

Sustained differences in capital costs of the magnitudes shown by McCauley and Zimmer are not likely under free market conditions in international finance.⁸ Based on evidence of capital-cost differences alone, we would conclude that the financial market of either the United States or Japan

⁷M. Fukao and M. Hanazaki, "Internationalization of Financial Markets: Some Implications for Macroeconomic Policy and for the Allocation of Capital," OECD Working Paper, No. 3, November 1986.

⁸It is quite possible, however, that smaller differences could be sustained simply by different calculations of investment risk based on currency fluctuations, even if capital moves across national borders without restriction. A Japanese investor, for example, might insist on a higher return on a foreign investment than on a comparable domestic one simply to cover the risk of losses induced solely by changes in currency value.

is not free to seek its own equilibrium. Since the American financial market is known to be relatively open internationally, and interest rates are higher here, the hypothesis is that the Japanese financial market has been controlled. That is in fact the case.

Moreover, regulated financial markets are not the only influence on capital investment or formation. Tax incentives and exemptions are widely used to promote capital investment in Japan, often for quite specific purposes. The Japanese main-bank system has also played a crucial part in lowering capital costs and reducing the risk of investment in Japan.⁹ So, too, has the Japanese network of stable shareholding, designed to help managers resist pressure from equity owners to concentrate on short-term profits and dividends at the expense of market share.

The American financial environment is markedly dissimilar. Not only are there fewer provisions, public and private, to promote investment, but the government gives less effort to maintaining overall macroeconomic stability, shareholders demand much greater accountability, and relationships between banks and companies they lend to are more distant. Moreover, the pressure exerted by the financial environment to focus on short-term payoff, or simply to invest less compared with Japan, is growing.

The Japanese Financial Market: Sharing the Risk

Capital costs are based on risk. Riskier investments must promise higher returns to induce investors to provide capital. There is evidence based on the likely future earnings potential of American and Japanese firms in 1989 that the international Japanese manufacturing firms could now be better bets than the American ones. While they were often satisfied with lower profits in the past, many

international Japanese firms are earning handsome profits now; their reputations are sounder, and their capital spending plans are lavish. A 26.3 percent real increase is anticipated in Japanese capital spending in manufacturing in fiscal year 1989, and 11.8 percent overall,¹⁰ compared with a 12.1 percent increase planned expenditures on new plant and equipment on the part of U.S. manufacturers.¹¹ A stable prosperous future for Japanese manufacturers is a recent development, at least in the eyes of international investors. In the 1960s and even in the 1970s, large, long-term investments by Japanese companies in markets dominated by European and American corporate giants must have been viewed with much more skepticism than comparable large investments in Japan now. Yet this higher degree of risk was not perceived in the same way in Japan, nor was it reflected in the costs of capital for large Japanese manufacturing concerns.

The regulation of many facets of the financial system of Japan made it possible for these companies to get low-cost capital. According to Abegglen and Stalk, "[t]he policy of the Japanese government is, and long has been, to hold interest rates to industry at as low a level as prudent monetary policy management allows."¹² Until the 1980s, Japan's financial market was effectively closed to outsiders, and Japanese investors had few options for investment outside Japan.¹³ Moreover, Japan's financial system spread the risks of long-term investments in industrial development widely among banks, savers, consumers, and corporations. This was done through controlled interest rates; tax policies that limited consumer spending, encouraged saving and transferred household savings to businesses on very favorable terms; and a variety of tax incentives that reduced the cost of investment. In America, much more of the risk of long-term investment is borne by

⁹Y. Kurosawa, op. cit.

¹⁰The Japan Development Bank, "The Japan Development Bank Reports on Capital Spending: Survey for Fiscal Year 1988-90," mimeo, September 1989, pp. 2-3. Mr. Nobuyuki Arai, Deputy Manager and Economist of the Economic and Industrial Research Department of JDB expects these planned targets to be met. Personal communication with Mr. Arai, November 1988.

¹¹U.S. Department of Commerce, Bureau of Economic Analysis, "Plant and Equipment Expenditures, the Four Quarters of 1988," Survey of Current Business, September 1988, p. 19.

¹²James C. A@@ and George Stalk, Jr., *Kaisha, the Japanese Corporation* (New York, NY: Basic Books, Inc., 1985), p. 178.

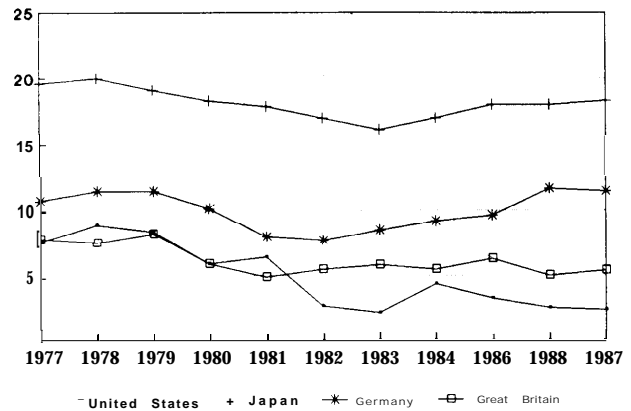
¹³The following discussion draws heavily from the following sources: M. Therese Flaherty and Hiroyuki Itami, "Finance," *Competitive Edge: The Semiconductor Industry in the U.S. and Japan*, Okimoto, Sugano and Weinstein (eds.) (Stanford, CA: Stanford University Press, 1984), pp. 135-76. Philip A. Wellons, "competitiveness in the World Economy: The Role of the U.S. Financial System," *U.S. Competitiveness in the World Economy*, Bruce R. Scott and George C. Lodge (eds.) (Boston, MA: Harvard Business School Press, 1985), pp. 357-394.

the corporation itself.¹⁴ In addition, Japan's high rate of savings and rapidly rising income levels have provided an increasingly generous pool of capital for investment. Since World War II, net savings as a percent of GNP averaged well above 20 percent in Japan through the late 1970s, and have declined only modestly since. Net savings as a percent of GNP have rarely approached as much as 15 percent in other advanced industrial democracies.¹⁵ America is the worst performer among the most advanced OECD nations; net saving hovered at just below 10 percent of GNP through the end of the 1970s, and then plummeted, reaching a low of 2.4 percent in 1987, and then recovered slightly (figure 3-5). Capital formation, as a percent of GDP, has also been higher in Japan than in the United States or OECD Europe (figure 3-6). Finally, Japanese lenders—stockholders and large city banks—tend to have much closer and more influential relationships with their corporate debtors than is the case in the United States.¹⁶

Although some of the conditions described above are slowly changing as the Japanese financial system is deregulated, their combined influence over the postwar period was to give Japanese firms substantially more freedom to make riskier, long-term investments at lower cost than American (or probably European) firms enjoyed. From this perspective, Japan's much-touted long-term vision—and correspondingly, the much remarked myopia of American managers—becomes understandable. Rational managers, operating under the rules and conditions of financing in both countries, could be expected to behave quite differently. This view is persuasive even if the numerical difference in interest rates—as low as 1 to 3 percentage points, according to some analyses—is modest.

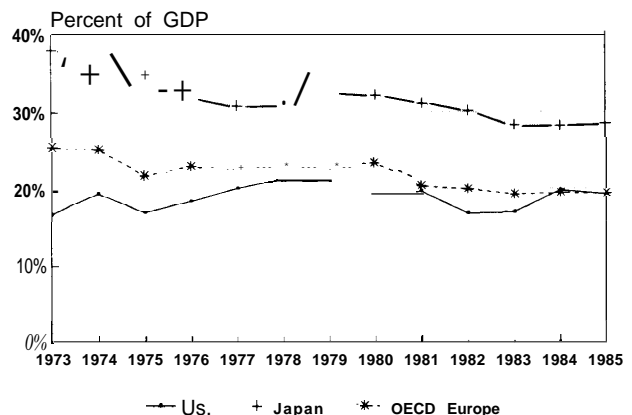
The sharing of risk in Japan is not the result of any single action or actor, but rather of a variety of institutions and laws. Moreover, the risk-sharing that lowers the cost of capital to corporations does not apply to consumers. The factors that spread the risk of business investment include closed or controlled financial markets, channeling of funds to

Figure 3-5--Net Savings, Percentage of Gross Domestic Product



SOURCE: Organization for Economic Cooperation and Development, *Historical Statistics 1960-87* (Paris, France: 1989), table 6.16.

Figure 3-6--Capital Formation in the United States, Japan, and OECD Europe



SOURCE: Organization for Economic Cooperation and Development, *National Accounts 1960-1964* (Paris, France: 1986).

businesses and away from consumer loans, a large pool of savings for investment, and close relationships between companies and capital providers (banks, affiliated financial institutions, government institutions, and stockholders). For targeted industries—those viewed as having most promise for development—there are other mechanisms as well,

¹⁴The developed economies of Western Europe, except West Germany, more closely approximate the American model than the Japanese, at least in terms of capital costs, according to available evidence. See, for example, Y. Suzuki, *Money and Banking in Contemporary Japan* (New Haven, CT: Yale University Press, 1980).

¹⁵Flaherty and Itami, op. cit., p. 137.

¹⁶For example, Corbett makes the point that Japanese banks probably monitor the companies they lend heavily to more actively than is the case in other countries. See Jemy Corbett, "International Perspectives on Financing: Evidence from Japan," *Oxford Review of Economic Policy*, vol. 3, No. 4, 1987, p. 45.

some of them explicit (subsidies for R&D and capital investment, for example) and some implicit or consensual, such as protection from the threat of hostile takeovers.¹⁷

Controlled Financial Markets—The history of the Japanese financial system is a study in control and fragmentation. Although recent market-opening moves have gained widespread attention, it is only in the 1980s, under intense internal and external pressure, that real liberalization has occurred, and even so, Japan's financial market remains one of the world's more controlled.¹⁸ Between World War II and the early 1980s, a dominant purpose of the Japanese financial system was to revive and strengthen Japanese industry, often at the expense of consumers. Guidance of the financial system had two aims, subsumed under the single purpose of promoting Japan's reconstruction and economic development. First, the system was designed to favor business investment instead of current consumption, or, in the words of an official of the Ministry of Finance, "to prepare the ground for industry to walk on."¹⁹ Second, the government selectively promoted heavier investment in certain sectors as a part of Japan's industrial policy, and also helped non-targeted industries cope with the costs of adjustment.

Preparing the Ground—Japan was a poor country after World War II. Its needs for capital were enormous. Much of its industry had been devastated by or dismantled after the war, and the *zaibatsu*, family-controlled bank-holding companies that were major providers of capital pre-war, were dismantled during the occupation.²⁰ To rebuild industrial production—and then, beginning in the 1950s and 1960s, to accelerate development of targeted indus-

tries like machinery, motor vehicles, and electronics—required what capital there was in Japan to be preferentially provided to utilities and manufacturing. Several things made this transfusion possible.

Japan's financial institutions were compartmentalized and fragmented, each with its own rather narrow purpose and with many proscriptions on its behavior. Briefly, the institutions worked together to increase savings rates (generating capital for investment) and pass them on to industrial users without high costs. They also worked to reduce the risk associated with financial downturns and the costs of financial distress to the firms.²¹ The institutions that promoted high savings rates in Japan included a lump-sum payment at retirement (rather than a lifetime annuity) and a marginal system of social security (though this is changing to become more generous); large required downpayments on houses; the absence of scholarships at universities; a system of postal savings banks authorized to pay interest rates higher than rates available elsewhere on deposits, and tax exemptions on interest on postal savings up to a certain level (14 million yen in the early 1980s); a bonus-pay system of compensation in Japanese corporations; and very high interest rates (with no tax deductibility of interest paid) on consumer loans.²²

Together, these measures discouraged consumption and encouraged saving. In addition to providing a large pool of capital, the system also controlled the cost of raising it. Households were paid low rates of interest on the savings they put into banks,²³ but rewarded by the tax benefits, or "maruyu," for doing so. Securities markets were tightly controlled so as to concentrate household savings in postal

¹⁷Personal communication with Ronald Dore, Imperial College, University of London; and Edward J. Lincoln, The Brookings Institution, March 1989.

¹⁸Aron Viner, *Japanese Financial Markets* (Homewood, IL: Dow Jones-Win, 1988).

¹⁹Personal communication, OTA staff with Mr. Kitamura, Financial Bureau, Ministry of Finance, Tokyo, Japan, Mar. 13 > 1989.

²⁰The following discussion of Japan's financial system depends heavily on the following sources: Viner, *op. cit.*; Andreas R. Prindl, *Japanese Finance: A Guide to Banking in Japan* (New York, NY: John Wiley & Sons, 1981); Philip A. Wellons, "Competitiveness in the World Economy: The Role of the U.S. Financial System," in Bruce R. Scott and George C. Lodge, *U.S. Competitiveness in the World Economy* (Boston, MA: Harvard Business School Press, 1984).

²¹Wellons, *op. cit.*, p. 361. Another set of institutions, equally important, gave Japanese firms preferential access to the domestic market, helping to assure a demand for the products of Japanese industry without ruinous competition from (at that time) abler foreign competitors. Japan's trade policies and their relation to industry policy will be discussed in the final report of this assessment of Technology, Innovation, and U.S. Trade.

²²To be specific, a change in the rules governing consumer finance companies—known as *sarakin*—in 1985 reduced the maximum rate on consumer loans from 109.5 percent per annum to 73 percent, and set a maximum of 10 percent of annual salary of 500,000 yen to the amount one customer could borrow. Source: Viner, *op. cit.*, p. 339. For an explanation of how the bonus-pay system promotes savings, see Abegglen and Stalk, *op. cit.*, p. 1%.

²³Banks did not pay as high interest rates as postal savings, but the upper limit on the amount of anyone's postal savings account, the trouble of keeping several accounts, and the fact that company employees are often encouraged to use the company's main bank or an affiliate, kept some household savings accounts in banks.

savings and in banks, so that banks, with their controlled interest rates, did not have to compete for savings by paying high rates of interest to depositors, and thus narrow their profit margins. Interbank transfers of funds were also handled so as to minimize the eventual interest rate that industry paid. The result of all this control was that money was channeled from households through several banks to corporations, at rates that greatly favored industrial investment and expansion at the expense of consumption. The extent of the transfer was huge. According to one estimate, if these measures lowered the interest rate to business by 2 percentage points in 1971, 800 billion yen was transferred from households to businesses in that year—money that, under free market conditions, would not have gone to the corporate sector.²⁴

Both commercial and governmental banks lend money to Japanese corporations, but the distinction between them is rather more blurred than is the case in most other industrialized nations. The commercial banks include the large city banks, which specialized in lending to large, blue chip corporations during the high growth period;²⁵ regional banks, which tend to lend to small and medium-sized companies; the Bank of Tokyo, technically a city bank, but the only one that could make foreign exchange transactions until World War II, and is still a specialist in foreign trade financing and foreign exchange; trust banks, which specialize in managing pension funds; specialized banks; the postal savings system; and long-term credit banks created in the 1950s and 1960s by government to make long-term funds available for industrialization. These last (which include the Industrial Bank of Japan and the Long Term Credit Bank) were able to provide funding to companies even when there were severe liquidity shortages, thus reducing the vulnerability of Japa-

nese firms to ordinary fluctuations in economic conditions.

The government exercises control over and through the banks in many ways. First, interest rates have been tightly regulated since 1947, when the Temporary Interest Rate Adjustment Law was passed.²⁶ By 1986, after 2 years of steps toward deregulation, about 80 percent of deposits in Japan still came under fixed interest rate regulations.²⁷ Interest rates have historically been negotiated by the Ministry of Finance, the Bank of Japan, and long-term credit banks, the financial institutions most concerned with the competitiveness of Japan's industry. Equity-to-asset ratios have also been extremely low by international standards; they averaged 2.19 percent for the city banks as of March 1986, compared with 5 to 6 percent for U.S. banks.²⁸ This allows Japanese banks to make low-interest loans both domestically and (lately) abroad.

There are informal controls as well. The Ministry of Finance exercises enormous (though waning) control over all aspects of Japanese finance. Much of this is through so-called administrative guidance, which takes a variety of forms, and can affect behavior at the level of the individual firm or bank. MoF's instructions and desires are not often ignored, even when they are not backed by force of law. Its staff are "the most gifted graduates of the best universities."²⁹ Like many other powerful Japanese institutions, MoF operates through frequent contact and consensus building; it holds regular meetings with the management of main Japanese banks, influencing the actions of Japanese branch banks in foreign nations as well as at home. When its senior staff retire,³⁰ many of them accept positions at the long-term credit banks, which were privatized decades ago. According to Viner, ". . . it is neither accurate nor meaningful to describe the three long-term credit banks as private institutions. Their

²⁴Y. Kurosawa, *op. cit.*, p. 13.

²⁵Both deregulation and the financial success of the large corporations of Japan have encouraged the city banks to look for new kinds of business. Now, with many large businesses financed mainly by bonds, depreciation, and retained earnings, the city banks are turning increasingly to medium-sized businesses for customers. Personal communication with Mr. Tatsuo Takahashi, Manager, Public Relations Division, Japan Development Bank, March 1989.

²⁶The word "temporary" is misleading; the law is still in effect.

²⁷Viner, *op. cit.*, pp. 306-307.

²⁸Viner, *op. cit.*, p. 20*. This low equity-to-asset ratio is typical, despite the fact that the 1954 Banking Act required a ratio of 10 percent. According to Viner, "this level was considered absurdly high by banks and was ignored."

²⁹Prindl, *op. cit.*, p. 9.

³⁰The term for this is *amakudari*, or 'descent from heaven'—which by itself connotes a status of civil servants that is very different from American experience.

ties with the government are so close that in many respects they resemble auxiliary components of the Ministry of Finance.”

Industrial Policy--Formal and informal controls can be used both systemwide—to advance capital relatively cheaply to firms and away from personal consumption, for example—and in pursuit of more industry-specific goals. The government acts both as a direct lender and as a bellwether for other private sector lenders. Its direct role is small—in 1980, only 5.6 percent of all funds placed in financial institutions in Japan reached business directly from governmental institutions,³¹ and long-term credit banks provided another 5.2 percent. But this governmental role is more powerful than its modest funding would suggest. According to Wellons, “few dispute that private lenders in Japan treat this lending as a sign that the firm or project has government support, which would reduce the risk of the credit.” Many Japanese sources agree. According to Kurosawa,

The government also helped to reduce risk; MITI established specific goals and initiated investment for companies, and when necessary, adjusted the order [of] which group of companies should invest first and which next (*Rinban Toshi*).³²

One way the Japanese Government primes the private lending pump is through the Japan Development Bank (JDB). When motor vehicles were chosen for rapid development in the 1950s, and electronics in the 1960s and 1970s, the Japanese companies were generally far behind American and European companies in technology, and financial returns from heavy investments in those industries were therefore quite uncertain. City banks, with

much of the lendable capital, might have been wary of making heavy investments in such industries, but were reassured by JDB’s lending. Throughout the postwar period, JDB loans have been among the most important sources of funds for new equipment acquisition in manufacturing. In fact, even in the 1980s, long after the end of any real capital scarcity in Japan, about one-fourth of JDB’s funds still go to manufacturing.³³ Where JDB lends is, in turn, decided by a variety of government departments, with strong participation from MITI, and its lending is meant to help major strategic industries directly.³⁶

Financial support for both industry as a whole and strategic industries in particular has been a crucial element of Japanese industrial policy, but it is by no means the only one. Government support takes a variety of forms, including preferential access to the Japanese market,³⁵ support for research and development, market segmentation among domestic firms, and control of foreign investment. With such a panoply of tools at hand, and the demonstrated willingness to use them to support development of industries, government can pack a powerful punch with a relatively modest direct financial role.³⁶ Also, the variety of available tools helps to make up for weaknesses in the use of any one. For example, pump priming alone would not have induced Japanese banks to invest in certain sectors where the expected returns were especially low; it was decisive, however, where both expected returns and risks were high.³⁷

The government’s control over the financial markets is lessening. Many Japanese financial institutions see narrowing opportunities for growth

³¹These institutions include the Japan Development Bank, the Japan Export-Import Bank, and agencies to finance small and medium-sized business. Source: Wellons, op. cit., p. 380.

³²Y. Kurosawa, op. Cit., p. 16.

³³Robert J. Ballon and Iwao Tomita, *The Financial Behavior of Japanese Corporations* (Tokyo: Kodansha International, 1988), p. 37.

³⁴Personal communication with Mr. Kitamura, Ministry of Finance, op. cit., and Ballon and Tomita, op. cit.

³⁵This is not total market protection, as is sometimes claimed; however, access to Japan’s markets in targeted industries is carefully controlled and limited, as are opportunities for direct foreign investment and direct investment abroad. Preferential access allows Japanese producers to sell goods in Japan at higher prices or of lower quality than they could if foreign products were allowed unlimited access. Barriers to foreign competition are usually phased out once the Japanese industries have grown to be formidable competitors. However, we are now beginning to see Japan resorting to voluntary restraint agreements in industries that are under pressure with the rise of the yen and the growing competence of other Asian competitors. A more complete discussion of these mechanisms will appear in the next and final report in this OTA assessment.

³⁶Although their number is declining, there are experts who dispute the degree to which Japan’s industrial policies have been responsible for the postwar success of her industries. Clearly, other nations have used tools similar to Japan’s without the same results, and Japan herself has demonstrated remarkable ability to develop industries in earlier periods when policies were quite different, as in the decades following the Meiji Restoration in the late 19th century. Thus, more than industrial policy is responsible for Japan’s recent performance. However, industrial policy has been and remains a critical factor in Japan’s development, as will be explained more fully in the next and final report in this OTA assessment.

³⁷Sakakibara Eisuke, Robert Feldman, and Yuzo Harada, *The Japanese Financial System in Comparative perspective, study prepared for the Use Of the Joint Economic Committee* (Washington, DC: U.S. Government Printing Office, 1982).

domestically, as prosperous Japanese firms are increasingly able to finance themselves, or have more freedom to choose among domestic and foreign financing options. International pressure has also been a factor forcing liberalization of Japanese financial markets. However, it would be a mistake to regard Japan's financial market as open—the deregulation is proceeding deliberately, so as to avoid major shocks—or to discount the advantage that tight controls gave to Japanese industry during the postwar period through the early 1980s. Without the deliberate channeling of capital away from personal consumption and towards industry—particularly those that were targeted—it is unlikely that so many Japanese industries would be so prominent on the international scene as they are now. It is also prudent to assume that, if Japanese manufacturing comes under increasing international pressure, the financial system is capable of mobilizing quickly in response.

Corporate Finance—It is well established that Japanese firms rely more heavily on external financing—both debt and equity—than American firms, and that the reliance was greater in the past than it is now. Debt financing in particular has played a greater part in corporate finance in Japan than in the United States (until very recently) and other western industrialized nations, and it still does so today, even though the percentage of equity financing is growing in Japan.

Precise figures are somewhat deceptive, as many critics have pointed out. The gearing ratios³⁸ reported are based on the book value of companies' assets, which are reported at historic cost. Inflation, especially the run-up in the value of property and land in Japan, tends to understate asset value and thus overstate gearing ratios. However, even when the figures are corrected to reflect more realistic measures of Japanese (and American) firms' asset values, gearing ratios in Japan were still roughly twice as high as those in the United States only a few years ago. In 1981, for example, Japanese gearing ratios were estimated at 0.56 to 0.62; American at 0.28 to 0.30.³⁹ Japanese dependence on bank financing is also high compared with that of European

nations. American companies have depended much more heavily on retained earnings (internal financing) and equity. This remains true even with modest moves away from debt as a source of new funds in Japan and increases in debt in America,⁴⁰ the latter resulting mostly from takeovers and leveraged buyouts to defend against the possibility of takeovers.

Japanese reliance on bank financing, particularly when capital was much less available there than it is now, underlines the importance of low interest rates in Japan. It also means that firms' relationships with banks are more important than their relationships with shareholders, compared with the United States (and much of Europe). As long as Japanese banks are sympathetic to the need to make long-term investments with little immediate return, firms are more likely to make such investments. This would be true even if Japanese firms' relationships with their shareholders were the same as those of American firms; however, Japanese shareholders are also more sympathetic to the long-term interests and performance of Japanese firms than in short-term financial gains, compared with American shareholders.⁴¹ In short, while the structure and regulation of Japanese finance would alone lead to the conclusion that Japanese firms are better able to make long-term, relatively heavy investments than American firms, the nature of the relationships between capital providers and firms supports this conclusion as well.

Japanese banks—including both commercial banks like city and regional banks, and government institutions like the Japan Development Bank—are more involved with their clients than are American banks. This is true at every step of the process, from screening to monitoring of firm performance.⁴² To begin with, Japanese firms usually have a special relationship with one bank, a system known as the main-bank system, and this relationship is an important part of the risk-sharing that allows Japanese firms to enjoy or act like they have lower capital costs. Kurosawa characterizes the main bank system this way:

³⁸Gearing ratio is defined as the sum of short- and long-term liabilities divided by total assets.

³⁹Figures reported in Jenny Corbett, 'Inflation—Perspectives on Financing; Evidence from Japan,' *Oxford Review of Economic Policy*, vol. 3, No. 4., p. 34.

⁴⁰Ben Bernanke, "Testimony on corporate debt," mimeo, May 25, 1989.

⁴¹This is largely due to the institution of stable shareholding, as is explained later in this chapter.

⁴²This conclusion, and much of the following discussion about banks' relationships with firms, depends heavily on Corbett, *op. cit.*, *passim*.

The main bank almost always has the largest share in such business relationships as lending, shareholding, trusteeship of bonds, deposits, and so on. It gives special priority to the client firms in credit rationing, and in the case of a severe slump or bankruptcy crisis, coordinates the responses of other lending financial institutions and acts as a mediator and supporter for the clients' survival. Consequently, it is essential for the main bank to monitor the firm, and for the other banks the actions of the main bank act as a signal. If the actions of the main bank remain unchanged, there are no problems in the fire-t. The main bank's additional loans in effect guarantee the security of the other banks' loans.⁴³

Differences begin with the way they screen potential borrowers. For example, city banks are less concerned about debt/equity ratios and are more sensitive to the firm as a going concern (rather than as a default risk) than are non-Japanese banks. The screening is extensive, so when a city bank takes on a client it is generally considered a good credit risk by others. Part of the screening is done by the city banks, but they are also able to rely on extensive screening by the Japan Development Bank and the Industrial Bank of Japan (IBJ).⁴⁴ There is some genial disagreement between these two institutions as to which developed the screening procedures both employ—both lay claim to it—but in any case, it is thorough. According to IBJ, the screen consists of increasingly smaller sieves. First, the Industrial Research Department (IRD) develops information on specific industries, examining in detail possibilities for growth and international competition. The IRD also examines new sectors and technologies, such as biotechnology and superconductivity, for their eventual commercial possibilities. Once industry prospects are understood, the Credit Department screens individual companies. If IBJ accepts a company, that is a powerful signal to other financial institutions of the company's creditworthiness, and a pattern of heavy lending to any particular industry or sector is also a bellwether.

There are several reasons why the close ties between main banks and their corporate customers could lead to a longer term outlook on the part of businesses, and possibly even to better decisionmak-

ing than in countries like the United States or England, where ties between banks and the companies they lend to are more frequently arm's-length. As noted above, the close relationships between city banks and their customers are based on massive amounts of information, always a good basis for sound advice and decisionmaking. The city banks, along with other major Japanese financial institutions like JDB, have become powerful information brokers, and their ability to gather and process information about businesses and business conditions in a variety of industries around the globe probably exceeds that of all but the very largest corporations. Banks can therefore serve as important sources of information for strategic and operating decisions for their closest customers. This assistance on the part of banks is influential in encouraging companies to focus on longer term goals in Japan and Germany.

Another difference between Japanese and American bank lending is that loans from city banks are much more likely to be long term. According to the Bank of Japan, about 40 percent of Japanese corporate borrowing had a maturity of more than a year, compared with only 19 percent in the United States, as of 1985. However, the longer maturities of many Japanese loans are not exceptional compared with France and the United Kingdom (where about 40 percent of loans are classified as being long or medium term) or Germany (where about 60 percent of corporate loans are long term).⁴⁵

Finally, it is well established that the conditions of loans are changed when economic conditions change in Japan. Although this practice is also common in western industrialized nations, the kinds of changes made are different. Corbett points out that a shortening of the term of a loan would be expected if a firm gets into trouble; yet in Japan loan maturities have lengthened at the same time that bankruptcies increased. With heavy investments of both capital and prestige in the successor failure of their clients, Japanese (and also German) banks are far more likely, in a crisis, to extend additional financing and assistance before pulling the plug than

⁴³Y. Kurosawa, op. cit., p. 18.

⁴⁴The Industrial Bank of Japan is one of Japan's three long-term credit banks, and it is usually described as the most prestigious of all Japanese private banks. Its purpose is to provide long-term capital to private corporations, with priority given to industries that are part of the government's industrial policy.

⁴⁵Bank of Japan, *Economic Statistics Annual*, various years; and Corbett, Op. cit., p. 42.

an American or a British bank.⁴⁶ Japanese banks often forgive payments on debt principal during tough economic times, or restructure debt in order to allow firms additional options to overcome their problems.⁴⁷ While some firms do eventually go bankrupt or are forced to restructure severely, banks explore many other options with their clients (often at great cost to themselves) before declaring loans in default. Prindl tells the story of Ataka, the fourth largest Japanese trading company in the early 1970s.⁴⁸ It got into trouble over excessive credit extended to a refinery in Canada, and eventually had to merge with another firm, C. Itoh. However, \$370 million in uncollectable receivables were absorbed by its house banks, Sumitomo and Kyowa. This was possible, in part, because of the widespread belief that no large bank would be allowed to fail. Indeed, in 1986, Japan had its first bank failure since World War H, and that was a result of ‘massive, long-term corruption. This situation is changing, like so much of Japanese business. According to Viner, “banks have been informed that they can no longer expect central bank rescue in the event of a liquidity crisis.”⁴⁹ So far, this new policy has not been tested.

Even the promise of government support does not seem adequate to explain why Japanese banks are more willing to go the distance with their clients, as long as there is some chance of maintaining the company in business. In part, it is because the main bank’s relationship with a client company goes far beyond a loan. Companies generally encourage their employees to deposit their savings in their main bank, and deal with the main bank or its affiliates for life insurance and managing the pension fund. In addition, the main banks, in return for bearing some of the risk of the company’s long-term investment, are privy to a great deal of information about the company, and are allowed to take part in its management should it get into trouble. Main banks often accept deferment of payment on principal and

interest if a client gets into trouble,⁵⁰ and will coordinate rescue funds from other banks. In addition, however, they investigate whether the company can be restructured to get it out of trouble, and often draw up the restructuring plan.⁵¹ Corbett points out that exchanges of personnel at both senior and junior levels between banks and large firms (and government ministries) are common.⁵² Banks sometimes suggest changes in strategy when evaluating a customer’s request for a loan, and make more forceful suggestions of strategic changes when a firm gets into trouble.

The kind of involvement that large banks maintain with their customers resembles that of preferred stockholders more than creditors, according to Kurosawa. Preferred stock may have a fixed dividend, but if profits are insufficient to support it, the rate will be reduced and carried over.⁵³

But what about actual equity holders? Here, too, there are different relationships in Japan. Most large Japanese firms belong to groups known as keiretsu, which translates as “group arranged in order.” These are companies that have primarily been associated with one city bank, and hold relatively large amounts of each other’s stock—1 to 3 percent, typically, of the stock of each other member of the group. The result is that a majority of shares of all members are held by other members of the same keiretsu.⁵⁴ Japanese city banks also typically hold stock in the companies they provide credit to, with the maximum amount now limited to 5 percent. Finally, although intra-keiretsu shareholding is decreasing, a majority of stock in Japanese corporations is still typically held by corporate and other institutional investors, rather than by individual shareholders. As of 1988, 69 percent of all shares listed on the Tokyo exchange were held by domestic institutional investors—19 percent by banks, 13 percent by life insurance companies, and 26 percent by other corporations—while 25 percent was held by

⁴⁶Corbett, op. cit.

⁴⁷Personal communication with David HI, @ Whittaker, 1988; Flaherty and Itami, op. cit., p. 144; Corbett, pp. 46-51 passim.

⁴⁸Prindl, op. cit., p. 64.

⁴⁹Viner, op. cit., p. 196.

⁵⁰This should not be regarded as a distant possibility, Ballon and Tomita point out that, “more often than not, [the] bank at some point in time has had to stage a rescue operation for its major clients with the cooperation of other parties concerned,” Ballon and Tomita, op. cit., p. 60.

⁵¹Y. Kurosawa, op. cit., pp. 19-20.

⁵²Corbett, op. cit., p. 45.

⁵³Y. Kurosawa, op. Cit., p. 20.

⁵⁴Viner, op. cit., p. 2.

individual Japanese stockholders and 6 percent by nonresidents.⁵⁵ In contrast, 57 percent of U.S. equities were held by individuals as of mid- 1989.⁵⁶

More important than the pattern itself is the character of equityholding in Japan. Until the early 1970s, it was virtually impossible for more than a tiny trickle of foreign capital to find away into Japan without the express permission—indeed, sponsorship—of government. In 1971, the door was opened a crack through revision of the Securities Exchange Law, and along with the liberalization came mounting concern that foreign companies would take over Japanese corporations. To prevent that, Japanese companies—at the urging of government—resorted to a system known as stable shareholding.

Stable shareholders are Japanese nationals who can be counted on to keep their shares, no matter what happens to their price. It is a primary duty of financial officers of corporations to find stable shareholders. According to Ballon and Tomita,

When a capital increase is planned, financial executives usually visit the major shareholders who might be willing to subscribe to new shares and request their cooperation in purchasing the new shares at par while retaining both old and new shares. However, a request for further subscription of shares frequently implies a favor in return. . . the firm may at this time confirm its friendly relationship with the bank by promising (albeit unwillingly) to buy more bank shares.⁵⁷

Stable shareholding has had the direct result of permitting companies to keep a longer term view in their capital investment. Stable shareholders prefer retaining earnings to receiving high dividends, permitting the company that issued the stock to reinvest its earnings. This reinvestment, in turn, is viewed as directly contributing to higher share prices. Since stocks are carried on their owners' books at purchase price, rather than market value, the rapid increase in share value has allowed Japanese banks and corporations to carry substantial hidden reserves. These hidden reserves are the utility

infielders of Japanese accounting: they can be used to manipulate the reported levels of profit, and thereby, taxes and dividends. For example, if the company has a loss and needs to show a small profit, it can sell a portion of its investment securities, whose book value is usually significantly underreported. Often, it sells these to an affiliate or another stable shareholder, and expects in its turn to pay the same consideration to its affiliates when needed.⁵⁸ The amount of hidden reserves is staggering: at the end of March 1988, the hidden reserves of securities of the 13 city banks alone totaled \$229 billion.⁵⁹

Stable shareholding has served the needs of the Japanese economy admirably. It permitted long-term investment at a time when Japan's companies were much more vulnerable to foreign competition than they are now. It has helped Japanese companies to continue expansion and market share-building during the various economic upheavals that paralyzed their competitors—through energy shocks of the 1970s, the recessions of 1974 and 1982, and through *endaka* in 1985-86. Most observers expect stable shareholding to continue for the foreseeable future, although it will face increasing challenges in the years ahead. Financial liberalization in Japan and the expansion of Japan's business and financial ties around the world have made it more vulnerable to outside economic uncertainties. While its recovery during the postwar period has been robust, this new international exposure could well reduce its power in the future. The high yen, too, has put the whole economy on a more precarious footing. Some of the advantages Japanese firms receive have narrowed or disappeared, and strong competition from a new set of industrializing nations has left Japanese manufacturers with less ability to ride out a prolonged downturn. In a downturn, stable shareholding might start to unravel, as companies in trouble draw down their hidden reserves. The demise of this institution is unlikely without a major recession, and not certain even with one; however, if it does happen, the system is likely to come apart rapidly.⁶⁰ That, according to Ballon and Tomita, "would have

⁵⁵Hideo Ishihara, "Japan's Compliant Shareholders," *The Asian Wall Street Journal Weekly*, June 13, 1988, p. 17.

⁵⁶Securities Industry Association data, compiled from *Flow of Funds Accounts*, Federal Reserve Board. This total is down from 65 percent in 1985 and 85 percent in 1989.

⁵⁷Ballon and Tomita, op. cit., p. 52.

⁵⁸Ballon and Tomita, op. cit., p. 202.

⁵⁹Y. Kurosawa, Op. Cit., p.20.

⁶⁰Personal communication, OTA staff with Kimihide Takano, Senior Analyst, Corporate Division, The Nikko Research Center, Ltd., Tokyo, Mar, 22, 1989.

profound repercussions on the stock market and the Japanese economy as a whole.”⁶¹ It would tend to shorten the perspectives of Japanese managers and firms, making them more like American firms. However, given the pervasive effect of administrative guidance from the Ministry of Finance, it seems unlikely that the Japanese financial market will behave a great deal like that of the United States anytime soon.

In sum, a network of policies, practices, and relationships acts to support heavy investment in long-term performance in Japanese industry by spreading risk. In contrast, American firms must carry more of the risk of such investments by themselves. While changes are occurring in the Japanese financial market, the backlog of more than three decades of such advantages has been highly effective in putting Japanese firms in the secure positions they now hold, relative to American and European competitor. Even if the changes were dramatic and rapid (which they are not) these advantages would not disappear quickly. It may well be that alterations in the way American managers are *taught to think* about business could foster a more positive attitude toward long-term investment, particularly in improved technology. But it is the rules under which they must operate rather than their education that is the principal influence on how U.S. managers view long-term investment.

Even with changes in the rules, however, there will be outliers. High capital costs have hobbled but not crippled American firms in international competition; some firms are able to make substantial investments in technology development for many years. If a firm exploits its R&D effectively, such investments are rewarded, not penalized, by equity holders. But now, with increasing competition, more firms are forced to choose between supporting profit margins or stock prices and postponable expenditures like R&D.

Some long-term investments pay off, and some don't. We should not expect that risk-sharing will necessarily result in longer term investment across the board in America, or that every long-term investment will be successful. However, without some changes in the financial rules of the game,

American companies will continue to focus mostly on short-term profit, to their detriment in international competition.

THE AMERICAN FINANCIAL MARKET

The problem for America is not only that Japan's capital costs are lower than those of the United States, or that Japan's providers of debt and equity capital are content to take more of their rewards as capital gains rather than as cash payments. Among the developed nations, Japan goes unusually far down these paths. America is, for the most part, at the other end of the scale. Our capital costs are high not only relative to Japan's, but relative to those of many European countries as well, and they are high in real terms, compared to what they were in the 1960s and 1970s. Institutional investors are, if anything, more insistent on receiving short-term financial gains than they have been, and they have powerful tools to use if their interests are not addressed. Rather than mobilizing its resources to support American manufacturing during its difficulties, the United States often seems indifferent to or contemptuous of the nation's manufacturers. The problems of manufacturers, we often say, are self-generated; manufacturing is badly managed, and badly managed firms ought to fail, or change hands. The contrasts with Japan, and with Europe as well, are great.

Some—not all—of what we attribute to bad management is simply a matter of intelligent people playing by the rules. If our interest rates are such that American managers can prudently invest \$0.37 in return for \$1.00 in 6 years, while a Japanese manager could invest \$0.66 for the same return,⁶² we would expect to see about half as much long-term investment in America as in Japan. If stockholders evaluate a company's performance on the basis of quarterly or half-yearly reports of profit, we would expect managers to emphasize short-term profits, even when it raises possible conflicts with longer term investment. And if showing a profit for shareholders is one of the most important factors in the survival of a business, we should expect to see financial specialists wielding more power in compa-

⁶¹Ballon and Tomita, *op. cit.*, p. 53.

⁶²These figures reflect the actual cost-of-capital difference of Japan and America, according to one calculation. See James M. Poterba, "The Cost of Capital Consequences of Curbing Corporate Borrowing," Testimony before the committee on Ways and Means, U.S. House of Representatives, May 16, 1989.

nies than in nations where share price is a less pressing daily concern to company managers. The preoccupation with finance and short-term share price performance was reinforced by the wave of mergers and acquisitions American business experienced in the 1980s. Rather than moving toward an environment more conducive to long-term investment in the development and use of outstanding technology, the U.S. system raised the hurdles.

Another complicating factor is instability in the financial environment. Federal decisions affecting the value of the dollar and interest rates take business competitiveness into account only tangentially, if at all; yet such changes can have profound effects on the ability of businesses to make prudent long-term investments. Again, Japanese policies contrast sharply. U.S. Government support for long-term research, development and investment has also been somewhat shaky, leaving businesses that invest in such projects vulnerable. For example, the Administration sent confusing signals about its support for technology development in semiconductors and high definition television in 1989. Even if the modest support for R&D in these areas is continued, the unreliability of Federal commitment to such programs could make industry wary of such ventures.⁶³ Another example of the inconstancy of Federal efforts to promote technology development and diffusion is the impermanence of tax measures that favor capital spending or R&D.

In short, America's financial environment is generally unfavorable to long-term investments in technology development and diffusion, and government actions that mitigate the effects of this unfavorable environment have lacked commitment.

The Decline in Savings

Nations must continuously invest in productive assets—plant and equipment, people, and technology development—to sustain investment and living standards. Investment funds come from saving, domestic and foreign. In the 1980s, an increasing proportion of U.S. investment has come from

foreign saving, because U.S. savings rates have fallen.

In the 1970s, net national saving (the percent of national income saved by business, government, and households) averaged 7.9 percent. Of this, 96 percent was invested domestically, and 4 percent was invested abroad. In the 1980s, savings rates dropped, and by the middle of the decade—1985 to 1987—net national saving dipped to 2.1 percent before rising to just above 5 percent in 1989. Net domestic investment (the percent of national income invested) dropped to 5.7 percent, lower than in the 1970s but greater than the amount of investable capital provided domestically. The United States made up the difference by becoming a net importer of investment funds, borrowing \$417 billion from abroad over the 1985-87 period.⁶⁴ To attract savings from abroad, the United States has had to raise interest rates, or the return to investors. Importing capital allowed the United States to invest more than its own savings would permit, but it also raised the price of domestic investment. This means that improving and replacing productive assets and technology for U.S. firms became more expensive in the 1980s. A nation trying to keep pace with well-financed and technologically sophisticated competition can ill afford this.

The decline in savings occurred across the board. The sharpest change in the 1980s was a decline in government saving, manifested by budget deficits at the federal level. Falling household and business savings contributed to the decline as well. The Federal budget deficit resulted from a tax cut, which slowed the growth of revenue, and from increased outlays, principally for defense.

The reasons behind falling household savings are less obvious. Many explanations have been advanced for this drop—and conversely, the rise in consumption as a percent of national income—but there is little consensus on which are most significant. Some analyses attribute part of the decline to high interest rates, which made it possible for corporations to decrease contributions to pension

⁶³In late 1989, rumors of an Administration proposal to kill funding for Sematech in the fiscal year 1991 budget surfaced. The rumor arose concurrently with Administration proposals to shut down the Defense Manufacturing Board, and an OMB proposal to reduce DARPA funding for HDTV. While the Administration eventually denied any plan to kill funding, the rumor was widely believed and taken seriously by much of the electronics industry. See "Administration Charged With Seeking Funding Cuts for Sematech, Other Projects," *International Trade Reporter*, Nov. 15, 1989, pp. 1481-1482; and Lucy Reilly, "Death Knell for Sematech?" *New Technology Week*, Nov. 6, 1989, p. 1.

⁶⁴George N. Hatsopoulos, Paul R. Krugman, and James M. Poterba, *Overconsumption: The Challenge to U.S. Economic Policy* (New York, NY and Washington, DC: American Business Conference and Thermo Electron Corp., 1989), pp. 6-7.

funds (these are included in household savings). The jury is out on the effect of demographics. Some think the baby boom was a major factor in increasing consumption rates: since young people typically save less than the middle-aged, they expect personal savings rates to rise as the baby boomers mature. Others dismiss demographics as having little explanatory power. Another often-cited argument is that gains in wealth in the 1980s--capital gains on corporate equities and homes---encouraged consumption. If people feel richer because their assets are increasing, goes the argument, they feel less need to save. On the other hand, since real wages and salaries dropped during the 1980s, falling savings may reflect attempts to keep up consumption patterns in the face of (for most families) declining incomes.⁶⁵ Another theory is that the propensity to consume may have been fueled by the easy availability of consumer credit.⁶⁶

The enormous increase in Federal Government debt and the fall in household savings rates were enough by themselves to force a curtailment of capital formation, or a switch to capital imports, or both. The decline in business saving has been less remarked, but is important for two reasons. Between the mid-1960s and the late 1970s, business saving—measured in national accounts by the retained earnings of corporations—fell from 4.5 percent of GNP to 2.75 percent. By the mid-1980s, business saving fell still further, to 1 percent of GNP.⁶⁷ Unlike the ballooning Federal deficit and falling household savings, the decline of business savings is long-standing, and cannot be fully understood in terms of the events of the 1980s alone. Nonetheless, the depression of business savings to the lows of the 1980s is part of another change in the financial environment—that is, mergers and acquisitions—that limits the willingness of American companies to make long-term investments.

Mergers and Acquisitions

Mergers and acquisitions are a normal feature of the U.S. financial landscape, and ordinarily not a controversial one. Occasionally, though, merger and acquisition (M&A) activity heats up, as it did in the 1980s, provoking debate and examination. M&A activity has raised many questions including those of basic efficacy (are mergers and acquisitions really an effective managerial disciplinary force, for example) and effect (do mergers and acquisitions generally improve long-term productivity, or produce outcomes as desirable from society standpoint as from target shareholders'?). None of the questions are resolved. Even questions that are somewhat peripheral to the whole debate—such as the effect on managers' willingness to undertake longer term investments in technology development and diffusion—are hotly debated. While there is a growing body of research and empirical evidence on the causes and consequences of M&A, there are few points of consensus in the argument. But it is clear that the takeover wave of the 1980s is a special feature of the American financial environment, much more prominent here than in any other nation. The length of the following discussion is not meant to imply that M&A is the only, or even the major, factor that causes American managers to focus strongly on short-term profit, but M&A does intensify the pressures of the American financial environment, characterized by high interest rates and capital costs and macroeconomic instability.⁶⁸

Briefly, the argument goes as follows. One point of view—often articulated by businessmen—is that corporate raiders have forced a preoccupation with short run performance that has disrupted business planning. With access to new capital instruments (junk bonds), acquirers can afford to pay inflated prices to get controlling interest in their targets. The first defense against potential raiders, therefore, is to keep the stock price high enough to fend them off. Since stock prices can fall significantly on disappointing quarterly profit performance, business man-

⁶⁵Katherine Gillman and Joy Dunkerley, "Is the Middle Class Shrinking?" *Futures*, April 1988.

⁶⁶The following sources discuss reasons for falling savings rates: Barry P. Bosworth, "There's No Simple Explanation for the Collapse in Saving," *Challenge*, July-August 1989, pp. 27-32; George N. Hatsopoulos, Paul R. Krugman, and James M. Poterba, *Overconsumption: The Challenge to U.S. Economic Policy* (Washington, DC: American Business Conference, 1989); David E. Bloom and Todd P. Steen, "Living on Credit," *American Demographics*, October 1987, pp. 22-29; and William D. Nordhaus, "What Wrong With a Declining National Saving Rate?" *Challenge*, July-August 1989, pp. 22-26.

⁶⁷Nordhaus, *op. cit.*, p. 23.

⁶⁸The United States is not unstable compared to most countries, but the American financial environment for business is less stable than that of either Japan and West Germany, our premier international competitors.

agers must focus on keeping short term profits at acceptable levels. This, in turn, exaggerates the already short-term planning horizons of American business.⁶⁹

In some cases, more drastic steps maybe taken to fend off a potential takeover, such as taking the company private by means of a leveraged buyout (LBO), or implementing some kind of “poison pill” defense. While these strategies can keep the company from changing hands, the effects on planning horizons can, ironically, be no friendlier to long-term investment and planning. In the case of a defensive LBO, the company exchanges equity for debt, making it safer from raiders but harder pressed to maintain cash flows. Debt payments must be made, while dividends can be postponed during thin times. Cash flows that could have been invested in research and development, plant and equipment, or other long-term projects must be at least partly dedicated to paying interest and debt retirement; so companies may defer long-term projects in favor of meeting their short-run obligations.⁷⁰

Current concern is spurred by the fact that the availability of high-risk, high-return bonds has subjected many more companies to the threat of a takeover than in the past. Junk bond financing can turn even relatively small operators into potential raiders, and even large companies are not immune from the possibility of a takeover. Any company that appears undervalued may be fair game.⁷¹ Moreover, a company’s value to a raider can seem inordinately high to many business managers;⁷² company managers feel pressed to keep their stock price above even inflated asset value.

The foregoing argument raises two questions. First, it is difficult to accept at face value the contention that a price can be too high if a willing buyer agrees to pay it. The difference between

managers’ estimation of the real value of their companies and that of potential acquirers may therefore be that outsiders can see higher yielding opportunities for managing companies’ assets than managers do. Experts hold divided opinions on whether acquisition prices are too high.

The concern implicit in the arguments of many businessmen is that equity markets consistently undervalue long-term investments. If the resulting stock prices do not fully reflect the companies’ investments in future output, then perhaps acquisition prices are *not* too high, but represent a more realistic appraisal of long-term company value. Here, too, there is no consensus of expert opinion, but it should be pointed out that there is no necessary inconsistency here: while ordinary stock prices may be too low, acquisition prices may be too high.⁷³

The opponents in the debate view debt very differently. Those who see takeovers and mergers as a necessary disciplinary force on management see the higher debt levels that result from much of the current takeover activity as keeping managers from squandering corporate assets on less productive ventures.⁷⁴ Others regard the high debt that often results from a hostile takeover, or a defense against one, as a ball and chain hampering companies’ abilities to invest, particularly in long-term ventures like R&D. The pressure of high debt load is expected cause many defaults or bankruptcies in a recession. Even without a recession, however, the junk bond market is troubled; in 1989, corporate bond defaults were up 136 percent over 1987, largely due to defaults on junk bonds.⁷⁵

Most of the evidence indicates that the *direct* effect of all kinds of M&A activity on R&D expenditures or intensity (R&D as a percent of sales) is small or negligible. Bronwyn Hall, examining approximately 250 manufacturing acquisitions be-

@John C. Coffee, Jr., Louis Lowenstein, and Susan Rose-Ackerman, *Knights, Raiders and Targets* (New York, NY: Oxford University Press, 1988), pp. 34.

⁷⁰For a brief summary of the arguments on both sides of the controversy, see Robert R. Miller, “The Impact of Merger and Acquisition Activity on Research and Development in U.S.-Based Companies,” contractor report to OTA, November 1989. The report is a summary of interviews with R&D directors of 19 firms with a variety of M&A experiences. Some had undergone friendly mergers, some hostile takeovers, some leveraged buyouts, and a couple had no recent experience with M&A.

⁷¹Miller, op. Cit., p. 3.

⁷²Warren E. Buffett, Michael D. Dingman, and Harry J. Gray, with Louis Lowenstein, Moderator, “Hostile Takeovers and Junk Bond Financing: A Panel Discussion,” in Coffee, et al., op. cit., pp. 10-27.

⁷³Coffee, et al., op. cit., p. 4.

⁷⁴Miller, op. cit., p. 6.

⁷⁵Richard D. Hylton, “Corporate Bond Defaults Up Sharply in ‘89,” *The New York Times*, Jan. 11, 1990.

tween 1977 and 1986, concludes that the post-acquisition R&D intensity of the firms was about the same as pre-acquisition; moreover, the R&D intensity of the post-acquisition firms was not different from the R&D intensity of all manufacturing firms during the same period.⁷⁶ In addition, there is a broad consensus that R&D-intensive firms are unlikely to be attractive takeover targets, and that the majority of M&A happens in firms that do relatively little research and development.⁷⁷

Some use this kind of evidence to dismiss the possibility that M&A is having corrosive effects on R&D in particular or long-term investment in particular.⁷⁸ Yet there is reason for skepticism. First, while much of the evidence supports the contention that the effect of M&A on R&D is small, it is not unanimous. The National Science Foundation examined the R&D spending and intensity of the 200 largest industrial R&D performing companies in 1984-86.⁷⁹ These companies account for almost 90 percent of all U.S. industrial research and development. Among the 200 firms were 24 firms that had either merged or undergone an LBO during the period; these 24 accounted for nearly 20 percent of the R&D spending of the entire group of 200 in 1987. The firms that did not undergo restructuring increased real spending on R&D by 5.4 percent, while the 24 firms that were restructured through M&A reduced their R&D spending by 8.3 percent in real (deflated) terms from 1986 to 1987. These overall findings were consistent with comparisons of restructured and unstructured firms at the industry level as well.⁸⁰ The NSF data should be interpreted cautiously—the study spans only 3 years, and some of the reductions in R&D might be elimination of redundant programs in newly merged

companies—but they indicate a need for equal caution towards studies that show negligible impacts of restructuring.

One possible reason for inconsistencies between the studies cited above is that not all restructurings are alike. One of the few points of consensus in the debate is that M&A in the 1980s is unlike earlier waves of M&A activity, and is certainly different from the background level of restructuring. Different kinds of restructuring-friendly mergers, hostile takeovers, defensive LBOs, and other management buyouts, for example—would be expected to have different effects on managers' abilities and incentives to invest in R&D and other activities considered discretionary in the short run.

The last wave of M&A activity, which occurred in the 1960s, was characterized by diversification and agglomeration. The 1980s, in contrast, are characterized by so-called bustup takeovers of diversified companies with subsequent selloffs of the components.⁸¹ Hall's study includes many mergers from what could be considered another era—the late 1970s—which may blur the effects observed by the NSF study which focused on the mid-1980s. High debt is closely associated with the bustup takeover. Friendly mergers often have little or no effect on overall corporate debt levels, while hostile takeovers and defensive LBOs, in particular, often leave very highly leveraged companies in their wake. One of the striking effects of the 1980s wave of M&A is the substantial increase in corporate debt attributed to it. According to one estimate, the corporate debt burden was 20 percent higher in 1988 than it would have been without the effects of corporate restructuring.⁸²

⁷⁶These results are summarized in 'Testimony of Bronwyn Hall i, Hearings on Corporate Restructuring and its Effects on R&D Before the Science, Research, and Technology Subcommittee of the House Committee on Science, Space and Technology, July 13, 1989;' and Bronwyn Hall, 'Effect of Takeover Activity on Corporate Research and Development,' Alan J. Auerbach (ed.), *Corporate Takeovers: Causes and Consequences* (Chicago, IL: University of Chicago Press, 1988), pp. 69-96.

⁷⁷See, for example, Lawrence Summers, 'LBO Debt and Taxes,' *Across the Board*, April 1989; Hall, op. cit.; and Abbie Smith, 'Corporate Ownership Structure and Performance: The Case of Management Buyouts,' *Leveraged Buyouts and Corporate Debt*, Hearing Before the Committee on Finance, United States Senate, Jan. 24, 1989.

⁷⁸For example, see Joseph A. Grundfest, 'M&A and R&D: In Corporate Restructuring Stifling Research and Development?' Address to National Academies of Sciences and Engineering, Academy Industry Program of the National Research Council, Oct. 11, 1989.

⁷⁹The term "industrial" refers to companies in mining, construction, and manufacturing. The vast majority are in manufacturing.

⁸⁰Testimony of Mr. William L. Stewart, National Science Foundation, before the Committee on Science Space and Technology, Subcommittee on Science, Research and Technology, House of Representatives, July 13, 1989.

⁸¹Lynn E. Browne and Eric S. Rosengren, 'The Merger Boom: An Overview,' *New England Economic Review*, March/April 1988, p. 23.

⁸²Goldman Sachs, *Financial Market Perspectives*, December 1988, quoted in Lawrence Summers, 'Taxation and Corporate Debt,' in U.S. Congress, House of Representatives, *Leveraged Buyouts and Corporate Debt*, Hearing Before the Committee on Finance, U.S. Senate, Jan. 25, 1989. The Goldman-Sachs analysis shows the outstanding debt of nonfinancial corporations as a percent of the gross domestic product of those corporations at 66 percent in 1988, compared with an estimated 55 percent without restructuring.

It is quite possible that high-debt restructuring has a greater impact than friendly mergers on R&D. This proved to be the case in OTA's interviews with 19 manufacturing companies representing a variety of different restructuring experiences. Although the sample was not a statistically valid sample of M&A as a whole, the firms that had increased debt as the result of a takeover or as a defense against a takeover consistently reduced R&D following the event. The reductions may not prove permanent—companies may rebuild R&D as they pay down their debt—but most of the R&D managers of the firms that had cut back also believed their firms' future ability to compete was compromised as a result.⁸³ Hall downplays the overall importance of R&D cutbacks following LBOs (which invariably results in much higher leverage), citing evidence that most firms that undergo LBOs do no R&D. Also, Hall points out that in her sample of 200 manufacturing acquisitions, 30 were LBOs. Those 30 had very low R&D intensity—on average, 0.4 percent of sales—and accounted for only 1 percent of the R&D done in the private sector in the years 1984-86.⁸⁴

What all this seemingly conflicting evidence may mean is that LBOs as a whole have not directly affected R&D overall by a measurable amount, but that LBOs in large manufacturing firms have resulted in reduced R&D, at least in the short run, because of the pressures of high debt. Indirect support for this conclusion comes from another study. Abbie Smith found that R&D intensity declined in firms that reported R&D expenditures before their LBO, and that sold assets after the LBO. Smith warns against any conclusory interpretation of this result, however, because so few of the firms in the population of LBOs studied reported any R&D at all.⁸⁵

Another complicating factor is firm size. Most service firms and small manufacturing firms perform very little or no R&D. The fact that NSF's top 200 R&D spenders accounted for 90 percent of all industrial R&D is telling. Summers points out that many LBOs occur when the owner-manager of a

small establishment approaches retirement, and that these are "almost certainly benign."⁸⁶ In another common LBO situation, a company finds that a certain line of business no longer fits into its overall strategy, and makes amicable arrangements with the managers of a division for the sale. Again, these buyouts could be expected to have little or no effect on R&D, either because many of the firms involved do little or none, or because amicable transfer of ownership of a division to its current managers can often be accomplished without the high acquisition prices often associated with LBOs.

Analysts have concentrated more on the effects of M&A on research and development than on its effects on other discretionary expenditures. But R&D isn't the only kind of discretionary expenditure that affects a firm's technology; the other is capital expenditure. There are no clear and consistent answers to questions about the effects of corporate restructuring. Capital expenditure is necessary if firms are to keep up with and advance technology, but like R&D, capital expenditure may be postponed for a short time without long-term material damage to a firm's technological base. The duration and depth of sustainable cuts varies by industry and by firm, but even so, available evidence gives some cause for concern. Smith reports a substantial and significant reduction in capital expenditures as a percentage of sales that occurred in 58 management buyouts between 1977 and 1986.⁸⁷ This finding is consistent with anecdotal evidence. For example, consider Houdaille, a machine-tool maker that underwent an LBO in 1979. Pressured by foreign competition and (later) the effects of the 1982 recession as well as its high debt burden, Houdaille cut capital spending as a percent of revenues in half following its post-buyout restructuring.⁸⁸ One owner of a machine-tool making business states, "When we hear LBO, we know they're not going to be buying anything."⁸⁹

Most analyses of the consequences of M&A have been confined to measurable direct effects—spending on various activities or overall perform-

⁸³Miller, op. cit., p. 14.

⁸⁴Hall, op. cit., p. 3.

⁸⁵Smith, op. Cit. p. 71.

⁸⁶Summers, op. cit., p. 187.

⁸⁷Smith, op. Cit., p. 47.

⁸⁸Max Holland, "How to Kill a Company," *The Washington Post*, Apr. 23, 1989.

⁸⁹Howard Greis, President, Kinefac, personal communication, NOV. 16, 1989.

ance of companies that have undergone restructuring. Two others should also be considered. First, there are qualitative effects, not readily measurable, on R&D or firm activities. Again, we would expect (and find, according to the limited evidence) that different kinds of restructuring have different qualitative effects. In OTA's interviews, firms that mounted successful defenses against hostile takeovers (leaving the companies with high debt) long-term R&D had invariably been significantly cut back in favor of projects with promise of quicker payoff.⁹⁰ Some analysts interpret this kind of cut-back as making R&D more efficient, and this is indeed possible in the short run. R&D is by its nature a long-term process, and firms can cut back on new long-term projects without impairing their ability to exploit the results of projects undertaken in the past. So a shift in emphasis toward shorter term projects would be unlikely to show up as detrimental for at least a year or two. But in the long run, it seems unlikely that increasing the focus on short-term projects on the part of American firms will permit them to maintain even their current level of competitiveness.

Friendly mergers, on the other hand, had either little impact on R&D, or effects that would be generally accepted as positive. One example is the purchase of Celanese Corp. by the West German chemical firm Hoechst. Hoechst was interested in expanding its U.S. operations through the purchase of an American firm with strong R&D, and after the acquisition increased Celanese's R&D expenditures by 10 percent annually. Significantly, the new German managers were also more willing to commit substantial resources to long-term projects with less certain payoffs.⁹¹ A similar story was told by the president of Materials Research Corp., a semiconductor equipment and materials company recently acquired by Sony. After the deal was completed, the president was told by Akio Morita, the president of Sony, that he had "essentially unlimited capital," and was no longer obliged to concern himself with quarterly profits. "I can think of projects that take two years," said Dr. Sheldon Weinig, the president. "It's a wonderful way to live."⁹²

It is difficult to make a few cases add up to a strong finding, but the anecdotes about the qualitative effects on manufacturing R&D of different kinds of M&A activity are consistent with quantitative evidence, if the focus is adjusted correctly. In other words, both the qualitative and quantitative evidence suggest the following: in manufacturing firms that have appreciable amounts of R&D, restructurings that result in high debt levels depress R&D spending or intensity, or both, and often shorten the allowable time for completion of R&D projects. Because such restructurings are not common—most happen in firms that do little R&D, and many of them are in service firms—the overall direct effects of M&A on overall national R&D are not yet large, and may never be, particularly as hostile takeover/LBO activity seems to be winding down for now. This does not justify complacency about M&A. NSF's data are disturbing, and will be more so if the highly leveraged companies continue to lag in R&D spending or long-term planning. Additional depression of discretionary expenditures on capital equipment or R&D could well occur in the event of a recession, or perhaps even when growth is less than robust. Such cutbacks, normal in recessions, are more likely when companies are highly leveraged.

Finally, the indirect effects of M&A must be considered. The 1980s added a new wrinkle to the takeover enterprise: the expansion of the pool of potential raiders. In the past, in most takeovers, large firms acquired smaller ones. In the 1980s, junk bonds made it possible for "individuals, smaller entities, and investment banking firms" to take part.⁹³ In another contrast to past takeover waves (and ordinary M&A activity), these new players often intended to dismantle the acquired company rather than to assimilate it. Both factors—the increase in number of raiders, and the consequences of a successful takeover—have apparently increased managers' fears of takeovers markedly, and may also have depressed discretionary expenditures. Managers, feeling that an unwelcome takeover bid might come at any time, might take steps that approximate what they would do to defend against a real hostile takeover bid, with the same effects on spending for R&D and capital equipment. In mid-

⁹⁰Miller, *op. cit.*, p. 18.

⁹¹Miller, *op. cit.*, p. 31.

⁹²Andrew Pollack, "The Challenge of Keeping U.S. Technology At Home," *NY Times*, Dec. 10, 1989.

⁹³John C. Coffee, Jr., "Shareholders Versus Managers: The Strain in the Corporate Web," in Coffee, et al., *op. cit.*, p. 77.

1989, for example, Honeywell acted to discourage potential raiders by cutting out certain lines of business (reducing the breakup value of its assets), eliminating 4,000 jobs, repurchasing up to 10 million shares of its own stock, and increasing its annual dividend to shareholders by 31 percent.⁹⁴ There had been speculation that Honeywell might be a takeover target, but no actual bid.

Few companies make moves as dramatic as Honeywell's, but many members of corporate boards and senior managers report that hostile takeovers came to dominate corporate board meetings and decisionmaking to an unprecedented extent in the 1980s. The effect on overall business planning, almost certainly, was to increase the emphasis on distributing profits to shareholders in preference to reinvesting in the company.

Hostile takeover activity seems to be winding down, although not crashing; the number of deals completed in the first 9 months of 1989 was smaller, according to a preliminary estimate, than the number

in the first 9 months of any of the preceding 3 years. The first three quarters of 1989 saw 2,298 completed acquisitions, compared to 2,790 in 1988, 2,851 in 1987, and 2,707 in 1986. However, the value of these deals in 1989 was \$144 billion, just below the peak of \$144.7 billion in 1988. The story is different for LBOs: there were slightly fewer completed in the first 9 months of 1989 (214) than in a similar period of 1988 (221), but the total value of those LBOs in 1989—\$47 billion—was quite a bit higher than the previous high of \$29.1 billion in 1988.⁹⁵ The numbers aren't the only story. There is a widespread perception that the market has grown pickier about the kind of deals that can be approved, and there has been a flight from junk bonds.⁹⁶ Acquisitions continue, but many believe that the wave of highly leveraged, bustup takeovers is on the wane. If this is true, it could provide time to examine how much of the negative effects of M&A is associated with this particular type of financial activity, and time for policymakers to evaluate how to tailor possible regulation to the real problems.

⁹⁴Tony Kennedy, "Honeywell Acts Against Potential Raiders," *The Washington Post*, July 25, 1989.

⁹⁵Judith H. Dobryzinski, "Deals, Yes. Maniac Deals, No," *Business Week*, Oct. 30, 1989.

⁹⁶Christopher Farrell, with Leah J. Nathans, "The Bills Are Coming Due," *Business Week*, Oct. 30, 1989.