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The Evolving Japanese Financial System, and the Cost of Capital

Jeffrey A. Frankel

University of California at Berkeley

December 1992

Department of Economics

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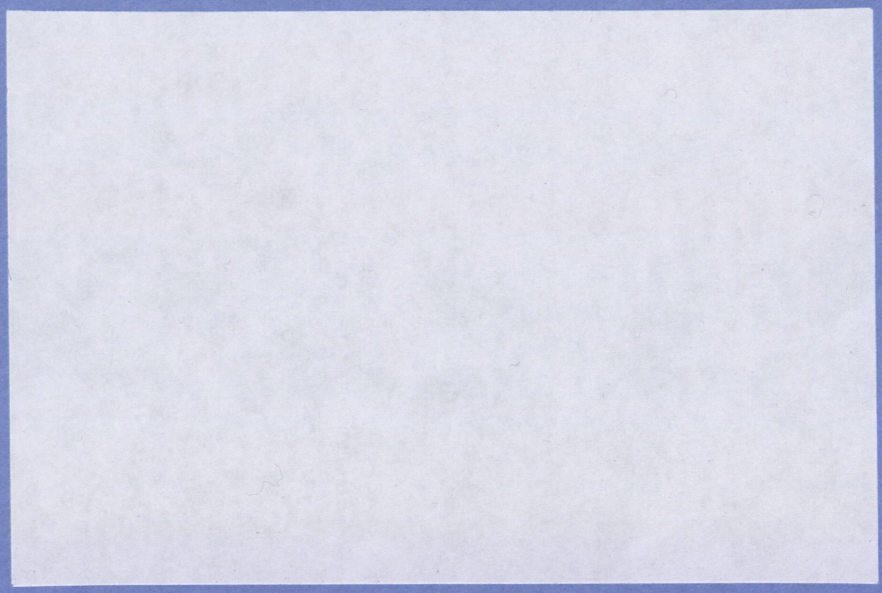

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Key words: cost of capital, Japanese finance, main bank, financial liberalization
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Abstract

The paper surveys the extensive literature on whether Japanese corporations in the 1980s were able to finance investment more easily than Americans. Along the way, it considers: the leverage of Japanese firms, dividend payout, equity price/earnings ratios, corporate taxation, cross-ownership, speculative bubbles, international capital mobility, the lower cost of financing investment internally and through "main bank" relationships, and the move to a more market-oriented system as these relationships, and the move to a more market-oriented system as these relationships appeared to break down in the 1980s. The conclusion that emerges from the literature is that the cost of finance in the 1980s was indeed lower in Japan than in the United States, by a variety of measures. But trends of domestic and international liberalization, followed by the events of 1990-92, have now raised the cost of capital in Japan to the U.S. market level. Some unanswered questions remain, regarding the reported shifts in reliance by firms between banking relationships versus securities markets.

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Contents

Americans became concerned in the 1980s with the question whether Japanese corporations had an advantage in the ease with which they could raise funds to finance investment. The majority of studies found that Japanese firms did indeed have a financial advantage, and disagreed only over what was the key element that constituted the difference in the two countries' financial systems.[1]

Many approached the question by quantifying the cost of capital, defined for example as a weighted average of the market cost of debt and the market cost of equity. A few such studies failed to find evidence of a significantly lower cost of capital in Japan. It is easy enough to come up with a negative finding like this, if one measures the required rate of return on equity by the observed ex post return on equity, because stock prices are so volatile that statistical significance is limited. But most studies did find lower real interest rates and other measures of required rates of return in Japan. Indeed, this conclusion in the finance field corresponded well to a conclusion of mainstream macroeconomists: that a shortfall in the U.S. national saving rate in the 1980s drove the rate of return in the United States above that prevailing in Japan and elsewhere, thereby attracting the large capital inflow that was the counterpart of the infamous trade imbalance.

Others argued that the standard concept of the cost of capital was not relevant to Japan, where long-term relationships such as that between a firm and its main bank predominated over Anglo-American style securities markets.[2] But these writers generally subscribed to the view that such relationships helped Japanese firms to achieve a level

of investment that was even higher than what one would expect from the observed cost of capital. Thus the main-bank relationship theory was not in competition to the cost-of-capital theory, in the sense that they were two parallel ways of explaining a greater apparent ease of funding investment in Japan.

Much has changed since December 1989. In that month, a new governor arrived at the Bank of Japan, determined to tighten monetary policy and burst the apparent stock market bubble. Interest rates rose sharply, and the Japanese stock market fell in three precipitous drops (dated roughly at January 1990, August 1990, and April 1992). The result is that standard measures of the cost of debt and the cost of equity show that they have now rise to the same level prevailing in the United States. It seems likely that the specifics of Japanese monetary policy mainly affected the timing, and that the convergence of Japanese and world rates of return was the inevitable eventual outcome of the preceding ten-year trend of financial liberalization. The point is that the equalization of Japanese and U.S. rates of return has rendered obsolete much of the cost-of-capital literature that is only a few years old.

For those who have always believed that the measured cost of capital is less relevant in Japan than main-bank and other relationships, the events of 1990-92 seem more supportive. Many Japanese corporations have come home from the Euromarkets, where they were busy issuing equity-linked bonds in 1989, and resumed borrowing from their banks.

This paper reviews the literature on cost of capital, beginning with the issue of access to cheap borrowing, shifting to a

consideration of the equity markets (including such issues as dividend-payout rates, P/E ratios, and corporate taxation), and then considering domestic and international determinants of the real interest rate. It concludes with a discussion of banking relationships. Measurement and accounting problems occur from the beginning, and will be discussed as we proceed. But throughout, the paper attempts to concentrate on those trends in financial prices that are so strong that one cannot easily attribute them entirely to measurement problems.

The paper raises a number of puzzles. First, if low interest rates explain the high level of the Japanese stock market in the late 1980s, what explains the increase in stock market prices during the decade? Second, if banking relationships represent a more efficient way to raise capital, why did Japanese corporations move away from them in the 1980s, and rely more heavily on securities markets for their funds? Third, do the developments since 1989 constitute a reversal of the trends of the late 1980s? Which situation more accurately indicates the longer-run reality, 1987-89 or 1990-92?

I. THE STANDARD WEIGHTED-AVERAGE MEASURE OF THE COST OF CAPITAL

The claim that the cost of capital was lower in Japan, perhaps giving Japanese firms an "unfair" advantage, arose with some American businessmen in the early 1980s.[3] Some of the original statements focused only on differences in interest rates. Later versions were more complete.[4]

A traditional measure of the cost of capital is a weighted average

of the cost of borrowing and the cost of equity:

$$r_c = w\, r_d + (1-w)\, r_e, \qquad (1)$$

where r_d is the cost of debt, r_e is the cost of equity, and w is the relative weight of debt in total financing. Under this definition, the claim can be broken down into some combination of the following three possibilities: (a) the cost of borrowing was lower in Japan, (b) the cost of equity was lower in Japan, or (c) the weight on debt-financing (versus equity-financing) was higher in Japan. All three statements contain some truth.[5]

I.A Real interest rates

Nominal interest rates in Japan have been below those in the United States during most of the postwar period, and continuously from 1977 to 1989. Japanese inflation has also been relatively low since 1977, and it is of course the real interest rate, not the nominal rate, that matters for investment. But calculations suggest that Japanese real interest rates were below U.S. real rates virtually continuously from 1967 to 1989.[6]

It should be noted that some of these calculations may understate the Japanese real interest rate in the 1960s and 1970s. The actual inflation rates that are used overstate expected inflation rates, and the government bond rates that are used were too low to be willingly absorbed by private investors. Also, for the case of borrowing from banks, firms were required to maintain "compensating balances," which

did not pay interest.[7] But for the 1980s one can use interest rates that do not have such problems.

In the period 1982-84, the U.S. long-term real interest rate rose substantially above that in Japan and other G-7 countries. The differential in real interest rates is widely considered to have been the result of a U.S. fiscal expansion, at a time of fiscal contraction in Japan and some major European countries.[8]

The U.S.-Japan real interest differential was smaller after the midpoint of the 1980s than it was in the first half of the decade.[9] This differential, even if small, was still present however in 1989. In early 1989, the long-term real interest differential was over one point, as is illustrated in Figure 1, and the short-term differential was larger. We postpone until Section 4 the question of how such a differential could have persisted despite the apparent international integration of financial markets. As discussed below, further narrowing of the real interest differential took place in the second half of 1989. (The long-term nominal interest rates in the graphs are 10-year government bond yields. Expected inflation is measured by a survey of forecasters conducted by Currency Forecasters' Digest.[10])

The standard capitalization formula for the equity price/dividend ratio and the price/rental ratio is

$$\frac{1}{r - g}, \qquad (2)$$

where r is the real interest rate used to discount expected future dividends to the present, and g is the expected growth rate of dividends. The formula is also sometimes used to think about the price/earnings ratio for equities. ("Earnings" would better be defined

asnet profits after new investment. See footnote 15.)

Sometimes the best we can do to get an idea of the expected growth rate of dividends is assume that it is equal to the expected growth rate of the economy. If r - g were a number like .02 in the world economy at large, then the Japanese interest rate would only have to be lower by .01 -- or the growth rate higher by .01, for that matter -- to explain a doubling of the price/earnings ratio. French and Poterba (1991) point out that a lower real rate of interest in Japan might be able to explain the high level of Japanese stock prices on average during their sample period (the 1970s and 1980s), though it cannot explain the increase during the last three years, 1986-88.

Because the real interest differential is thought to be small, with the exception of the early 1980s, those who argue that the cost of capital is low in Japan and that this has presented a problem for the "competitiveness" of U.S. industry ever since 1973, e.g., Krugman, Hatsopoulos, and Summers (1988) and Poterba (1991), tend not to emphasize the real interest rate. They choose, rather, to emphasize the cost of equity financing and the relative weight of debt versus equity in corporate financing. (We return to the role of the real interest rate later, however.)

I.B Leverage (debt/equity ratios)

In the past, Japanese corporations have had a much higher ratio of debt to equity than U.S. corporations, that is, they have been much more highly leveraged. (In terms of equation (1) earlier, the debt/equity ratio is w/(1-w).) In the period 1970-72, for example,

debt/equity ratios in Japan were four times as high as in the United States. This commonly-observed characteristic of the Japanese system is one major reason why calculations often show a lower overall cost of capital in Japan than in the United States; equity-financing is known to be more expensive than debt-financing in any market, presumably because portfolio investors demand a higher expected return on equity to compensate them for higher risk. It must be noted from the outset that the apparent conclusion that a given firm can lower its cost of capital by increasing the weight on debt is illusory. It would only hold if both the cost of equity and the cost of debt could be assumed to be independent of leverage. To the contrary, both would in fact be expected to rise: the former as the firm's levered beta rises, and the latter as its credit rating falls (McCauley and Zimmer, 1989, p.24). Kester and Luehrman (1992, pp.9-14) think that most of the cost-of-capital literature is crippled by a failure to realize that the costs of debt and equity themselves depend on the degree of leverage, which they refer to as the "mismatch" problem.

How have Japanese firms been able to rely so heavily on debt? As a number of authors have pointed out, a particular debt/equity ratio that would be very risky for a U.S. firm would have been less risky for a Japanese firm. There are several reasons for this. (1) Much of the borrowing was from the firm's main bank. A main bank would not cut off lending in time of financial difficulty; to the contrary it would do all it could to see the company through. Hoshi, Kashyap and Scharfstein (1990) examined a sample of 125 Japanese firms that ran into financial trouble over the period 1978-85. They found that those who had a main bank -- and especially those who were members of a

keiretsu -- were buffered from their financial distress and enjoyed subsequent recovery of earnings as compared to other firms.[11]

(2) Until recently, all loans had to be collaterized. This certainly reduced the risk from the viewpoint of the bank, which in turn helps explain the reduced danger from the viewpoint of the corporation that bank lending (as well as the ability to sell bonds) would dry up in time of difficulty.

(3) Such government policies as allowing the formation of cartels in event of recession reduced the risk of financial difficulty or bankruptcy.[12]

(4) The practice of paying workers a substantial fraction of their compensation in the form of twice-yearly bonuses that vary with the success of the company acts as a sort of profit-sharing mechanism, and again reduces the risk of bankruptcy.

Abegglen (1985, 165) offered an accounting reason why a given corporate balance sheet that might spell excessive risk in the United States would not be as worrisome in Japan: a typical Japanese firm does not consolidate the financial assets held by its subsidiaries into its own balance sheet -- where a corresponding U.S. firm might do so -- and carries land and securities on its books at original cost. He thinks that such a firm is in a stronger financial position than its balance sheet would suggest. Some of these accounting questions are discussed under the heading of price/earnings ratios below.

In any case, it is important to note that the seemingly robust regularity that "Japanese firms are much more highly leveraged" appears to have died out in the course of the 1970s and 1980s. The debt/equity ratio fell throughout most of these two decades, and by one measure had

by 1986 fallen below the level in the United States, as shown in the last two columns of Table 1 (from French and Poterba).[13] This reversal was due only in part to the increase in corporate leverage in the 1980s that generated so much alarm in the United States. The reversal was due primarily to the decline in Japan, which was in turn due, at least in an arithmetic sense, to the soaring value of Japanese equities in the late 1980s and to decreased reliance on the main bank system, as well as to the reduced need for external financing of any sort after 1973. Each of these factors will be discussed below.

II. EQUITY CAPITAL

II.A The rate of return on equity: stock prices and dividends

The third of the standard components of the overall cost of capital, after leverage and the cost of debt, is the cost of equity financing, r_e in the standard equation (1). It is the most ambiguous of the components to measure. One approach has been to use the realized market rate of return on equity, i.e., the dividend/price ratio plus the rate of increase of equity prices. C.Baldwin (1986) and Kester and Luehrman (1991) were unable to reject the hypothesis that the level of expected return on equities for any given level of risk was similar in the two countries. Ando and Auerbach (1988a) found, for the period 1966-1981, that returns were actually considerably higher in Japan. (In addition to their calculation of the average rates of return, they also looked at earnings/price ratios, discussed below.)

Subsequently, on a much larger sample of firms than that used in their earlier study, but with a similar methodology and time period, Ando and Auerbach (1988b) found that the overall rate of return on capital was substantially lower in Japan than in the United States after all. (The time period was 1967-83.)

Stockholders' realized rate of return on equity is a very noisy indicator of their ex ante expectations. As McCauley and Zimmer (1989, p.9) and Poterba (1991, p.24) pointed out, an increase in the discount rate, by causing an immediate fall in stock prices, would even show up perversely in the short run as a lower rate of return rather than a higher one. Friend and Tokutsu (1987, p.317) remarked that while realized market rates of return on equity were higher in Japan [over the period 1962-1984] than in the United States, a reverse answer results if the dividend/price ratio is added to the rate of growth of dividends per share, rather than to the rate of growth of prices. Looking at the problem from the viewpoint of the market investor rather than the firm might give the wrong answer if the stockholders' return to capital measured over a finite sample differs from what managers perceive as their required rate of return. Hatsopoulos and Brooks (1987) and Hodder (1988b, 1990) dissented from the Baldwin and Ando-Auerbach approaches on these grounds.[14]

In the absence of a speculative bubble, stock prices can be thought of either as the present discounted value of expected future dividends, or the present discounted value of expected future free cash flow, where the latter is often proxied by earnings. (Free Cash Flow is defined as profit after tax, minus changes in working capital, minus other capital spending, plus depreciation.[15]) We consider the subject

of dividends first, and turn to earnings in the next sub-section.

There has been little upward trend in Japanese dividends per share over the last 20 years.[16] This made it especially difficult to explain the high level of Japanese stock prices, if one followed the common approach of choosing the present-discounted-value-of-future-dividends formula and estimating expected dividends from actual realized dividends. On the other hand, the observed high level of prices relative to dividends would be perfectly understandable if the increase in dividends were thought still to lie in the future.

If dividends are treated as expected to grow at a constant rate g_d from now on, then the current dividend/price ratio should equal $r_e - g_d$, where r_e is the required rate of return on equity capital (which may be higher than the real interest rate because of a risk premium). As of 1988, the dividend price ratio was only .006 in Japan, as compared to .030 in the United States (from French and Poterba). If r_e is assumed to be the same in the two countries, then the 1988 levels of stock prices make sense if and only if the dividends were expected to grow at a rate 2.4 per cent faster in Japan than in the United States.

Why should Japanese dividends grow rapidly in the future, given that they have not done so in the past? We have no good theory of how shareholders wish to receive the return on their equity investment, i.e., in the form of dividends or capital gains, or of how managers choose to pay dividends. In a sufficiently abstract (Modigliani-Miller) world the payout rate is indeterminate. On the one hand, tax considerations point to postponing the payment of dividends. On the other hand, the hypothesis that managers sometimes use funds for purposes other than maximizing shareholder welfare points to

shareholders insisting on early payment of dividends.

Corporations do determine dividends, one way or another. One hypothesis is that some shareholders like to receive quarterly checks for liquidity reasons. They could instead sell some stock to generate cash, but there are transactions costs to doing so.

The payout rate, i.e., the ratio of dividends to earnings, has been declining gradually in Japan since the early 1960s, and is lower than in the United States. Over the period 1980-88, it averaged .357 for Japan and .469 for the United States. This difference would be larger if Japanese earnings were adjusted upward for the factors described in the next section.[17]

The ratio of retirees to working-age people is close to a minimum in Japan now, and will soon begin to rise until, by 2020, it will be the highest of the major industrialized countries. It is plausible that wealthy Japanese retirees in the future will wish to receive high dividend payments on their holdings. Thus it is not entirely implausible that the expected future growth rate of dividends in Japan should be almost as high as the rate of return on capital, or that it should be 2.4 per cent higher than the growth rate in the United States, notwithstanding the dividend record of the past 20 years.

Another, consistent, explanation as to why Japanese dividends might rise in the future even though they have been low in the past is that Japanese corporations have over the postwar period had many profitable investment opportunities, but until the late 1980s have not had sufficiently free access to securities markets to drive their cost of capital into equality with the rate of return on these investments. For this reason, they have chosen to finance investment out of retained

earnings. Even in the United States, a rapidly-growing company may pay no dividends at all, for example, and rather re-invest all earnings into highly-profitable projects. Japan has been going through a collective life-cycle similar to such a company. At some point in the future, the extra growth opportunities of Japanese corporations will disappear, and they will be free to begin paying out a higher level of dividends. Akio Morita (1992, p.8), Chairman of Sony, has recently suggested, "Wouldn't it be advisable for Japanese companies to increase the payout ratio to a level comparable with that of European and American companies?"

Such considerations suggest that looking at the past history of dividends may not be very useful. An alternative approach is to look at the amount of earnings the firm is required to generate per unit of equity, that is, the inverse of the price/earnings ratio.

II.B Price-earnings ratios

The price/earnings ratio (like the price/dividend ratio) has been observed to be higher in Japan than in the United States ever since the early 1970s, and most dramatically in the late 1980s. Because this difference could be explained by a lower discount rate in Japan, it is often the basis of arguments that the cost of equity capital is lower in Japan. But the difference could also have other explanations, such as a higher expected growth rate in Japan. If a high growth rate were the complete explanation, one would not want to attribute the high P/E ratios to a low discount rate. More broadly, one would not want to attribute the superior performance of Japanese industry necessarily to

a low cost of capital. The paper now turns to the subject of the high and (in the 1980s) increasing P/E ratios in Japan, an important question in its own right.

Some, such as Ando and Auerbach, have looked at the price-earnings ratio because they are interested in the cost-of-capital question, and they consider P/E to be inversely related to the required rate of return r_e. Others, such as French and Poterba (1991) and Lawler, Loopesko and Dudey (1988) are interested in the price-earnings ratio for its own sake. As shown in the first two columns of Table 1, the reported price/earnings ratio for Japanese firms has been higher than the P/E ratio in the United States ever since the 1970s. It reached 58.6, three times as high as the U.S. level, in 1986. In the stock market crash of October 1987, the decline in Japan was smaller and shorter-lived, with the result that in 1988 and 1989 Japan's reported P/E was more than four times that in the United States or the rest of the world. (The developments of 1990-92 are discussed in Section II.F and below. See Figure 2, which is borrowed from Hale.)

Such an apparent discrepancy would be difficult to explain. If earnings were expected to grow at rate g_e, then the earnings/price ratio should equal $r_e - g_e$. The end-1988 differential between reported earnings/price ratios in the United States and Japan was .06 [=.078-.018]. The real growth rate of the Japanese economy had averaged 1.6 per cent faster than the U.S. economy over 1980-88; there was no particular reason to expect the real growth rate of the economy to increase in the future, or to expect the growth rate of earnings or cash flow to be higher than the growth rate of GNP. Thus the required rate of return on capital r_e would have to have been more than 4

percentage points lower than in the United States to explain the difference in reported P/E ratios. Such a finding would support the cost-of-capital-advantage school, but seems too large to be plausible.

Hatsopoulos and Poterba (1991, p.11-12) point out that stockholders' required rate of return on equity will differ from the earnings/price ratio to the extent that some part of earnings is reinvested by managers rather than paid out, and is reinvested at a rate of return that differs from the stockholders' required return. They acknowledge that the earnings/price ratio will accurately reflect the required return in the special case when the return on reinvested earnings is the same as the stockholder return. But they focus on an example where the stockholders cannot prevent managers from undertaking projects that are not profitable at current required returns. This case, which implies that the earnings/price ratio understates the true required rate of return, would appear to be more applicable to the United States than Japan, if the literature on information and incentive problems described in Part IV of this paper is to be believed. It would appear to follow that the U.S.-Japanese difference in required rates of return on equity is even larger than E/P ratios imply.[18]

French and Poterba (1991), Ando and Auerbach (1988a, 1988b, 1990), Lawler, Loopesko and Dudey (1988), and Hatsopoulos and Poterba (1991) all emphasized the importance of correcting earnings for a number of measurement problems. Ando and Auerbach (1988ab) focussed on three distortions related to inflation: depreciation accounting, inventory accounting, and accounting for nominal liabilities. They found that

correcting for these distortions increased estimated earnings, and therefore increased the E/P ratio, for virtually all the Japanese firms in their sample, while it had no systematic effect for the U.S. firms.[19] The principle apparent source of the effect was that the Japanese firms relied more on debt than equity (see above), so the fact that inflation reduced the real value of their outstanding liabilities was more important for them. Apparently the fact that the inflation rate was lower in Japan had less of an effect than the higher debt/equity ratio. If reliance on debt is indeed the source of the effect, then the fact that the debt/equity ratio in Japan appeared to have fallen below that in the United States by 1986 (and that inflation fell in both countries in the 1980s), suggests that the inflation accounting may no longer be as important for the P/E comparison.

French and Poterba had some other corrections to make to reported earnings and therefore P/E ratios. First was the point that earnings reported by U.S. corporations include the profits of subsidiaries, while those reported by Japanese firms do not (only actual dividends received from subsidiaries), so their earnings look smaller. A calculation to convert P/E ratios to what they would have been if there were no cross-holding of corporate equity (which required adjusting both earnings, by removing intercorporate dividends, and share prices) reduced the Japanese P/E ratio.

Second, reported Japanese earnings also look smaller because they deduct (both on the firms' tax returns and on their financial statements) generous allowances for special reserves for such possible future contingencies as product returns, repairs, and retirement benefits. But this effect was relatively small.

Third, Japanese firms often take greater depreciation allowances. This factor, like the previous two, works to reduce reported earnings. (Unlike U.S. firms, when a Japanese firm claims a high depreciation allowance for tax purposes, it must do the same on its income statement.) The effect of all three corrections together was to reduce the 1989 P/E ratio in Japan from 58 to 37. Lawler, Loopesko and Dudey (1988, 24) made their own adjustments for depreciation and consolidation of earnings, which produced a very similar result. The analogous downward adjustment in U.S. P/E ratios was much smaller. Overall, these accounting differences in earnings explained about half of the difference between Japanese and U.S. ratios.[20] This still left Japanese equities about 2.6 times as high as U.S. equities at the end of 1989. Or, if our interest is in the cost-of-capital question rather than in the was-Japan's-market-too-high question, the correction still left 1988 Japanese earnings/price ratios at about half U.S. levels.

Once we get the corrected Japanese earnings/price ratio up to the neighborhood of .027, it becomes slightly easier to explain the differential vis-a-vis the United States (which was at .071 when similarly adjusted by French and Poterba). If, for example, the expected rate of growth of earnings g_e in Japan were 2 per cent faster than in the U.S. and the rate of return required by shareholders were 2 per cent lower, that would explain the differential. But if it is true that the required rate of return was lower by, say 2 per cent, what might have been the source of this difference?

We consider six possible explanations, relating to: the equity risk premium, land prices, tax treatment, the low real interest rate, a possible speculative bubble, and non-market finance. The latter four

topics merit their own sections below. We begin with the first two.

One possible explanation of a low required rate of return on equity is that the "equity premium" (defined as the expected rate of return on equity minus the risk-free interest rate) was smaller for Japan. In theory this would require either a lower level of risk in the Japanese market, or a lower price of risk. The latter hypothesis would in turn require that Japanese stocks -- for whatever reason -- are held primarily by Japanese investors (i.e., segmented markets) and that Japanese investors are less risk-averse than American investors. This hypothesis has the virtue that, in commonly specified intertemporal utility functions, the parameter determining risk-aversion is the same as the parameter determining the rate of time preference; the claim that Japanese are less impatient than Americans sounds more familiar than the hypothesis that they are less risk-averse.

In any case, Baldwin (1986) and the appendix to Ando and Auerbach 1988b found no sign that the expected rate of return on Japanese securities was lower for a given amount of risk. Similarly, Kester and Luehrman (1991) were statistically unable to reject the hypothesis that the price of risk is the same in Japan as the United States.

Thus the risk-premium hypothesis would seem to require the Japanese stock market to have been less risky than the American stock market. Ueda (1990, 362-64) argued that the risk premium in the Japanese stock market declined sharply between 1982 and 1988, but could find little evidence of a corresponding decline in riskiness. Lawler, Loopesko and Dudey (1988, 26-27) concluded that uncertainty in the two stock markets was roughly similar in the late 1980s (despite some

possible differences in the past), whether estimated from the standard deviations of monthly changes or expected volatilities implicit in stock index options. So there is little evidence of the smaller uncertainty in the Japanese market that would normally be required to justify a smaller risk premium.

Another explanation that could explain an apparently low required rate of return on equity in the 1980s is the rise in land prices. Firms hold a lot of land, which they usually carry on their books, not at current market price, but at the price of acquisition (which, in the case of land held since the 19th century, is essentially zero). French and Poterba thus tentatively concluded that the puzzle as to why equity prices rose so much in the 1980s may be the same as the puzzle why land prices rose so much in the 1980s. Ando and Auerbach (1990) reached a similar conclusion -- that even a conservative calculation to adjust corporate earnings for land appreciation can fully account for the apparent differential in rate of return vis-a-vis the United States -- while admitting that this answer only pushes the question of the source of the 1980s run-up from the stock market onto the land market.[21] Hamao and Hoshi (1991) report evidence of linkage between stock prices and land prices. But Ziemba (1991) finds evidence that stock prices lead land prices, rather than the reverse.

Theories regarding Japanese land prices are reviewed in Section II.E of Frankel (1991a). The price of land, analogously to the price of equity, should equal the present discounted value of future rents (in the absence of a speculative bubble). If rents are expected to grow at rate g_r, then the price/rental ratio should be given by

$$P_{land}/rent = \frac{1}{r - g_r}$$

In terms of the above equation, either a high value for g_r or a low value for the discount rate r could explain the high price/rental ratio. Ito (1989), Sachs and Boone (1989) and Boone (1989b) attribute Japanese land prices to such macroeconomic factors. But, even though the expected-growth argument favored by both Boone and Ito tells us why land price/rental ratios in Japan were high as of 1989, it does not tell us why they should have increased so much in the 1980s. According to the theory, the price and rent should each rise proportionately with economic growth. Instead, while land and housing prices sky-rocketed, the rental rate remained approximately constant in real terms. Furthermore, since low interest rates and high expected growth rates are the same factors used to explain the high level of the stock market, the consideration of the land market does not move us ahead in understanding the Japanese cost of capital.

We now consider in turn three remaining serious possibilities to explain the apparently lower required rate of return on equity capital in Japan in the 1980s: more favorable tax treatment, a lower real interest rate, and financing that is cheaper than the rate of return required on securities markets. We will see that the third explanation seems especially appropriate for the period before liberalization, and the second explanation for the period since liberalization. But there is also a fourth possibility to consider, that the increase in stock prices in the late 1980s was a speculative bubble.

II.C Corporate taxation

Corporate taxation is one of the respects in which the effective cost of capital facing the firm can differ from the observed rate of return on investment: it is of course the after-tax cost of capital that should matter for investment decisions. It would presumably be more convenient for any American businessman who wished to claim that Japanese industry had an "unfair advantage" in the form of a low cost of capital, if the source of the advantage were more favorable tax treatment by the Japanese government.

In the past, the corporate income tax rate in Japan has been much higher than in the United States, especially after the more favorable U.S. tax treatment of business adopted in 1981. In 1985, the Japanese government raised 5.9 per cent of its tax revenue from corporations, as compared to only 2.1 per cent in the United States.[22] This has made it difficult to claim a tax advantage for Japanese industry.

Indeed, when Ando and Auerbach (1988a) computed after-tax earnings/price ratios and after-tax return-to-capital rates, they found that "it is Japanese, not American, firms that are taxed more heavily on their real incomes." They registered two possible qualifications. First, one would prefer to look at the marginal effective tax rates that are relevant to the firm's decision whether to invest, rather than the average tax rate. They noted that such measures were unavailable for Japan. Second, their calculations apply to the unlevered firm; but a corporation derives tax advantages from borrowing since interest payments are tax-deductible and one might expect these advantages to be larger for Japanese firms (both because they have had higher

debt/equity ratios until recently and because the corporate tax rate that they are deducting against was higher). But Ando and Auerbach computed an upper bound on this tax advantage, and claimed that it was very small. Thus they felt able to "rule out" the claim that the corporate tax system gave Japanese firms a cost-of-capital advantage. Noguchi (1985), taking into account the advantages of borrowing, also concluded that the tax burden was higher on Japanese, not U.S., corporations.

Other authors have ascribed more importance to the tax advantages of borrowing in Japan. Hatsopoulos and Brooks (1987), for example, emphasized that the definition of tax-deductible borrowing is more permissive in the Japanese tax code than in the American.

Bernheim and Shoven (1986) disputed the prevailing approach in public finance of presupposing that the (pre-tax) real interest rate must be constant across countries, in light of the observed failure of this condition. They first computed the after-tax cost of capital under the 1980 tax codes, using the actual interest rates and inflation rates that held on average for the 1970s (which entails assuming a U.S.-Japan real interest differential of 1.5 per cent). They found a smaller tax wedge on capital in Japan than the United States, with the result that the after-tax cost of capital in Japan was negative.[23] They attributed this result to the greater importance of interest payments in Japan.

Bernheim and Shoven then repeated the computations for 1985 tax codes, using the actual interest and inflation rates for the early 1980s. Despite the adoption of accelerated depreciation allowances in the U.S. tax code in 1981, the estimated U.S. cost of capital rose

substantially in the 1980s, as a result particularly of the much higher real interest rate (5.0 per cent, as compared to 2.0 per cent in the 1970s). The real interest rate was higher in Japan as well, but there remained a substantial difference in the after-tax costs of capital in 1985 [5.5 for the U.S. versus 2.8 for Japan].

The central message of Bernheim and Shoven was that variation in real interest rates tends to dwarf variation in corporate tax laws as determinants of the cost of capital. They subsumed in this message the changes in the 1986 tax reform (including the removal of the investment tax credit that had been increased in 1981), which was under debate at the time that they were writing. Takenaka (1986) concluded that the impact of the investment tax credit on Japanese investment was negligible. Fukao (1988, 339-341) found a less favorable tax wedge (less negative) for Japan than the United States during the period 1981-84, but found that the combination of the 1986 U.S. tax reform and lower inflation rates brought the post-1986 tax wedge in the United States very close to that in Japan.

In December 1988, the Japanese Diet approved a tax reform which had been long sought by the ruling Liberal Democratic Party. The reform, among other things, cut the Japanese corporate tax rate from 42 per cent[24] to 37 1/2 per cent (with the full cut not effective until 1990). This left the tax rate only slightly higher than the current rates in the United States (34 per cent) or the United Kingdom (35 per cent). When state and local taxes on corporations are added in, the Japanese rate is about 50 per cent and the U.S. rate about 40 per cent. (These numbers are taken from Shoven, 1988.) One of several motives for the Japanese tax reform is that the Ministry of Finance fears that,

in the absence of international harmonization of corporate tax rates, business would increasingly be able to find ways to arbitrage across tax jurisdictions.

Shoven (1989) updated his calculations of the effective tax rates on corporate investment. He found that the effective tax rate on investments in Japan was up sharply to 32 per cent in 1988 (as compared to 5 per cent in 1980). Part of the reason was the tax reform: in Shoven's calculations -- unlike Ando and Auerbach's -- the high <u>average</u> corporate tax rate in Japan worked to reduce the effective <u>marginal</u> tax rate on new investment, because it increased the value to the corporation of borrowing to finance the investment and deducting the interest payments from its taxable income. He thus estimated that the reduction in the average corporate tax rate in itself raised the effective tax rate 9 percentage points.

The major reason for the increase in the marginal effective tax rate on investment was not the tax reform, however, but rather the sharp decline in expected inflation relative to the 1970s. This decline was estimated to have raised the effective tax rate by 23 percentage points. The fall in the inflation rate in Japan [from 9% in the 1970s to 1%] means that the favorable distortion caused by the tax-deductibility of nominal interest payments was reduced. This left the effective Japanese tax rate still somewhat below the U.S. rate, which was at 41 per cent in 1988 (up from 29 per cent before the Tax Reform Act of 1986).

It is possible that the moderate tax advantage that remained in Shoven's numbers did not adequately take into account the downward trend in the Japanese reliance on debt,[25] and that by now little is

left of the Japanese tax advantage. Ando and Auerbach (1988a, 1988b) dismissed the importance in this context of taxes altogether. Bernheim and Shoven (1986, p.3) concluded that "under prevailing tax systems, differences in the cost of capital between countries are largely attributable to differences in domestic credit market conditions, rather than to taxes."

Since the time that these papers were written, the difference in tax treatment between the two countries has, if anything, narrowed further. The Japanese tax reforms that took effect in April of 1988 and April of 1989 raised the tax rate on Japanese saving in a number of ways.[26] Iwata and Yoshida (1987) calculated that the abolition of the pro-saving bias in the (then-proposed) reforms would increase the total tax wedge in Japan, and thereby narrow the differential in the corporate cost of capital vis-a-vis the United States, despite the accompanying reductions in Japanese corporate taxes. (They, unlike Shoven, found that the latter work to reduce the after-tax cost of capital in Japan.)

If the public finance experts think that taxes are of at best second-order importance in comparing the cost of capital between the U.S. and Japan -- or that the difference has, if anything, gone <u>against</u> Japanese corporations -- why should an international economist disagree?

II.D Speculative bubbles

There is always the possibility of a speculative bubble in the

1980s, to explain the price of land, the price of equity, or both. In surveys of institutional investors conducted by Shiller, Kon-ya and Tsutsui (1991b) in mid-1989, late 1989, and early 1990, many respondents chose the statement, "Stock prices in Japan, when compared with measures of true fundamental value or sensible investment value, are too high." (In August 1991, when Iraq invaded Kuwait and the Japanese market fell precipitously, the percentage of respondents finding the market "too low" rose sharply, and the percentage finding it "too high" fell.)[27]

It is sometimes argued that special institutional features of the Japanese stock market, such as the dominance of trading by the big four security firms and administrative guidance by the Ministry of Finance,[28] keep prices artificially high. It has been argued, for example, that such features might explain why the Japanese market "was not allowed" to fall as far in the crash of October 1987 as other countries' markets.[29] From a 1989 survey of 139 Japanese institutional investors, Shiller, Kon-ya and Tsutsui (1991a, 12-13) report that 68 per cent agreed with the statement "The Ministry of Finance will take steps to assure that stock prices in Japan will not lose too much of their value in another crash," while only 12 per cent disagreed.[30]

What means does the Japanese government have to control the stock market, aside from monetary policy? Hardouvelis and Peristiani (1989, p. 19) found that "Margin requirements in Japan have proved to be an effective tool of controlling wild gyrations in stock prices." Hardouvelis and Peristiani (1990, p.27) also found that "margin policy in Japan has been useful even during the 1980s, a period when Japanese capital markets were increasingly deregulated." But it is not clear

that adjustment of margin requirements has helped to stabilize the stock market in the 1990-92 decline.

Financial economists have not yet been able to construct good models of what gets speculative bubbles started, or what causes them to collapse. We do not even have much idea whether bubbles are more or less likely in perfectly competitive "efficient" markets than in markets where trading is characterized by turnover taxes, larger transactions costs, oligopolistic market-makers, and government intervention (all of which characteristics are attributed to Japanese stock markets).[31] Amihud and Mendelson (1992) find that such aspects of the Japanese stock market as the securities transfer tax and fixed commission rates, by raising transactions costs and reducing liquidity, artificially depress the level of the market.

In 1990-92, the Japanese stock market lost half its value. At first consideration, this plunge could be interpreted as clear evidence that the run-up of prices in the late 1980s was indeed a speculative bubble. Unfortunately for this view, the macroeconomic fundamentals changed dramatically at the same time. A new Bank of Japan governor, less enthusiastic about buying dollars to support the U.S. currency than some others in the Japanese government and more intent on fighting inflation, began to tighten Japanese monetary policy in the second half of 1989, raising real interest rates to a sharply higher level in 1990. Notice from Figure 1 that the long-term real interest differential vis-a-vis the United States vanished at the end of 1989. The Japanese stock market fell sharply at the beginning of 1990, presumably as a result of the increase in interest rates, and fell again in August, presumably as a result of the beginning of the Kuwait crisis. It then

fell a third time in the Spring of 1992. Before we attribute the 1980s ascent in Japan's equity (and land) prices to a speculative bubble, we should consider the possibility that the cycle can be explained by interest rates.

We can try some simple calculations to see if the changes in macroeconomic fundamentals can explain the decline of the Japanese stockmarket between late 1989 and the end of 1990. The calculations use monthly survey data collected from a sample of banks, multinational corporations by Currency Forecaster's Digest of White Plains, New York.

The Japanese 10-year real interest rate is estimated to have been 2.6 per cent in September 1989, and the 10-year expected rate of economic growth to have been 3.7 per cent. One is tempted to take the difference $r - g$ as an estimate of $r_e - g_e$ and see if it equals the ratio of earnings to prices. But the difference, -1.1, is less than zero, and would thus apparently be capable of explaining any P/E ratio, no matter how high. Clearly the real interest rate must underestimate the required rate of return on capital -- presumably due to a risk premium of the sort discussed above in the section on price/earnings ratios -- or else the GNP growth rate must overestimate the rate of growth of earnings.[32]

The comparable calculations for the United States show that the differential between the real interest rate and the expected growth rate was 0.7 per cent in September 1989. The French and Poterba (1991) figures, after adjustment of earnings, show that the U.S. E/P ratio exceeded the Japanese E/P ratio by about .044 in 1989. Thus at the end of the 1980s there was an apparent "overvaluation" of the Japanese stock and land markets that could be attributed either to (1) a

speculative bubble, or (2) a higher equity risk premium for the United States than for Japan, or some other source of bias in r - g (as an estimate of the difference between the relevant discount and growth rates) that is greater for the United States.

Let us consider the second hypothesis, and assume that the difference in risk premiums (or other source of bias) between the two countries remained the same at the end of 1990 as in late 1989: about 2.6 per cent if adjusted figures are used [3.6 per cent with unadjusted earnings]. Is the 1990 increase in Japanese real interest rates capable of explaining the collapse of the Japanese market? French and Poterba's figures show that the international difference in E/P ratios fell by .025 in 1990 if adjusted figures are used [.013 with unadjusted figures]. Calculations in Frankel (1991, Table 3) suggest that the increase in real interest rates in Japan [1.3 %] can explain a large fraction, but not all, of the decline in the stock market in 1990 vis-a-vis the United States. It would seem to follow that there is not necessarily a need for recourse to the hypothesis of a burst speculative bubble. Suzuki (1991, p.10-11) comes to the same conclusion.

It should be noted that it is the intrinsic nature of such calculations that nearly-inconsequential changes in the computed macroeconomic fundamentals are apparently capable of "explaining" large changes in the stock market. Perhaps the appropriately-balanced judgment would conclude that there may have been a bubble component in the late 1980s, coming on top of a rise in the stock market that occurred for fundamental reasons, and point out that the decline was deliberately triggered by the authorities, by raising interest rates in

order to head off a still-larger bubble.

What are the implications of the 1990 developments for the cost of capital question? The difference in real interest rates between the United States and Japan has disappeared completely. As of mid-1992 there is probably now little left also of the difference in P/E ratios once the accounting adjustments are made to Japanese earnings.[33] Some may continue to believe that the standard weighted average of debt and equity is not relevant for Japan because many corporations still get much of their financing from main banks. This point is developed in the last part of this paper. Even in the case of bank borrowing, however, there is reason to think that the era of cheap finance may be over. Japanese banking was itself the industry hardest-hit in the 1990 stock market collapse, and is now under pressure to restrict lending in order to meet stringent new international standards for capital adequacy.[34]

In short, though by most measures the cost of finance in the 1980s was lower in Japan than in the United States, this appears no longer to be the case. Whether this is cause for rejoicing among American businessmen is another question. Given the high degree of international integration that has taken place over the last ten years, fluctuations in saving are reflected in capital flows between Japan and the rest of the world as easily as in domestic investment. In other words, corporate borrowers in Japan are not the only ones to feel the effect of a decreased availability of Japanese savings; borrowers in the United States and elsewhere in the 1990s will feel it as well.

III. DETERMINANTS OF THE REAL INTEREST RATE

If one thinks of the real interest rate as equilibrating the various sources and uses of funds, then a low real interest rate in the 1970s and 1980s would be explained by some combination of four factors: a high corporate saving rate net of investment, a high public saving rate, a high household saving rate, or a high availability of savings from abroad. Each factor probably has played a role at one time or another in Japan.

We know that the government was a source of cheap capital for many firms in the 1950s and 1960s, but that it went sharply into deficit and became a big user of funds after 1973. The Ministry of Finance took pains to cut the government budget deficit in the early 1980s, but the deficit has nevertheless been relatively high throughout the post-1973 period, and thus cannot explain a low real interest rate during this period.

The corporate sector was in deficit in the postwar period until the first oil shock. We know that the corporate deficit has been sharply lower since then,[35] as the result of a fall-off in the previously-high level of investment, which helps explain cheap capital after 1973). But the high Japanese private saving rate is the factor most often cited as applying throughout the period.

The Japanese household saving rate is among the highest of industrialized countries: saving (expressed net of depreciation) averaged 16.0 per cent of disposable income over the period 1980-89. By comparison, net saving in the United States averaged only 6.0 per cent of disposable income over the same period. The question of why the saving rate is so high in Japan is another major topic in itself. Horioka (1990) offers a comprehensive survey. Section III.A of Frankel

(1991) offers a condensed survey, including some measurement issues and an enumeration of six arguments that have been suggested to explain the high saving rate, though it must be admitted that none of them is entirely convincing.

Even if the Japanese level of household saving were to be reduced toward that in Western countries, for example by a tax reform or a land-use reform, there is a serious further question as to whether such a change would lower the Japanese real interest rate or the cost of capital to firms. If capital is perfectly mobile internationally, it is argued, then a decline in national saving should not put any upward pressure on the rate of return within Japan, but rather should be entirely offset by increased borrowing from abroad (and decreased lending) at an unchanged rate of return. However it is fairly clear that such a decrease in saving would reduce the Japanese current account surplus -- and all the more so if capital is highly mobile -- which is what many Americans want.

Feldstein and Horioka (1980) initiated what has proven to be a long-lasting debate by observing that changes in countries' rates of national saving in fact had large effects on their rates of investment, and interpreting the finding as evidence of low capital mobility. The paper was subjected to many econometric attacks, but the basic results seemed to hold up. The "saving-retention" coefficient did finally begin to decline in the 1980s however, according to the latest studies: Feldstein and Bacchetta (1989) and Frankel (1991a). (The latter paper contains 65 references on the subject, many of them demonstrations that one can have a high correlation between saving and investment despite

perfect capital mobility.)

It is possible to test the international equalization of rates of return more directly. Many studies have documented the failure of real interest rates to be equalized across countries,[36] seeming to confirm the Feldstein-Horioka results. We saw in Section 1 that the Japanese real interest rate was below the U.S. rate throughout the 1980s. But the Japanese government announced the removal of controls on international capital movements in 1979-80, and further liberalization measures in 1983-84, partly in response to pressure from the U.S.Treasury.[37] It is often argued that if capital markets are open, international arbitrage should eliminate real interest differentials. Is it possible that the announced Japanese liberalization has failed to be genuine or complete?

A number of studies have shown, using data on covered interest differentials, that the 1979-80 and 1983-84 liberalizations did indeed have the effects advertized.[38] By now covered interest parity holds as well for Japan (vis-a-vis the Eurodollar market) as it does for such major countries as Canada, Germany and the United Kingdom: the differential between the dollar interest rate and the interest rate on domestic currency is equal to the discount on the dollar in the forward exchange market. This finding suggests that Japan is highly integrated into world financial markets with respect to the movement of capital across national boundaries.

The finding still leaves open the possibility of differences associated with the currency in which an asset is denominated, as opposed to the political jurisdiction in which it is issued. For example, investors' expectations that the dollar may in the future

depreciate against the yen in nominal terms almost certainly explain why the yen interest rate was less than the dollar interest rate in the 1980s.[39] Similarly, expectations that the dollar may depreciate against the yen in real terms may explain why the yen real interest rate was less than the dollar real interest rate. In that case, the original Feldstein-Horioka view is correct -- real interest rates are not necessarily equalized internationally and changes in saving (even if truly exogenous) need not be offset by borrowing from abroad and thus may be heavily reflected as changes in investment -- and yet the explanation may be the imperfect international integration of goods markets that allows failures of purchasing power parity, rather than imperfect international integration of financial markets. If there is no way of arbitraging directly among countries' goods or among their plant and equipment, and if plant and equipment are imperfect substitutes for bonds within each country, then perfect international arbitrage among countries' bonds is not sufficient to equalize real rates of return among countries' plant and equipment.

It is quite likely that, by the 1980s, investors had come to hold an expectation of future yen appreciation. The issue is discussed elsewhere.[40] One piece of evidence is survey data on investors' forecasts.[41]

We have argued that, even if Japanese corporations are now no more highly levered than American corporations, and even if international arbitrage now equates the Japanese and foreign nominal interest rates (when expressed in a common currency), the Japanese real interest rate could still lie below the foreign rate. A real interest differential in the 1980s -- whatever its source -- could in turn help explain high

average price/earnings ratios in the Japanese stock market, high price/rental ratios in the Japanese land market, and a lower cost of capital to some Japanese firms.[42]

The argument about the low real interest rate might seem to apply to the past in Japan as much as, or more than, to the 1980s. Similarly, the argument that the expected rate of real economic growth in Japan is high applies to the past as much as, or more than, to the 1980s. How can one explain that price/earnings ratios and price/rental ratios were not also high in the past, i.e., that they rose sharply in the 1980s? We address this question in the course of the next part of the paper.

IV. MAIN BANK RELATIONSHIPS, VS. SECURITIES MARKETS

The standard formula for the price/earnings ratio and the price/rental ratio, $1/(r-g)$, assumes that r, the real interest rate (or a required rate of return equal to the real interest rate marked up by a risk premium), is relevant for discounting expected future returns. This assumption is appropriate for economies where corporate finance is oriented around a unified central market, i.e., a common pool of funds into which most savers deposit and from which most investors draw off.[43] This description applies relatively well to the United States, and it applies increasingly to Japan today. But it did not apply very well to Japan in the 1970s, and still less so in the 1960s, as Meerschwam (1989) explains at greater length. In terms used by Zysman (1983), Japan has a "credit-based" financial system such as Germany and France have, rather than a "capital market-based" financial system such

as the United States and the United Kingdom have.[44]

The existence of lending by government agencies to favored firms in favored industries at subsidized rates, and the artificial "repression" of other interest rates through regulation and administrative guidance, have always been major ways that Japanese corporations have been thought to have an "unfair" cost-of-capital advantage in the past. Twelve government financial institutions as recently as 1980 supplied 17 per cent of funds for investment in plant and equipment -- of which the Japan Development Bank and the Small Business Finance Corporation were particularly notable in channeling subsidized investment funds to selected industries (Lee, 1988, p.25-36). The general low-interest rate policy of the government before 1973 was explicit.

Equally familiar is the claim that large corporations or keiretsu take profits from one activity and cross-subsidize investment in another.[45] But it has often been unclear why Japanese industry should want to do this. If the investment is expected to be profitable in the long run, then it should be undertaken in a market-oriented financial system such as the United States, with the investment funded by borrowing in the market if necessary, as readily as under the Japanese system.

IV.A How the Japanese system has avoided information and incentive problems

Recent theoretical developments have helped us understand better how the cost of internal finance can be less than the cost of external

finance.[46] One route is asymmetric information between the firm's managers and the typical stockholder or bondholder in the market regarding the rate of return on an investment. Another route is incentive or "agency" problems.

"Internal finance" is the corporation's financing of an investment out of retained earnings (or out of depreciation charges), as opposed to financing at market rates by borrowing from a bank or issuing securities.[47] Retained earnings explain why the Japanese cost of capital was low in the 1970s. When the Japanese economic growth rate fell off with the oil shock of 1973, the number of profitable investment projects fell relative to the supply of funds available. (In the national savings identity, the offset to the increase in the saving-investment balance of the corporate sector was primarily a large increase in the government budget deficit in the 1970s, followed by a large increase in the current account surplus in the 1980s.) In other words, since 1973 firms have been able to finance investments out of retained earnings to a much greater extent than previously.[48] Retained earnings can be a cheaper source of financing than issuing corporate debt or equity, because they are not penalized by problems of incomplete information or incentive incompatibility.

It can be argued that, in Japan, borrowing by a firm from its main bank under a long-term relationship avoids incentive and information problems as effectively as does internal finance. The reasoning is that the main bank, like a large shareholder -- which, in fact, it often is -- can keep close tabs on what goes on inside the firm, thus largely obviating the information and incentive problems.[49] Japanese financial institutions (including not just banks, but also life

insurance companies and other institutional investors), unlike their U.S. counterparts, are allowed to take large debt and equity positions in the same firm. Prowse (1989) and Kim (1992) argue that this difference constitutes in itself a way that the Japanese system is better able to circumvent agency problems.[50]

Hodder (1988b) concludes that the advantages of "lender monitoring" are key, and that they may explain why studies like Ando and Auerbach (1988b) find that the cost of capital is lower in Japan than the United States. His argument is that the advantages of lender monitoring may show up in part as low reported earnings/price ratios because banks receive payments for their services in the form of "compensating balances" and transactions fees, which come out of reported corporate earnings, rather than in the form of interest payments.[51]

Aoki (1990, 17-18) describes an equilibrium whereby a main bank preserves its reputation as a reliable monitor of firms by voluntarily foregoing the priority of its claims in the process of reorganization or liquidation of a troubled client firm. Aoki (1992) suggests that this equilibrium is delicate, and is only preserved by (implicit) Ministry of Finance regulation. The Ministry keeps the list of eligible banks (primarily 12 city banks) from changing, regulates them as a natural monopoly, and even stands ready to punish a main bank that defects from the cooperative equilibrium (by withholding licenses for branch office openings).

Empirical evidence in support of the proposition that internal and main-bank finance are cheaper than external or market finance is offered by some recent microeconomic studies of the determinants of

firm investment. The new theories of information and incentive problems now provide the desired rigorous theoretical basis for including cash flow in econometric equations to explain business fixed investment, rather than just the real interest rate or Tobin's Q.[52]. Fazzari, Hubbard and Petersen (1988) have recently estimated regression equations for investment on a cross-section of U.S. firms. They distinguish firms that pay low dividends, which they assume are liquidity-constrained, from others. They show that cash flow is a more important determinant of investment in the former group, which they interpret as evidence in favor of the internal-finance hypothesis. (Tobin's Q, the ratio of the market price of equity to replacement cost, is also included as an explanatory variable, to capture expectations of the return to investment.) One can interpret such findings as analogous to the Feldstein-Horioka result: just as a high correlation of national saving and investment across countries suggests that there may exist some barriers that separate individual countries from the worldwide capital market, so does high correlation of corporate saving and investment across firms suggest that there may exist barriers that separate individual firms from the nationwide capital market.

Hoshi, Kashyap and Sharfstein (1989a) apply a similar methodology to Japan, where the segregation of firms can be more definitively accomplished. They break down a sample into two groups. One consists of 121 "affiliated" firms, those with ties to large banks (typically a main bank) that are part of its keiretsu. The other consists of 25 "independent" firms, without close links to any particular bank. They find that among the independent firms, cash flow positively affects

investment (and Tobin's Q does not), while among the affiliated firms cash flow has no significant effect (while Q does have an effect).[53] The conclusion is that the first group faces a barrier between the cost of financing investment out of retained earnings and the cost of borrowing, like American firms do, while the latter can borrow from their affiliated banks as easily as financing out of retained earnings. The authors conclude that one possible implication is that "the institutional arrangements in Japan may offer Japanese firms an important competitive advantage (p.24)."

IV.B The loosening of the system and the shift toward market finance

The hypothesis that internal and indirect finance (especially from the main bank) is cheaper than direct or market finance can thus support the claim that the true cost of capital to Japanese corporations (at least those that are members of keiretsu) has been low in the past. But established banking relationships have begun to break down in Japan and the market has begun to take their place, as corporations begin to use banks less and bond markets more, a process that accelerated in the 1980s as the result of international liberalization as well as domestic deregulation.[54] In the 1970s, the non-financial corporate sector issued stock and marketable debt securities on a scale that averaged only 12.8 per cent of total outside financing including borrowings from banks; in 1987 that ratio increased to 30.1 per cent, as many firms found they could raise funds more easily or more cheaply on the open market (Bisignano, 1990, p.41 and Table 10).

But if the relevant cost of issuing debt was higher in the more market-oriented 1980s than it was in the past era of cheap bank finance, this raises some difficult questions. The first question, which we now consider, is how one explains the fact that price/earnings and price/rental ratios were lower in previous decades than in the late 1980s.[55] The second, why firms would voluntarily abandon advantageous banking arrangements, is addressed subsequently.

We must ask who would have had the opportunity to arbitrage between the low "cost of capital" and the high expected future return to holding land or equities. For those who had the opportunity to buy land, plant and equipment, or equity, the opportunity cost of funds was high, a number more like the observed rate of return on equity than like the observed interest rate or the still lower cost of internal finance.[56] The individual small investor did not have such opportunities; he was given little alternative to depositing his savings in a low-interest-rate account.[57] The same was to a certain extent true of institutional investors such as pension funds and insurance companies, and in any case the pool of available savings in such institutions was far smaller than in the 1980s. A corporation that was favored with access to cheap loans from the government or from its main bank was not generally free to use those funds to "speculate" in land or in the shares of other corporations. Nor was the firm allowed to buy back its own shares, when it should have had plenty of profitable new projects in which to invest.[58] Thus the arbitrage between the interest rate and real assets that we take for granted in a market-oriented system was not entirely relevant in the earlier period.

As noted, firms have begun to rely less on banks for their financing, and more on marketplace borrowing, due in large part to deregulation and internationalization. The most important liberalizations include: (1) the removal of ceilings on interest rates after 1978 (in response to growing reluctance on the part of banks to absorb growing quantities of government debt at artificially low interest rates), (2) the switch to a presumption that firms were allowed to sell bonds to foreign residents (as part of the Foreign Exchange Law Reform) in 1980, (3) the legalization of warrant bonds in 1981, (4) the legalization of non-collateralized bonds for sufficiently safe corporations beginning in 1983, and (5) the liberalization of issues of Euro-yen bonds as part of the Yen/Dollar negotiations between the Ministry of Finance and the U.S. Treasury in 1984. More recent measures taken pursuant to the Yen/Dollar Agreement include: (6) establishment of new short-term financial markets (in yen-denominated banker's acceptances, June 1985,[59] short-term bonds, November 1986, and commercial paper, November 1987), (7) further liberalization regarding the Euromarket (such as allowing foreign companies to lead-manage Eurobond issues in December 1986, and introducing rating systems for Eurobonds in 1987), (8) establishment of an offshore market in Japan (December 1986), (9) the admission of major American securities companies to the Tokyo Stock Exchange (approximately 22 by the end of 1987), and (10) inclusion of foreign firms in the syndicate through which the Japanese government sells its bonds and in the trust business (9 banks authorized after October 1985). In addition, (11) the Ministry of Finance liberalized restrictions on what share of their portfolios Japanese insurance companies and trust banks could hold in

the form of foreign securities (in 1986 and 1987).[60]

Even for those steps that represent domestic innovation or deregulation as opposed to international liberalization, foreigners have been an important driving force. There has been both direct political pressure on the Japanese government from foreign governments and competitive pressures on Japanese financial institutions from the activities of foreign rivals.[61]

By 1989 Japanese bond issues in the Euro-yen market, which had been growing rapidly for ten years, reached 40 per cent of total public corporate issues.[62] Often the Eurobonds issued by Japanese corporations, particularly convertible and warrant issues, were ultimately acquired by Japanese residents. Hale (1990, p.5) estimates that 60 to 70 per cent of Japanese corporate bonds issued in the Euromarket in 1989 were bought by Japanese investors. In this way internationalization facilitated an end-run around remaining domestic Japanese rigidities, and made Japanese finance more competitive, even when neither the borrower nor the lender was foreign. The transactions costs that remained in Japanese financial markets were large enough to be exploited by major corporations who took money raised at a low interest rate offshore and invested it in other financial instruments, an example of earning profits by "zaiteku" or financial engineering.[63] Aoki and Sheard (1992, p.7) identify the transactions costs leading to Eurobond issues: still-restrictive collateral requirements on domestic bond issues.

In a follow-up to their first paper, Hoshi, Kashyap and Sharfstein (1990b) address the gradual weakening of the links between banks and

affiliated firms that has been taking place in Japan. Choosing 1983 as the first year in which the effects of deregulation were fully felt, they begin with their sample of firms that had close banking ties during the period 1977-1982, and divide it into a sub-sample who shifted emphasis thereafter from bank-borrowing to direct market finance, and a sub-sample who continued to rely primarily on their banks. They find that the former group developed a strong sensitivity of investment to cash flow after 1983, while the latter group did not. This constitutes further evidence that bank-borrowing in Japan obviates some of the usual costs of external financing.

IV.C Is the shift to market finance good or bad?

Some have surmised that if public policy and the main-bank system have kept the cost of capital artificially low in Japan in the past, the deregulation and internationalization of Japanese financial markets must now have eliminated that advantage. Even if we could be confident that the Japanese cost of capital has been raised in this manner, that would still leave open the question of whether or not the traditional system produced a greater level of economic efficiency for the economy overall. On the one hand, any way of obviating information or incentive problems must represent a gain. On the other hand, the exclusion of certain firms and certain industries from the privileges of cheaper financing is only beneficial if there exists some decision-making mechanism superior to the market to decide who is worthy of inclusion and who is not, a debatable proposition.

It is also possible that the previous system of denying Japanese

savers, banks, and taxpayers an opportunity to earn an equilibrium rate of return on their savings, even if inefficient in the economists' sense that it failed to maximize intertemporal welfare, nevertheless produced a high level of investment. Zielinski and Holloway (1991, p.152) speak of "chronic overinvestment in plant and equipment" resulting from cheap capital, at the expense of the Japanese public. Such a proposition would be consistent with the legendary Japanese corporate emphasis on maximizing market share at the short-run expense of current profits.[64] Blinder (1991) also argues that Japanese corporations maximize growth rather than profits, and includes among the implications the proposition that Japanese firms act *as if* they have a lower cost of capital than American firms. Horiuchi (1990, p.26) attributes a corporate emphasis on growth rather than shareholder profits to managers maximizing their own personal objectives, protected from the sort of merger-and-acquisition activity that disciplines managers under the U.S. system.

An alternative line of argument is that it is the U.S. system that is inefficient. Krugman, Hatsopoulos and Summers (1988) argue that the U.S. market system gives rise to an inefficiently low level of investment because of excessive concern with short-term profits and capital gains, at the expense of longer-term investment opportunities. McKinnon (1989) argues that excessively short investment horizons in the United States (in contrast to Japan) are attributable to high interest rates, which are in turn attributable to the risk of dollar depreciation against the yen under the floating exchange rate system.[65] If it is the U.S. system that is inefficient, it would appear to follow that American pressure on Japan to speed financial liberalization

constitute an effort to "drag the Japanese down to the U.S. level." Kaplan (1992), on the other hand, examines rewards to Japanese and American managers, as reflected in executive turnover rates and compensation, and finds no significant differences in their degrees of sensitivity to performance measures such as the prices of their stocks.

In any case, a puzzle remains. If the effective cost of capital under the traditional system is less than the market interest rate under the new system, why are Japanese firms voluntarily giving up their advantageous main-banking relationships for the difficulties of the marketplace? Hodder (1988b) concludes that if firms are leaving their main bank relationships, it must be because it is advantageous to do so, though he also concludes that it must have been advantageous for them to enter into these relationships in the first place.

Hoshi, Kashyap and Sharfstein (1990a) suggest a possible explanation to the paradox: there are hidden costs to the system of bank monitoring, and a cheaper way of overcoming the information and incentive obstacles to borrowing -- which is available only to older, well-established, successful firms -- is to take advantage of the firm's reputation by issuing highly-rated bonds. It is noteworthy that agencies that rate the creditworthiness of corporations (the analogues of Moody's or Standard and Poor's) did not develop in Japan until recently. In yet another paper, Hoshi, Kashyap and Sharfstein (1991) put forth the hypothesis that older, more successful, firms that have "reputational capital" at stake are the ones who issue bonds rather than borrowing from banks. They claim supporting evidence in a finding that Japanese firms with more "collateralizable assets" in place seem

to have moved away from banks during the period of deregulation.[66]

Perhaps national financial systems pass through a life cycle. In Stage 1, business investment is financed out of family savings or -- in a country where the government plays a more *dirigiste* role -- by official loans. In Stage 2, financial intermediation by investment banks allows a more effective channeling of funds from savers to business. U.S. firms relied on investment banks for much of their finance a century ago.[67] In Stage 3, well-established corporations find that it is more efficient still to disintermediate. They switch from reliance on bank loans to issuing securities directly in developed financial markets, where a corporation with a good reputation and credit-rating can obtain capital cheaply.

There are alternatives to the hypothesis that the corporate migration in Japan away from reliance on banking relationships is the manifestation of newly-exploitable reputations. It is possible that the trend is not even desirable from the viewpoint of the well-established firms. One approach would be to model cooperation between a firm and its main bank as an equilibrium which is only sustainable in a repeated game if the relevant discount rate is sufficiently low. There is a temptation in each period for defection from the relationship: when the corporation is experiencing bad times, the bank will be tempted to defect, and when the corporation is experiencing good times it will be tempted to defect. Only if the discount rate is low will the prospective future benefits of continuing the relationship (the avoidance of information problems via monitoring) be sufficiently important to sustain the cooperation. It could then be argued that, because the interest rate has in the past been lower in Japan than in

the United States, it has been easier to sustain such cooperative relationships. But now that the relevant interest rate in Japan has risen to the world level, it is harder to sustain such cooperation, and long-term banking relationships are coming apart.

It may not be possible for trust and long-term relationships to survive in an environment where new-comers deal only in explicit contracts. Rajan (1991) develops a model with precisely this property. In this model, the private information that a bank obtains with regard to a firm's sequence of investment projects gives the bank some monopoly power, which it is able to exploit by extracting rents from the firm in the terms of short-term loans. When an armslength bond market is then introduced, some firms will switch their financing to it (notwithstanding the problem that investors lack information about the firm) in order to get out from the bank's clutches. Even though such firms find it in their private interest to switch, the result may be a net loss in efficiency for the economy, due to the loss of banks' monitoring role. It is likely that some firms will gain from a switch to a market system and others lose.

Meerschwam (1990, 6-7) acknowledges the possibility that "insiders," those corporations with access to preferentially priced funds may have in the past had an advantage over "outsiders," and that this advantage was lost when the latter gained access to the escape route of borrowing abroad. If the outsiders had previously been subsidizing the insiders, their escape from the closed system may have driven up the cost of capital for the former.[68]

Finally, an additional hypothesis is that the fundamental

structure of the system of main bank relationships has not in fact changed radically after all. Aoki (1992) and Aoki and Sheard (1992) argue essentially that firms which prosper are able to move up a hierarchy from less-desirable financial states into better ones, where they are less dependent on their main banks, but that the same main bank monitoring system prevails throughout. When many firms were able to decrease their bank borrowing in the 1980s, or to reduce the frequency with which they were induced to accept managers from their main bank,[69] this was an indication that times were good, not that the fundamental structure had changed. Hsieh and Wells (1992) offer evidence that firms' reliance on bank loans is negatively related to performance (profitability and growth rates). The key point, in the view of Aoki and Sheard, is that the main bank remains the device to discipline the firm (by takeover of management or liquidation) in the event that it falls into a critical state in the hierarchy, and that the existence of this hierarchy provides incentives to the team of managers and workers.

This hypothesis deserves particularly serious consideration in light of the recent reaction to the 1990-92 collapse of the stock market and the onset of a Japanese recession. New equity issues fell 48 per cent in the fiscal year ended March 1992, and Eurobond issues have also fallen dramatically. Some firms have returned to bank borrowing in place of securities issues. Aoki and Sheard would presumably view this development as an example of firms moving back down the hierarchy when times are bad. Perhaps the apparent shift away from banks in the late 1980s was a transitory deviation, in part an artifact of the stock market bubble, rather than a longer-lasting

trend.

V. CONCLUSIONS

The overall conclusions that emerge from the literature of the 1980s on the cost of capital may be summarized as follows. (1) required rates of return were lower in Japan than in the United States. (2) Two aspects of this difference were lower real interest rates and lower required returns on equity. (3) Low real interest rates and high expected growth rates can go far toward explaining the high <u>levels</u> of equity prices, but not the great <u>increases</u> of the 1980s. (4) The high Japanese saving rate was responsible for the low rates of return; Japanese tax policy plays no clear role. (5) The increased availability of funds that can be used for asset-market arbitrage allowed the great run-up in equity prices in the 1980s. (6) Financial liberalization narrowed cost-of-capital differences in the 1980s; now fluctuations in the availability of Japanese saving affects investment abroad almost as easily as at home. (7) Many believe that the measured cost of capital is less relevant in the post-war Japanese system to managers' decisions than are long-term banking relationships, which are thought to obviate problems of managers' incentives and imperfect information regarding projects, thus further easing the financing of investment. (8) In the 1980s, large successful corporations were able to move on to a stage where they could issue bonds more cheaply than borrowing from their banks, though this trend may have endangered the cooperative equilibrium between firms and their main banks.

Recent events suggest some additional conclusions. (9) Increases in interest rates and declines in the stock market in Japan during 1990-92 have left the cost of capital there approximately as high as in the United States. (10) Given the earlier international financial liberalization and integration, the 1990 increase in the cost of capital in Japan may hurt borrowers in the U.S. and elsewhere almost as much as Japanese corporate borrowers. (11) Japanese firms withdrew from the securities markets in 1990-92; the loosening of banking relationships that was widely reported in the late 1980s may turn out to have been in part transitory.

In the 1980s, the banking-relationships theory was not in competition with the cost-of-capital arguments: both pointed to ease of financing investment. Some argue that the banking relationships have gradually broken down over time, an argument that is appealing in that it parallels the trend observed in the cost of capital. Others argue that observed swings in the share of bank borrowing versus securities issues do not reflect fundamental long-term changes in the main-bank relationship, but only short-term fluctuations in firms' fortunes. This view has its own appeal, in that it can explain developments of the late 1980s and early 1990s as changes within a specified structure, rather than as postulated changes every few years in the structure itself. A verdict will have to wait until more evidence is available.

Footnotes

1. Concise summaries are offered by Poterba (1991) and Frankel (1991c). Kester and Luehrman (1992) offer a skeptical survey, with a series of criticisms of the studies that purport to find a difference in the cost of capital.

2. E.g., Meerschwam (1989, 1990) and Hodder (1988b, 1990).

3. Early, highly influential, claims that Japanese firms had a cost-of-capital advantage over American competitors included Hatsopolous (1983) and Semiconductor Industry Association (1980).

4. For example, Hatsopoulos and Brooks (1986, 1987) and, especially, Hatsopoulos, Krugman, and Summers (1988). Lippens (1990) argues that a wide variety of estimates from different studies support the claim that U.S. industry labors under a higher cost of capital than Japanese industry.

5. The three-way breakdown was calculated by Friend and Tokutsu (1987), among others.

6.Bernheim and Shoven (1986) for the periods 1971-84, Lawler, Loopesko and Dudey (1988, 26) for the 1965-1988 period; Friend and Tokutsu over the period 1970-1984. Luehrman and Kester (1989) found no systematic difference in real interest rates.

7. McCauley and Zimmer (1989) correct observed interest rates for the cost of compensating balances, to obtain a comprehensive measure of borrowing costs.

8. References on the forces behind the flow of capital from Japan to the United States are given in Frankel (1988).

9. E.g., French and Poterba, 1989, p.40 .

10. Edited by Alan Teck, White Plains, N.Y.. I obtained this data by subscription by the Institute for International Economics. The reported data on inflation expectations come from surveys conducted every third month. Prior to June 1989, long-term forecasts of inflation are not available, so 12-month forecasts are used instead.

11. Other references include Abegglen (1985), Bisignano (1990, p.38), Borio (1990, p.26-31), Crum and Meerschwam (1987), Frost (1987, p.41), Gerlach (1989, p.153-54), Meerschwam (1989), McCauley and Zimmer (1989, p.21) and Nakatani (1984).

12. Caves and Uekusa (1976, p.480) suggested that highly leveraged firms are more likely to collude, as a way to reduce risk. However Japanese firms are generally considered to be relatively

competitive in their product markets (as opposed to factor markets). Gilson and Roe (1992), for example, see product-market competition as a more important discipline on Japanese firms than monitoring by main banks, and see it as an important difference between the Japanese and German systems, which others describe as similar.

13. The debt/equity ratio actually fell to half the U.S. level in an estimate for 1988 (according to French and Poterba, 1991 [p.8 and Table 4], and Bisignano, 1990, Chart 3). Others' figures show the Japanese ratio still above the U.S. level (e.g., Frost, 1987, p.41, and McCauley and Zimmer, 1989, p.13). Borio (1990, 8-11) also shows the Japanese debt/asset ratio still above the U.S. level as of 1987, even for the measure that uses market values (which shows greater convergence).

14. We save until later the argument that firms may have access to some funds that are cheaper than the expected rate of return on capital (that internal financing is cheaper than <u>either</u> the cost of debt or the cost of equity).

15. How does the use of Price/Earnings ratios bias the calculation, relative to a more correct calculation that would use Free Cash Flow, which subtracts off investment, in place of Earnings? More of earnings are thought to go to net investment in Japan than in the United States, in line with its higher growth rate. The implication is that the true equity cost of capital r_e was even lower in Japan than would appear from our attempt in the next section to apply the capitalization formula to the P/E ratio.

16. Minimum dividend-payout rates were established in the early 1970s (Meerschwam, 1989).

17. E.g., Zielinski and Holloway (1991, p.167).

18. This is the same direction of bias suggested in footnote 14.

19. When Ando and Auerbach applied a corresponding correction for their measure of total return to capital, on the other hand, they found that the median rate for Japan fell more than that for the U.S..

20. When Aron (1989) converted the Japanese P/E ratio to U.S. accounting practices, and adjusted for crossholding, he lowered it from a reported 49.6 in 1989 to 19.1 (compared to 13.5 in the United States).

21. Ueda (1990, p.357) found that the market value of corporate shares after 1983 surpassed the officially-reported value of corporate assets including land. But in the final version of his paper he did not rule out the possibility that land prices were a major factor in the rise in stock prices, in light of claims that the official land prices greatly understate true land values.

22. Shoven (1989). See also Noguchi (1985).

23. Consistent with the findings of Shoven and Tachibanaki (1988). Kikutani and Tachibanaki (1990, 287-88) fine-tune the earlier calculations [particularly with regard to depreciation]; they conclude that the 1980 marginal tax rate on capital in Japan was again lower than in the United States, primarily due to the tax-advantage of debt. They also find the Japanese marginal tax rate to have been as low in 1961 as in 1980.

24. The tax rate on undistributed profits during the period 1984 to 1987 was 43.3 per cent. (Homma, Maeda and Hashimoto, 1986, p.14., and Homma, 1987, p.21.) However, it had been lower in the 1950s and 1960s, ranging from 35 per cent to 40 per cent. (Homma et al, 1984, p.124, Table 2.39, and Shoven and Tachibanaki, 1988, Table 3.6.)

25. Recall the figures from French and Poterba that by 1988 the debt/equity ratio in Japan had fallen below that in the United States. Noguchi (1985, p. 9, 18) listed the fall in the debt/equity ratio as one of several reasons why the tax burden on Japanese investment increased in the late 1970s and early 1980s (though, like Ando and Auerbach, Noguchi thought that the Japanese burden had been higher than the U.S. burden all along). The most important of the reasons (as with Shoven) was the fall in the inflation rate.

26. The previously existing pro-saving bias in the Japanese tax system, compared to the American system, constituted part of the difference in "tax wedges" computed by Bernheim and Shoven (1986). Determinants of saving are surveyed in Part III of Frankel (1991a).

27. Interestingly, American respondents at all survey dates are far more pessimistic about the Japanese market than Japanese respondents. Shiller, Kon-ya and Tsutsui interpret this finding as support for the claim of French and Poterba (1990) -- based on the observation that investors in each country each hold most of their portfolios in their own country's assets -- that investors in each country expect the rate of return on their own stock market to be higher than on the other's.

28. The Ministry of Finance began to look after the stability of the Japanese stock market after a crash in 1965. S. Takagi (1989) discussed the history and institutional features of the market.

29. Lawler, Loopesko and Dudey (1988, 31-33), Murphy (1989) and Zielinski and Holloway (1991, 71-74).

30. The Japanese respondents attribute their October 1987 crash to contemporaneous U.S. developments. But, like American respondents, they rate news of price movements themselves as a more important influence on their behavior than news regarding fundamentals.

31. Aggarwal, Rao and Hiraki (1990) found evidence in the Tokyo Stock Exchange that stocks with low P/E ratios had higher returns than stocks with high P/E ratios (as others have found in the United States.)

32. As noted earlier, the capitalization formula does not strictly apply to P/E ratios, because the portion of earnings that are reinvested are not available as returns to the stockholder. (This just makes the gap between the discount rate - growth rate differential and the E/P ratio that much harder to explain.) One would be on firmer theoretical foundations to match up the calculations reported in this section to observations on the price/dividend ratio, for the case of stocks, or the price/rental ratio, for the case of land.

33. Hatsopoulos and Poterba (1991, Table 6) report adjusted P/E ratios up through 1990 (while adjusting accounting earnings in a way that they now regard as better than the adjustments made in French and Poterba, 1991). They conclude that the adjusted P/E ratio, even after the 1990 crash, is still higher in Japan than in the United States. But the difference is much smaller than it was during the period 1983-89, and it undoubtedly diminished further in 1992.

34. In 1988 Japan agreed with other major countries, through the Bank for International Settlements in Basel, to raise the minimum capital/asset ratios of its international banks to 8 per cent by 1993 [the same as other countries' international banks]. Japanese banks were initially able to attain this ratio easily by issuing large amounts of equity on the booming stock market. But the 1990 stock market plunge put many of the banks back below the 8 per cent capital/asset ratio. Hale (1990) and Zielinski and Holloway (1991, 179-188).

35. Indeed, Balassa and Noland (1988, p. 84) reported that the Japanese corporate sector was in surplus in the years 1974-77, although others showed only a declining deficit (where both financial and nonfinancial corporations were included; Lincoln, 1988, Table 3-2, pp.76-77).

36. Glick (1987) and Glick and Hutchison (1990) examine real interest differentials among Pacific countries.

37. The story of the U.S. Treasury campaign for the liberalization of Japanese financial markets, which began in October 1983, is told in Frankel (1984).

38. Otani and Tiwari (1981), Frankel (1984, 1988) and Ito (1986).

39. The interest differential could in theory be explained by either of two terms (after the possibility of a covered interest differential, or political premium, has been eliminated), both of them associated with the currency: expected depreciation or an exchange risk premium. The possible exchange risk premium between

the dollar and yen is examined by Fukao and Okuba (1984), Frankel and Froot (1987), Ito (1988), and Frankel (1988).

40. The section on long-term real appreciation of the yen in Frankel (1991b) attributes the 1950-1989 trend (which averaged in excess of 3.5 per cent per year) to a steady increase in the Japanese price of non-traded goods relative to traded goods.

41. By 1989, however, expectations of future yen appreciation according to surveys had disappeared. Survey data on the yen are used in Frankel and Froot (1987), Ito (1990), and Froot and Ito (1989).

42. One must note, however, that if "the" real interest rate was lower in Japan than the United States only because of an expected rate of real appreciation of the yen in terms of a basket of goods that includes non-traded goods, it can only explain high equity prices or a low cost of capital within the nontraded goods sector, or for the average across the entire economy. It cannot explain a low cost of capital for Japanese firms producing traded goods, which are the ones from whom American businessmen fear competition.

43. Note that this does not preclude some firms having projects with rates of return greater than the market rate or internal funding sources at costs less than the market rate; it requires only that the market rate be the marginal cost of funds for most firms.

44. Other cross-country studies of corporate finance structure include Mayer (1988) and Bisignano (1990).

45. Abegglen and Stalk (1985) and Hodder and Tschoegl (1985).

46. For example, in the finance literature, Myers and Majluf (1984) and Jensen and Meckling (1976). The first focuses on information costs, the latter on incentive problems. For a concise statement of this literature, see Hubbard (1990).

47. More net financing of investment comes from retained earnings in the United States (and the United Kingdom) than in Japan and other countries with bank-oriented financial systems. Mayer (1988) argues that the absence of long-term banking relationships in the former countries is a handicap that forces corporations to rely on retained earnings.

48. Aoki (1984, p.195, 219; 1988, pp.99-138) examines the increased reliance on internal finance in the 1970s. He argues that firms could have advantageously cut dividend payout rates in the 1960s and obtained more of their financing internally, but were kept from doing so by powerful banks who encouraged their clients to overborrow.

49. For example, Crum and Meerschwam (1986), Hamada and Horiuchi (1987), Hodder (1988a,b), and Hoshi, Kashyap and Sharfstein (1990a,b).

50. Horiuchi, Packer and Fukuda (1990) test the alternative hypothesis proposed by some that the key element of the main bank relationship is risk-sharing (e.g., Nakatani, 1984, who finds that the profit rates and growth rates for group-affiliated firms are less variable than for independent firms), as opposed to minimizing information problems. They find no evidence to support the alternative.

51. On the general point that the apparent cost of borrowing is understated in Japan by the requirement of compensating balances, see, e.g., Bronte (1982, p. 17). The fraction of loan contracts with compensating balances declined steadily in the 1980s (A.Frankel and Morgan, 1991, p.36).

52. Traditional investment equations are surveyed by Jorgenson (1971).

53. Hayashi and Inoue (1989) find that q is significantly related to firm growth, and that much, though not all, of the power of cash flow to explain investment in a cross-section of Japanese firms disappears when correcting for the endogeneity of cash flow. They do not segregate affiliated and non-affiliated firms.

54. Crum and Meerschwam (1986) and Meerschwam (1989), for example, discuss the decline of "relationship banking," and its replacement by the market. Also Kyuno (1989, p. 5).

55. Despite the diminished importance of subsidized government lending and the main bank system, the era of cheaper capital through internal finance was prolonged past 1973 in Japan by the greater availability of retained earnings when the number of profitable investment projects that needed to be financed diminished after the oil shock. The share of funds coming from internal finance narrowly-defined (retained earnings and depreciation charges), as opposed to external finance (securities-issues and borrowings), rose from 32.9 per cent in the period 1970-74 to 46.3 per cent in the period 1975-78, and stayed in that neighborhood subsequently. (1979-85. The source is Tamura, 1987, p.3.) It is the changes of the 1980s that need explaining, not the changes after 1973.

56. When markets in government bonds and other instruments did begin to develop, especially in the 1970s, the observed interest rate was presumably somewhere between the low cost of internal and subsidized finance and the high rate of return to physical investment.

57. As noted in Meerschwam (1989), only pre-existing shareholders received advantageous new-share subscription rights.

58. The commercial code still prohibits companies from buying back their own shares. (Hatsopoulos and Brooks, 1987, p.12, and Zielinski and Holloway, 1991, p.106, 226.)

59. Volume in the yen-denominated BA market soon began to decline, however, in favor of other instruments, and it died out completely in November 1989. (Nihon Keizai Shimbun, Dec. 14, 1989.)

60. Lincoln (1988, 130-210), Shinkai (1988), Hoshi, Kashyap and Sharfstein (1990a), Crum and Meerschwam (1986), Feldman (1986), Frankel (1984), Sakakibara and Kondoh (1984), Suzuki (1987), Ido (1989) and Bisignano (1990, 41-45), among many other sources.

61. Rosenbluth (1989) examines the various political and market forces that brought about Japanese financial liberalization.

62. Bisignano (1990, p.42 and Table 8).

63. Emmott (1989, 108-112) suggests that only government regulation kept Japanese corporations until the 1980s dependent on bank borrowing, and that all parties in Japan subsequently benefitted from the changes. Deregulation of domestic securities markets and, especially, the opportunity to issue securities abroad allowed corporations to obtain cheaper funds in the Euromarket in the late 1980s. (See also Rosenbluth, 1989, 137-166.) The shift also benefitted Japan's securities firms. Even Japan's banks were compensated for the loss of domestic loan business by the opportunity to underwrite corporate securities abroad, a business that they are still excluded from at home under Article 65 (the equivalent of the American Glass-Steagall Act, which was written into Japan's financial system during the post-war occupation).

64. For example, Abegglen and Stalk (1985), Crum and Meerschwam (1986) and Meerschwam (1989).

65. Stein (1989) offers a theory with more rigorous foundations.

66. One might interpret the finding of Ando and Auerbach (1990) that the required rate of return in Japan declines with the size of the corporation as evidence that larger companies are indeed better able to develop reputations and thereby overcome obstacles to borrowing.

67. Delong (1991).

68. To validate this hypothesis, one would like evidence that banks and other financial institutions are supplying less credit to their previously-privileged domestic clients (or offering less favorable terms), and instead taking advantage of the higher interest rates in the United States by lending abroad.

69. Aoki and Sheard (1992, p.11) report that large firms decreased their employment of main-bank managers in the mid-1980s, by an average of 3.3 per cent, while small and medium firms increased

theirs, by an average of 9.4 per cent. In a similar connection, Okazaki and Horiuchi (1992) examine the strength of main-bank relationships in the 1980s for a sample of 38 companies, using as a measure the frequency with which the main bank sent executives to the management of the firm (in addition to the usual measures of lending and shareholding).

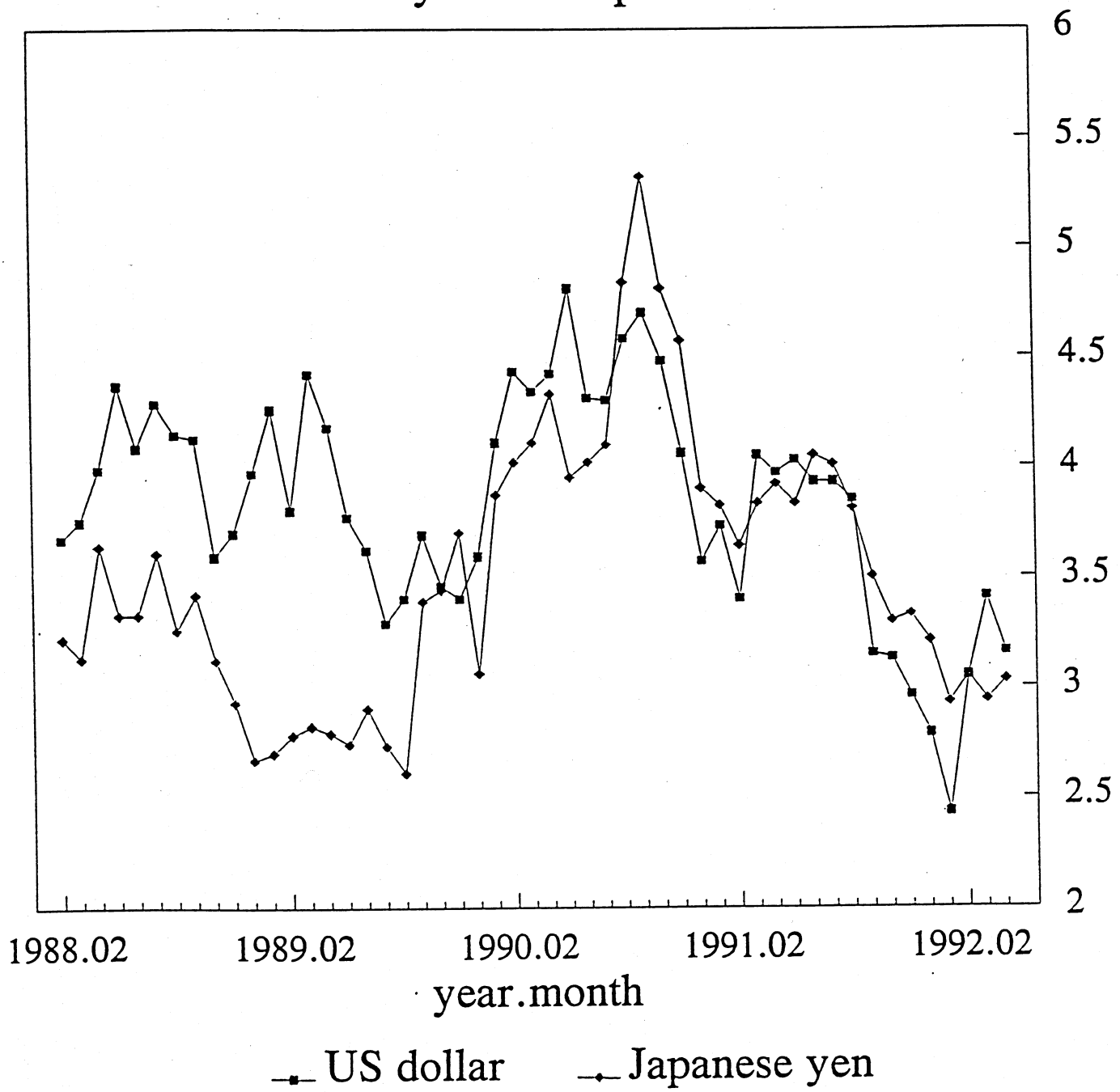
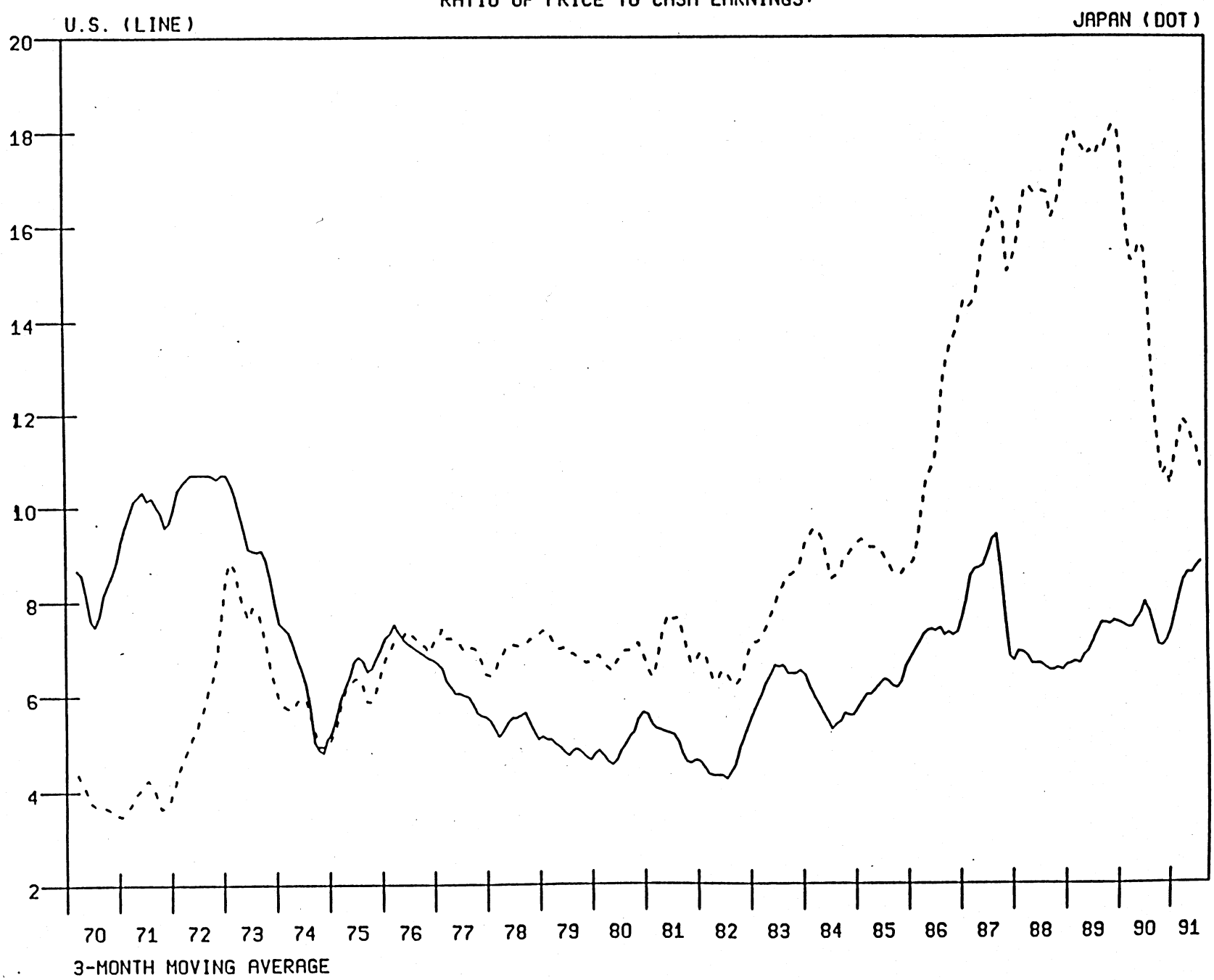


Figure 1: Real interest rates in the U.S. and Japan

Date source: Currency Forecasters Digest

Figure 2: P/E Multiples in Japan and the U.S.



Source: David Hale, Kemper Financial Services

Table 1: Price-Earnings Ratios, Japan and U.S., 1971-1990

	United States		Japan (Daiwa Firms)	
	Reported	Adjusted	Reported	Adjusted
1971	15	15	NA	NA
1972	14	14	NA	NA
1973	10	12	NA	NA
1974	6	11	NA	NA
1975	6	8	NA	NA
1976	6	8	23	8
1977	6	7	21	8
1978	5	7	20	10
1979	5	7	19	24
1980	6	10	15	9
1981	7	10	20	12
1982	10	12	21	16
1983	10	10	24	18
1984	10	8	25	15
1985	12	9	30	18
1986	16	11	48	23
1987	13	11	52	36
1988	11	10	52	32
1989	14	14	58	37
1990	14	15	33	21
1970-74	11	13	NA	NA
1975-79	5	7	22	10
1980-84	9	10	21	14
1985-89	13	11	49	30

From K.French and J.Poterba, Journal of Financial Economics, 1991, Table 6.

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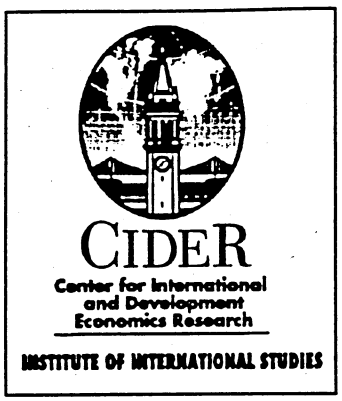

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