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8 Japanese Finance in the 1980s: A Survey

Jeffrey A. Frankel

8.1 Introduction

The structure of Japanese financial markets and the behavior of observed financial prices have raised a number of important interrelated questions in the minds of American observers, among others. The first set, of particular concern to American businessmen, pertain to:

1. *The cost of capital to Japanese firms.* Is it lower than the cost of capital to U.S. and other firms, providing an explanation for the higher rate of investment in Japan? And if so, why? What are the implications, if any, for the trade balance? The cost of capital is usually represented as a weighted average of the cost of borrowing (measured, e.g., by the real interest rate) and the cost of equity financing (inferred, e.g., from the ratio of required corporate earnings to the price of equity). A major theme of Meerschman (in this volume), and for the conclusion of this paper as well, is that this standard way of viewing the cost-of-capital question is incomplete. But, for the moment, it does serve to introduce the next two Japanese financial prices whose behavior has raised puzzles.

2. *The Japanese interest rate.* Is it lower than that in the United States and other industrialized countries, in real terms? If so, why?

3. *Japanese equity prices.* Why are they so high relative, for example, to earnings? Alternatively, why did they rise so much in the 1980s? One of a number of possible contributing explanations for high price/earnings ratios is number 2 above, a low interest rate (used to discount expected future earnings

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or dividends into current equity prices). Another is a high expected real growth rate in the economy (raising expected future earnings relative to observed current earnings). Because corporations hold land, yet another of the contributing factors to high equity prices is high Japanese land prices.

4. *Japanese land prices.* Why are they so high relative, for example, to rents? Alternatively, why did they rise so much in the 1980s? The two contributing explanations given for high equity prices apply equally here: a low interest rate (used to discount expected future rents into current land prices) and a high expected economic growth rate (raising expected future rents relative to observed current rents). A final question that, the paper shall argue, may be intrinsically tied to the question of low Japanese interest rates, relates to the exchange rate.

5. *The foreign exchange value of the yen.* Why is it so high, in real terms? Alternatively, why has it increased so much over time? What are the implications?

No single paper can hope to answer all these questions. Much is written on the subject of Japanese financial markets every year. The institutional details, as well as the market prices themselves, change rapidly, by virtue of domestic financial deregulation and innovation, international financial liberalization, and tax reform. A goal of this paper is to survey the issues, including a variety of recent contributions (many of them unpublished) to the study of one or another of the financial market prices enumerated above, in brief enough form that one can see how the different questions fit together. The survey does not purport to be exhaustive of the literature, however.

There is a fundamental thread that winds through the issues, and it is worth spelling it out here. This paper subscribes to the common view that a low real interest rate and a high expected growth rate are two major factors explaining high price/earnings ratios in the stock market and high price/rental ratios in the land market in Japan. One respect in which the paper deviates from conventional views is in arguing that the Japanese real interest rate may have remained low in the 1980s despite high integration into international financial markets. Even so, a major apparent puzzle that remains is to explain why price/earnings and price/rental ratios were not just as high (or even higher) in the 1960s and 1970s, when Japanese real interest rates were just as low (or even lower) and Japanese growth rates were just as high (or—until 1973—even higher). The difficulty, in other words, is to explain why price/earnings and price/rental ratios increased so much in the 1980s.

The proposed answer is that, in previous decades and especially prior to 1973, institutional aspects of the Japanese financial system, such as those discussed in Meerscham (in this volume), rendered the observed interest rate in large part irrelevant for the pricing of assets such as equities and land. This answer implies that anyone able to borrow from a bank or government agency at artificially low interest rates for the purpose of acquiring land or corporate equity, could have made “excess” profits; but not just anyone was able to do

so. Such sources of funds were not available to the man in the street, or even to the corporation in the street. To those favored corporations that did have access to such funds, such as members of the industrial groupings known as *keiretsu*, the number of profitable investment projects typically exceeded the supply of funds available.

The international financial liberalization that has taken place in Japan over the last 10 years has been important for many reasons, not least because it forced the pace of domestic financial liberalization. But it is possible that the primary effect of the structural changes in the 1970s was *not* to bring the level of “the” cost of funds in Japan up to the level of the world real interest rate as is conventionally suggested.¹ *Rather, the primary effect was to bring the cost of capital facing a typical unaffiliated Japanese firm or institutional investor down toward the cost of capital facing a favored keiretsu firm.* This process included both the accumulation of a vast pool of savings—particularly in the hands of institutional investors—and the development of active bond and equity markets in which these funds could be invested. The increase in the pool of funds available for arbitrage purposes helps to explain the price increases in equity and land markets in the 1980s.

The paper begins with the issue of access to cheap borrowing, then shifts to a consideration of the equity markets (including such issues as dividend-payout rates, P/E ratios, and corporate taxation), considers domestic and international determinants of the real interest rate, and concludes with a discussion of internal financing. 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.

8.2 The Standard Weighted-Average Measure of the Cost of Capital

The claim that the cost of capital is lower in Japan, perhaps giving Japanese firms an “unfair” advantage, arose with some American businessmen in the early 1980s. The original statements (Semiconductor Industry Association 1980; Hatsopoulos 1983), while highly influential, are considered by some to have been somewhat simplistic. Later versions are more persuasive (e.g., Hatsopoulos and Brooks 1986, 1989 and, esp., Hatsopoulos, Krugman, and Summers 1988). A traditional measure of the cost of capital is a weighted average of the cost of borrowing and the cost of equity:

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

1. For example, by Balassa and Noland (1988, p. 113). As of May 1990, one year after the first draft of this paper was written, the cost of capital does appear to be approximately as high in Japan as in the United States, as the result of increases in interest rates and an accompanying decline in the Japanese stock market.

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 is lower in Japan, (b) the cost of equity is lower in Japan, or (c) the weight on debt financing (versus equity financing) is higher in Japan. All three statements contain some truth.²

8.2.1 Real Interest Rates

Nominal interest rates in Japan have been below those in the United States during most of the postwar period, and continuously since 1977. 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 using 10-year government bond yields suggest that Japanese real interest rates were below U.S. real rates virtually continuously from 1967 to 1988 (see fig. 8.1).³

Bernheim and Shoven (1986) estimate that the Japanese real interest rate, on average, lay below the U.S. real rate during the period 1971–82, although the difference was quite small for the long-term rates, which presumably are the ones that matter for investment: 0.23, 0.30, or 0.93, depending whether expected inflation is estimated by, respectively, the inflation rate over the preceding year, the average *ex post* rate, or a simple ARIMA model.⁴

In the period 1982–84, the U.S. long-term real interest rate rose substantially above that in Japan and other G-7 countries.⁵ This differential is widely considered to have been the result of a U.S. fiscal expansion (which was accommodated neither by monetary policy nor by private saving in the United States), counterpoised to fiscal contraction in Japan and some major European countries.⁶ Bernheim and Shoven (1986) put the U.S.-Japan long-term real interest differential, on average for the period 1983–85, at 2.02.

2. The three-way breakdown has been calculated by Friend and Tokutsu (1987), among others.

3. The charts are borrowed from an uncirculated paper by Lawler, Loopesko, and Dudey (1988). Fig. 8.1 above may understate the Japanese real interest rate in the 1970s, both because the actual inflation rates that are used overstate expected inflation rates and because the government bond rates that are used were too low to be willingly absorbed by private investors.

4. Lawler, Loopesko, and Dudey (1988, p. 26) show real interest rates on Japanese one-year government bonds that have been below U.S. yields during virtually the entire 1965–88 period. Friend and Tokutsu (1987) find that the real cost of debt, weighted between short term and long term, was .80 percentage points lower in Japan than the United States on average over the period 1962–84 (1.70 lower over the period 1970–84).

5. The increase in the U.S. real interest differential from 1981 to mid-1984 is often credited with much of the explanation for the contemporaneous appreciation of the dollar. The differential *vis-à-vis* the real interest rate in Japan was no larger than that *vis-à-vis* Germany and some other countries. But then the movement of the dollar against the yen was actually less than against the mark and other major European currencies (contrary to a widespread impression) and peaked in 1982 rather than February 1985.

6. One of the many possible references on the capital inflow that resulted from the shift in the U.S. monetary/fiscal mix in the 1980s is Frankel (1988a). References on the forces behind the inflow from Japan in particular are given in Frankel (1988b).

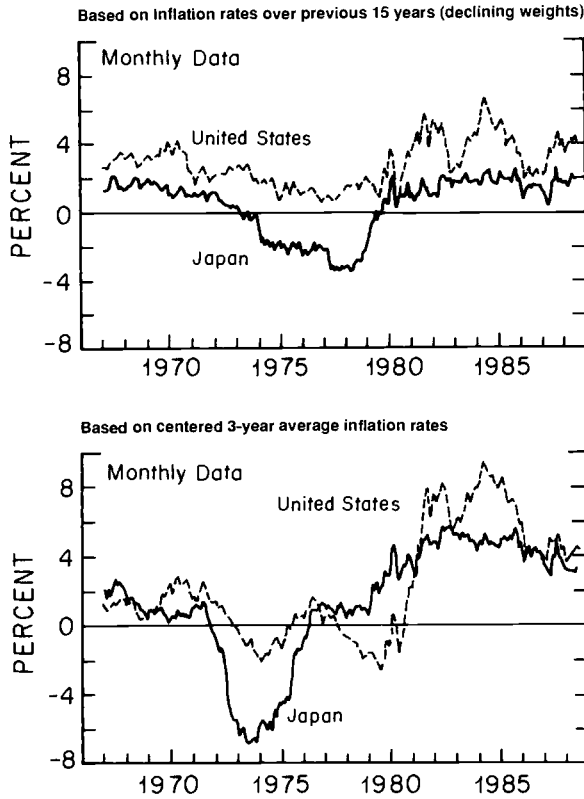


Fig. 8.1 Long-term real interest rates, 10-year government bond yields
 Source: Lawler, Loopesko, and Dudey (1988).

The U.S.-Japan real interest differential has been smaller in the years since 1985 than it was in the first half of the 1980s.⁷ This differential, even if small, was still present, however, in mid-1989 (anywhere from one-half percent to 3 percent, depending on the measure). I estimated the 10-year real interest differential to have been 0.8 percent as of the end of August, 1989.⁸ (We post-

7. This was .58 since 1985 according to French and Poterba (1989, p. 40) (average of first quarters of 1986, 1987 and 1988); they use long-term government bond yields minus the previous year's inflation rate.

8. On 23 August 1989 the nominal interest differential between the United States and Japan was 3.3 percent for 10-year government bond yields, 3.5 percent for one-year Eurocurrency rates, and 5.6 percent for bank prime lending rates. A survey of forecasters conducted by Alan Teck on that day put the difference in expected inflation rates at 2.5 percent for the 10-year horizon (4.75 percent in the United States vs. 2.25 percent in Japan) and 2.6 percent for the one-year horizon. (*Currency Forecasters' Digest*, White Plains, N.Y., September 1989.) The CPI inflation differential was 3.3 percent in 1988 and 2.0 percent in the first five months of 1989 (IMF data). As noted earlier, some further narrowing of the real interest differential took place in early 1990.

pone, until sec. 8.4, the question of how such a differential can have persisted despite the apparent international integration of financial markets.)

The standard “capitalization” formula for the equity price/earnings ratio and the price/rental ratio is

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

where r is the real interest rate used to discount expected future earnings or rents to the present, and g is the expected growth rate of earnings or rents, as the case may be. (“Earnings” should really be defined as net profits after new investment, for the formula to be correct; see n. 18 below.)⁹ Sometimes the best we can do to get an idea of the expected growth rate of earnings or rents is to assume that they are equal to the expected growth rate of the economy. If $r - g$ were a number like .02 in the world economy at large (which admittedly may be too low), 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.¹⁰

Nevertheless, 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., Hatsopoulos, Krugman, and Summers 1988) 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 will return to the role of the real interest rate later, however.)

8.2.2 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 eq. [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

9. The formula also works for firms’ dividend/price ratio, again with the growth rate properly defined.

10. A similar point is made by French and Poterba (1989, p. 19). However, they conclude that, while 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), it cannot explain the *increase* during the last three years, 1986–88.

because portfolio investors demand a higher expected return on equity to compensate them for higher risk.¹¹

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 may have been less risky for a Japanese firm. There are several reasons for this. (1) Much of the borrowing, particularly for members of a *keiretsu*, 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 (e.g., Abegglen and Stock 1985; Crum and Meerschwan 1987; Meerschwan, in this volume). (2) Until recently, all loans had to be collateralized. 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) It has been suggested that such government policies as allowing the formation of cartels in event of recession reduced the risk of financial difficulty or bankruptcy.¹² (4) It has also been suggested that 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.¹³

In any case, it is important to note that the seemingly robust regularity that "Japanese firms are highly leveraged" now appears to be a thing of the past. The debt/equity ratio fell throughout most of the 1970s and 1980s, and has by one measure fallen *below* the level in the United States, as shown in the last two columns of table 8.1 (from French and Poterba 1989).¹⁴ This reversal is due only in small part to the increase in corporate leverage in the 1980s that generated so much alarm in the United States, partly because of its association with "junk bonds." The reversal is due primarily to the decline in Japan, which is in turn due, at least in an arithmetic sense, to the soaring value of Japanese equities and to decreased reliance on the main bank system as well as to the

11. The apparent conclusion that a firm can lower its cost of capital by increasing the weight on debt would only hold if the cost of equity could be assumed to be independent (whereas it might in fact be expected to rise as the firm's levered beta rises).

12. On the so-called recession cartels, see Yamamura (1982) and Meerschwan (in this volume).

13. Other reasons have been given as well why a given corporate balance sheet that might spell excessive risk in the United States would not be as worrisome in Japan. For example, Abegglen and Stalk (1985, p. 165) argue in this connection that 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. (But the fact that much of Japanese equity is held by other firms, so that the total amount of equity in Japan is not as large as appears on the books, seems like a reason why Japanese debt/equity ratios might be understated.) Some of these accounting questions are discussed under the heading of price/earnings ratios below.

14. This occurred in 1986. The debt/equity ratio actually fell to half the U.S. level in an estimate for 1988 (according to French and Poterba 1989, p. 8 and table 4).

Table 8.1 Price-Earnings Ratios (P/E), Dividend-Price Ratios (Div/P, in %), and Debt-Equity Ratios (D/Eq), Japan and the United States, 1970–88

Year	P/E		Div/P		D/Eq	
	Japan	United States	Japan	United States	Japan	United States
1970	9.0	18.6	3.9	3.3	1.63	.54
1971	13.5	18.7	3.9	2.9	2.13	.50
1972	23.3	19.3	2.4	2.5	2.23	.48
1973	13.9	12.3	2.1	3.4	1.38	.69
1974	16.5	7.9	2.7	5.0	1.44	1.04
1975	25.2	11.8	2.5	3.8	2.13	.78
1976	22.0	11.2	2.1	3.7	1.88	.72
1977	19.3	9.1	2.0	5.0	1.82	.85
1978	21.5	8.2	1.7	5.2	1.62	.91
1979	16.6	7.5	1.8	5.3	1.78	.82
1980	17.9	9.6	1.6	4.4	1.59	.64
1981	24.9	8.2	1.5	5.3	1.64	.76
1982	23.7	11.9	1.4	4.6	1.44	.70
1983	29.4	12.6	1.2	3.7	1.03	.62
1984	26.3	10.4	1.2	4.1	.93	.74
1985	29.4	15.4	1.2	3.4	.71	.66
1986	58.6	18.7	.8	3.0	.45	.65
1987	50.4	14.1	.8	3.2	.43	.71
1988	54.3	12.9	.6	3.0	.36 ^a	.71 ^a

Sources: From French and Poterba (1989), who give original sources for the ratios. Entries reflect values on last trading day of each year. The debt-equity ratio is defined as the book value of debt divided by the market value of equity.

^aFrench and Poterba's estimates.

reduced need for external financing of any sort after 1973. Each of these factors will be discussed below.

8.3 Equity Capital

8.3.1 The Rate of Return on Equity: Stock Prices and Dividends

The third of the standard components of the overall cost of capital is the cost of equity financing, r_e in the standard equation. It is the most ambiguous of the components to measure. One approach has been to use the realized market rate of return on equity, that is, the dividend/price ratio plus the rate of increase of equity prices. Baldwin (1986) and Ando and Auerbach (1985) computed the overall return to debt plus equity in what are intended to be improvements on the Hatsopoulos (1983) approach of omitting equity altogether on the Japanese side of the calculation. They both found little evidence

of a difference between Japan and the United States.¹⁵ Ando and Auerbach (1985) found that the market rate of return to equity was in fact much *higher* in Japan (13.6% for the median of their sample of firms, vs. 2.2% for the U.S. firms). Subsequently, on a much larger sample of firms but with a similar methodology and time period, Ando and Auerbach (1988) found that the overall rate of return on capital was substantially lower in Japan than in the United States after all.¹⁶

Stockholders' realized rate of return on equity is, in any case, a very noisy indicator of their *ex ante* expectations, however. Friend and Tokutsu (1987, p. 317) pointed out that, while realized market rates of return on equity have been higher in Japan (over the period 1962–84) 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. Furthermore, 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 (1989) and Hodder (1988b, 1991) dissent from the Baldwin and Ando-Auerbach approaches on these grounds.¹⁷

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 earnings (as a proxy for cash flow,¹⁸ which is more correct, as explained in n. 21 below). In both the United States and Japan the dividend payout rate (Div/E) is substantially less than 1, which suggests that the expected rate of growth of dividends is greater than the expected rate of growth of earnings (properly averaged over the perhaps distant future). Many rapidly growing companies pay no dividends at all, for example, preferring to reinvest all earnings into highly profitable projects. I consider the subject of dividends first and then turn to earnings in the next subsection.

There has been no upward trend in Japanese dividends per share over the last 20 years.¹⁹ This makes it especially difficult to explain the high level of

15. Baldwin (1986) computes a risk-return frontier for each country and finds little difference between the two; i.e., the level of expected return for any given level of risk is similar. Ando and Auerbach (1985) is based on a fairly small sample of firms (for the period 1966–81). In addition to their calculation of the average rates of return, they also look at earnings/price ratios, discussed below.

16. They found that the before-tax returns were 6.5 percent in Japan, 12.3 percent in the United States. After-tax returns were 2.5 percent vs. 5.6 percent. The time period was 1967–83.

17. 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 *both* the cost of debt and the cost of equity).

18. Free cash flow is defined as profit after tax minus changes in working capital minus other capital spending plus depreciation.

19. Minimum dividend-payout rates were established in the early 1970s (Meerschman, in this volume).

Japanese stock prices, if one follows 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 gd from now on, then the current dividend/price ratio should equal $r_e - gd$, 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 (third and fourth columns of table 8.1). If r_e is assumed to be the same in the two countries, then the current levels of stock prices make sense if and only if the dividends are expected to grow at a rate 2.4 percent 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, that is, 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. But dividends do get paid, and 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 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 entirely 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 percent higher than the growth rate in the United States, notwithstanding the dividend record of the past 20 years.

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. If one is trying to determine whether the Japanese stock market may be overvalued, looking at earnings or cash flow has the advantage that they may be tied more directly to the productive capacity of the economy, as compared to dividends.²⁰

20. Lawler, Loopesko, and Dudey (1988, p. 25) point out that the Japanese rate of growth of earnings per share need not be correlated with the rate of growth of the Japanese economy. On the other hand, dividends would appear to be one step further removed than are earnings, via the (difficult to determine) procedure whereby firms set their payout rates.

8.3.2 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. 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 increasing P/E ratios in Japan, an important question in its own right.

Some, such as Ando and Auerbach, have looked at the P/E 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 (1989) and Lawler, Loopesko, and Dudey (1988) are interested in the P/E ratio for its own sake. As shown in the first two columns of table 8.1, the reported P/E ratio for Japanese firms has been higher than the P/E ratio in the United States ever since 1972, and 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, by the end of 1988, Japan's reported P/E was more than four times that in the United States or the rest of the world (see fig. 8.2.)

Such an apparent discrepancy would be difficult to explain. If earnings are 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 averaged 1.56 percent faster than the U.S. economy over 1980–88; there is 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 rate of return on capital r_e would have to be 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.²¹

French and Poterba (1989), Ando and Auerbach (1985, 1988), and Lawler, Loopesko, and Dudey (1988), all emphasize the importance of correcting earnings for a number of measurement problems. Ando and Auerbach (1985) focus on three distortions related to inflation: depreciation accounting, inven-

21. As mentioned above, a more correct calculation would use free cash flow, which subtracts off investment, in place of earnings. More of earnings 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 is even lower in Japan than would appear from our attempt to apply the capitalization formula to the P/E ratio.

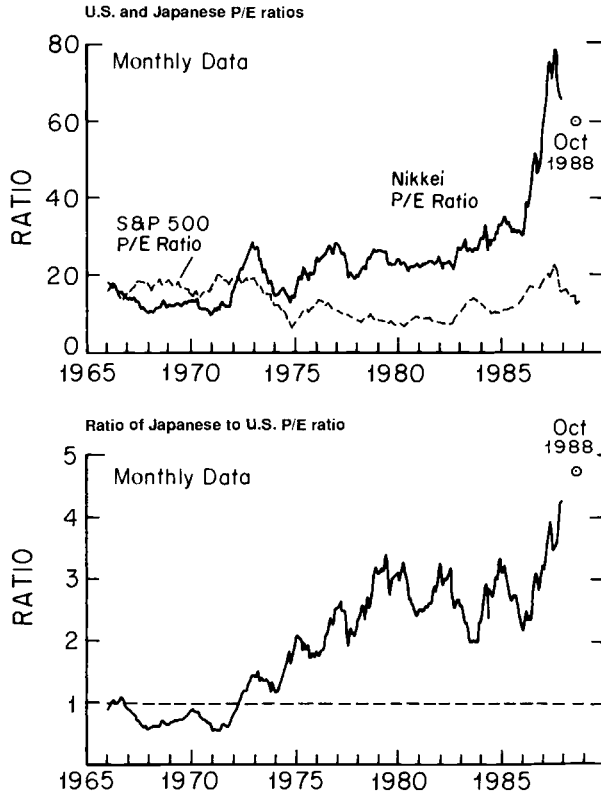


Fig. 8.2 Price/earnings ratios

Source: Lawler, Loopesko, and Dudey (1988).

tory accounting, and accounting for nominal liabilities. They find that correcting for these distortions increases estimated earnings, and therefore reduces the P/E ratio, for virtually all the Japanese firms in their sample, while it has no systematic effect for the U.S. firms.²² The principal apparent source of the effect is that the Japanese firms rely more on debt than equity (see above), so the fact that inflation reduces the real value of their outstanding liabilities is more important for them.²³ If this is indeed the source of the effect, then the fact that the debt/equity ratio in Japan appears to have fallen

22. When Ando and Auerbach (1988) apply a corresponding correction for their measure of total return to capital, on the other hand, they find that the median rate for Japan falls more than that for the United States.

23. Apparently the fact that the inflation rate is lower in Japan has less of an effect than the higher debt/equity ratio.

below that in the United States in 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 (1989) have some other corrections to make to reported earnings and, therefore, P/E ratios. First is 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 be if there were no cross-holding of corporate equity (which requires adjusting both earnings by removing intercorporate dividends and share prices) reduces the Japanese P/E ratio. In 1988 the adjustment is big enough to reduce it from 54.3 to 36.3.

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 is relatively small.

Third, Japanese firms often take greater depreciation allowances, which, like the previous two factors, 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.) French and Poterba (1989) consider two alternate ways of correcting for the difference in depreciation accounting (see table 8.2).

The effect of all three corrections together is to reduce the 1988 P/E ratio from 54.3 to either 23.2 or 32.1, depending on which depreciation correction is used. Lawler et al. (1988, p. 24) make their own adjustments for depreciation and consolidation of earnings, which produce a very similar result (see figs. 8.3 and 8.4). The analogous downward adjustment in U.S. P/E ratios is much smaller. Overall, these accounting differences in earnings explain about half of the difference between Japanese and U.S. ratios.²⁴ This still leaves Japanese equities about twice as high as U.S. equities. Or, if our interest is in the cost-of-capital question rather than in the is-Japan's-market-too-high question, the correction still leaves Japanese earnings/price ratios at about half U.S. levels.

Once we get the corrected Japanese earnings/price ratio up to the neighborhood of .04, it becomes slightly easier to explain the differential vis-à-vis the United States (which is at .09 when similarly adjusted by French and Poterba). If, for example, the expected rate of growth of earnings g_e in Japan were 2.5 percent faster than in the U.S. and the required rate of return were 2.5 percent lower, that would explain the differential. But if it is true that the

24. When Aron (1989) converts the Japanese P/E ratio to U.S. accounting practices, and adjusts for cross-holding, he lowers it from a reported 49.6 in 1989 to 19.1 (compared to 13.5 in the United States).

Table 8.2 Adjusted P/E Ratios, Japan, 1975–88

Year	Unadjusted P/E	Cross-Holding			Depreciation Adjustment			
		Factor	Interim P/E	Reserves Factor	Method 1		Method 2	
					Factor	P/E	Factor	P/E
1975	25.2	.784	19.8	.98	.599	11.5	.905	17.2
1976	22.0	.824	18.1	.97	.655	11.6	.920	16.1
1977	19.3	.797	15.4	.97	.684	10.2	.926	13.7
1978	21.5	.792	17.0	.97	.704	11.7	.931	15.3
1979	16.6	.778	12.9	.97	.717	9.0	.935	11.7
1980	17.9	.770	13.8	.97	.755	10.1	.947	12.6
1981	24.9	.764	19.0	.97	.702	13.0	.932	17.1
1982	23.7	.769	18.2	.97	.700	12.4	.931	16.3
1983	29.4	.795	23.4	.97	.692	15.8	.936	21.1
1984	26.3	.734	19.3	.97	.711	13.3	.943	17.5
1985	29.4	.694	20.4	.97	.668	13.3	.924	18.2
1986	58.6	.695	40.7	.98	.624	24.8	.908	35.7
1987	50.4	.665	33.5	.97	.660	21.5	.920	29.8
1988	54.3	.669	36.3	.97 ^a	.660 ^a	23.2	.920 ^a	32.1

Source: French and Poterba (1989). Their calculations are described in the text. The unadjusted P/E ratio corresponds to the NRI 350 index.

^aValues for 1988 estimated using 1987 data.

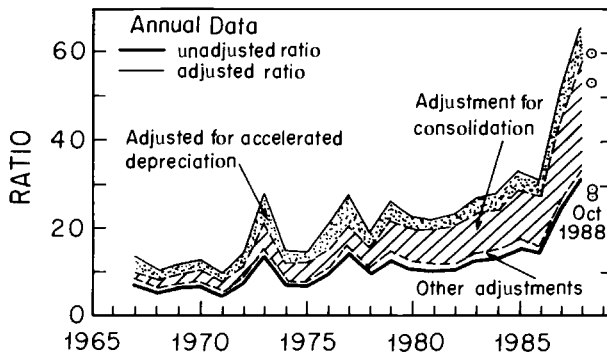


Fig. 8.3 Adjustments to price/earnings ratio

Source: Lawler, Loopesko, and Dudey (1988).

required rate of return is lower by, say 2.5 percentage points, what might be the source of this difference?

We consider in turn three possibilities: more favorable tax treatment, a lower real interest rate, and internal financing that is cheaper than the market interest rate. In the end, the paper will favor the third explanation, especially

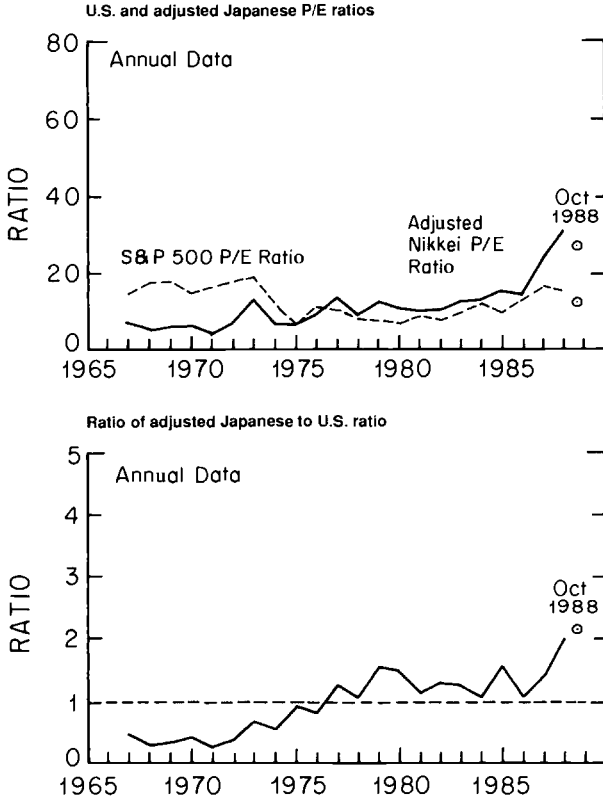


Fig. 8.4 Price/earnings ratios

Source: French and Poterba (1989).

for the period before liberalization, together with the second explanation, especially for the period since liberalization.²⁵

8.3.3 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:

25. There is a fourth possibility, that the "equity premium" (defined as the expected rate of return on equity minus the interest rate) is smaller for Japan, which would in theory require that the Japanese stock market be less risky than the American stock market. Ueda (1990, pp. 362-64) argues that the risk premium in the Japanese stock market declined sharply between 1982 and 1988, but can find little evidence of a corresponding decline in riskiness. Lawler, Loopesko, and Dudey (1988, pp. 26-27) conclude 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. (Baldwin 1986 and the appendix to Ando and Auerbach 1988 find no sign that the expected rate of return on Japanese securities is lower, even for a given amount of risk.)

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, or even than in other countries such as the United Kingdom, which cut its corporate tax rate in 1984 (Hale 1987, p. 1). In 1985, the Japanese government raised 5.9 percent of its tax revenue from corporations, as compared to only 2.1 percent in the United States (Shoven 1989; see also Noguchi 1985). This has made it difficult to claim a tax advantage for Japanese industry.²⁶

Indeed, when Ando and Auerbach (1985) 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" (p. 25). 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; but 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 is higher). But Ando and Auerbach compute an upper bound on this tax advantage, and claim that it is very small. Thus they feel able to "rule out" the claim that the corporate tax system gives Japanese firms a cost-of-capital advantage (p. 37). Noguchi (1985), taking into account the advantages of borrowing, also concludes that the tax burden is higher on Japanese, not U.S., corporations.

Other authors have ascribed more importance to the tax advantages of borrowing in Japan. Hatsopoulos and Brooks (1989), for example, emphasize that the definition of tax-deductible borrowing is more permissive in the Japanese tax code than in the American.

Bernheim and Shoven (1986) dispute the prevailing approach in public finance of presupposing that the (pretax) real interest rate must be constant across countries, in light of the observed failure of this condition. They first compute 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 percent). They

26. The paper treats separately the possibility that favorable treatment of *saving* in the Japanese tax system has been one of the causes of high household saving in Japan. This effect, if it existed, would operate via a low real interest rate.

find a smaller tax wedge on capital in Japan than in the United States, with the result that the after-tax cost of capital in Japan is negative.²⁷ They attributed this result to the greater importance of interest payments (tax deductible, on a nominal basis) in Japan.

Bernheim and Shoven then repeat 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 rises substantially in the 1980s as a result, particularly, of the much higher real interest rate (5.0 percent, as compared to 2.0 percent in the 1970s).²⁸ The real interest rate was higher in Japan as well, but there remains a substantial difference in the after-tax costs of capital in 1985 (5.48 for the U.S. vs. 2.76 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 include 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. Fukao (1988, pp. 339–41) finds a larger tax wedge (less negative) for Japan than the United States during the period 1981–84 but also finds 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 that had been long sought by the ruling Liberal Democratic party. The reform, among other things, cut the Japanese corporate tax rate from 42 percent to 37.5 percent (with the full cut not effective until 1990).²⁹ This leaves the tax rate only slightly higher than the current rates in the United States (34 percent) or the United Kingdom (35 percent).³⁰ Shoven (1989) updates his calculations of the effective tax rates on corporate investment. He finds that the effective tax rate on investments in Japan is up sharply to 32 percent in 1988 (as compared to 5 percent in 1980). Part of the reason is the tax reform: in Shoven's calculations (unlike Ando and Auerbach 1985), the high *average* corporate tax rate in Japan worked to reduce the effective *marginal* tax rate on new investment, because it increased the value to the corporation of borrowing to finance the

27. Consistent with the findings of Shoven and Tachibanaki (1988).

28. Bernheim and Shoven artificially boost the U.S. real interest rate for the 1970s up a bit, because it was in fact observed to be negative, which would "wreak havoc" with the methodology that they adopt to evaluate tax systems.

29. The tax rate on undistributed profits during the period 1984–87 was 43.3 percent (Homma, Maeda, and Hashimoto 1986, p. 14; Homma 1987, p. 21). However, it had been lower in the 1950s and 1960s, ranging from 35 percent to 40 percent (Homma et al. 1984, p. 124, table 2.39; Shoven and Tachibanaki 1988, table 3.6).

30. When state and local taxes on corporations are added in, the Japanese rate is about 50 percent and the U.S. rate about 40 percent. These numbers are taken from Shoven (1989). 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.

investment and then deducting the interest payments from its taxable income. He thus estimates 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 is not the tax reform, however, but rather the sharp decline in expected inflation relative to the 1970s. This decline is estimated to have raised the effective tax rate by 23 percentage points. The fall in the inflation rate in Japan (from 9 percent in the 1970s to 1 percent) means that the favorable distortion caused by the tax deductibility of nominal interest payments is reduced. This leaves the effective Japanese tax rate still somewhat below the U.S. rate, which was at 41 percent in 1988 (up from 29 percent before the Tax Reform Act of 1986).

It is possible that the moderate tax advantage that remains in Shoven's numbers does not adequately take into account the downward trend in the Japanese reliance on debt,³¹ and that by now little is left of the Japanese tax advantage. Ando and Auerbach (1985, 1988) dismissed the importance, in this context, of taxes altogether.³² 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 two papers were written, the difference in tax treatment between the two countries has, if anything, narrowed. (At the same time that the U.S. tax reform of 1986 rolled back investment incentives for U.S. firms, 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.)³³ If the public finance experts think that taxes are of, at best, second-order importance in comparing the cost of capital between the United States and Japan—or that the difference has, if anything, gone *against* Japanese corporations—why should international economists disagree?

8.3.4 Total Stock Market Capitalization and the Late-1980s Run-up

The empirical fact that dominates the study of Japan's stock market is the tremendous run-up in prices since 1970, especially in the 1980s. We have

31. Recall the figures from French and Poterba (1989) that by 1988 the debt/equity ratio in Japan had fallen below that in the United States. Noguchi (1985, pp. 9, 18) lists 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 thinks that the Japanese burden has been higher than the U.S. burden all along). The most important of the reasons (as with Shoven 1989) is the fall in the inflation rate.

32. Takenaka (1986) concludes that the impact of the investment tax credit on Japanese investment is negligible.

33. The previously existing prosaving 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). It is discussed below under the topic of determinants of the real interest rate in Japan. Iwata and Yoshida (1987) calculated that the abolition of the prosaving 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-à-vis the United States), despite the accompanying reductions in Japanese corporate taxes. (They, unlike Shoven, find that the latter work to reduce the after-tax cost of capital in Japan.)

already discussed the level of stock prices when they are compared to dividends and when they are compared to earnings. The same trend is evident when comparing total capitalization (price times number of shares) in Japan to capitalization in the United States.

Total stock market capitalization in Japan had, by 1989, surpassed the United States: 44 percent of the world versus 29 percent, in the conventional statistics.³⁴ But market values need to be adjusted for the double counting that results from intercorporate share ownership. Nearly two-thirds of corporate equity in Japan is held by other corporations. When French and Poterba (1989) adjust the Japanese market for cross-holdings, they find that it is still smaller than the United States: 33 percent of the world capitalization versus 36 percent for the United States. When McDonald (1989) adjusted for cross-holdings (or *mochiai* in Japanese) he found, as of early 1989, that the Japanese market was indeed larger than the U.S. market: 39 percent versus 33 percent. But the ranking again reversed with the fall of Japanese stock prices in early 1990. In any case, the growth of the Japanese market in the 1980s is astounding by any measure (a 68-fold increase over 1970).

French and Poterba observe that the magnitude of the 1986–88 run-up in the stock market is equally impressive when measured relative to GNP. Their computed ratio of adjusted equity to GNP fluctuated between .14 and .33 during the period 1970–85 and then rose sharply to .68 by 1988. (Meanwhile, the U.S. ratio, though more than twice as high as the Japanese ratio in the early 1970s, was only .49 in 1988.)

The only ratio where French and Poterba do not find potentially explosive behavior is the ratio of equity prices to the replacement cost of capital, that is, Tobin's Q . They do find that the Q ratio in Japan increased about 35 percent from 1973 to 1987, to .67 or .77, depending on the method of calculating net equity outstanding. But the U.S. ratio, at .71, is in about the same range. The fact that the replacement cost of capital in Japan has increased almost as much as stock market prices is tentatively attributed by French and Poterba to the fact that land prices have almost doubled since 1983 and the fact that companies hold a lot of land.³⁵ They thus tentatively conclude 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. (See comparison of stock prices and land prices in major cities in fig. 8.5.)³⁶

34. Hale (1989) opines that the dramatic reversal of the rankings of U.S. and Japanese capitalization over the course of the 1980s represents the financial market's negative judgment on Reaganomics as compared to policy-making by bureaucrats in the Japanese Ministry of Finance. But when Murphy (1989) observes the same reversal, he worries that Japan's policymakers are not ready to accept the responsibility of greater weight in the world.

35. Japanese companies usually carry land on their books, not at current market price, but at the price of acquisition (which, in the case of land held since the nineteenth century, is essentially zero).

36. Ueda (1990, p. 357) finds that the market value of corporate shares after 1983 surpassed the reported value of corporate assets including land. But the final version of the paper does not rule out the possibility that land prices explain the rise in stock prices, in light of claims that official land prices are greatly understated.

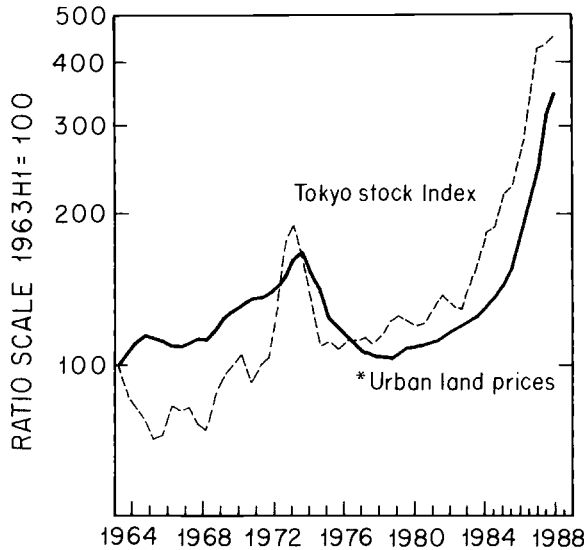


Fig. 8.5 Real Japanese urban land prices and real Tokyo Stock Index

Source: Lawler, Loopesko, and Dudey (1988).

Note: Both series deflated by an index of consumer prices.

*Index of urban land prices, six largest cities, commercial area.

8.3.5 Land Prices

The soaring price of land in Japan is a major phenomenon in its own right. In 1986 the price of land in Tokyo (for residential use) was 150 times the price in New York, 16 times the price in London, 35 times in Paris, and 11 times in Munich (Iwata and Yoshida 1988, p. 509). The unit cost of land for the country overall was about 40 times as high as in the U.S.³⁷ Thus the value of all the land in Japan is several times as great as the value of all the land in the (much larger) United States.³⁸ A favorite “factoid,” which is apparently true, is that the grounds of the Imperial Palace in Tokyo, when evaluated at the land prices of the adjoining Otemachi area, is worth more than all the land in the State of California (see, e.g., Boone and Sachs 1989; Boone 1989b).

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 gr , then the price/rental ratio should be given by

37. Ito (1989). In 1987, the average price of usable land in Japan was 90 times that in the United States, according to Boone (1989a).

38. In 1984, the value of land in Japan was 3.17 times GNP, while in the United States it was only .80 times GNP (Sachs and Boone 1988).

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

Thus the same possible explanations arise for high land prices as arise for high equity prices: a low discount rate r or a high growth rate gr . Noguchi (1987, as described by Ito 1989) observes that the price/rental ratio is much higher in Tokyo than in other major world cities,³⁹ and concludes that about half of the Japanese land price is a speculative bubble, that the demand for land is based on a self-confirming expectation of future capital gains. But Ito (1989) disagrees, arguing that Noguchi omits the possibility that expectations of rising land prices could be correctly based on fundamentals, because the relative price of land will increase in a growing economy where the supply of land is fixed by geographical and other factors.⁴⁰

In terms of the above equation, gr could be high. Ito shows in an overlapping generations model, in which land is a substitutable factor of production, that if land is in fixed supply, its relative price will increase at a rate essentially given by the real growth rate of the economy. Boone and Sachs (1989) argue similarly. Boone (1989b) concludes that one can explain the difference between Japanese and U.S. land values by fundamentals if Japanese GNP is expected to grow at roughly 2 percent a year faster than U.S. GNP.

The institutional factors that are listed in note 40 above are often cited as causes of the high cost of land in Japan. They are one component of the Structural Impediments Initiative (SII) launched by the U.S. government in 1989, on the theory that the high cost of land is in turn a cause of low consumption and low imports in Japan. But in the absence of macroeconomic differences like interest rates and expectations, these institutional factors could not in themselves explain the high price of land. In the first place, Boone (1989a) studies data across regions of Japan and finds that factors such as excess concentration in the Tokyo region, agricultural protection, and tax policies cannot explain differences in land costs. In the second place, even if these institutional factors could explain the high cost of land in Japan overall, they cannot serve as an explanation for the high price/rental *ratio*. As Boone (1989a, p. 14) notes, they would predict that, not only land prices in Tokyo, but *rents* as well, should far exceed those in other world capitals, which is not the case.

The expected-growth argument favored by both Boone and Ito tells us why land price/rental ratios in Japan are currently high. But it does not tell us why they should have *increased* so much over the last 18 years. In the theory, with

39. It is about five times higher than London. Boone (1989a, p. 47) estimates that the price of land in Tokyo is 150 times that in New York, despite little difference in rental rates on apartments and buildings.

40. There are a number of special institutional features that affect the Japanese land market, such as building height restrictions and sunshine laws, special protection for rice paddies, and a level of taxation of capital gains at the time of sale that is much greater than annual property taxes (on the last point, see K. Takagi 1989). Some of these features can be viewed as contributing to the inelasticity of the supply of land.

growth in the economy, the price and rent should each rise proportionately. Instead, while land and housing prices have skyrocketed, the rental rate has remained approximately constant in real terms (see the last four lines of table 8.3). The price/rental ratio for housing increased by 67 percent between 1970 and 1987.⁴¹

8.3.6 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. 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,⁴² 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 were other countries’ markets (Lawler, Loopesko, and Dudey 1988, pp. 31–33; Murphy 1989). Hardouvelis and Peristiani (1989, p. 19) find that “margin requirements in Japan have proved to be an effective tool of controlling wild gyrations in stock prices.” But 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 characteristics that are sometimes attributed to Japanese stock markets).⁴³

It is possible that some short-term movements in financial markets represent speculative bubbles. But before we do anything so radical as attributing the longer-term movement in Japan’s equity and land prices to a speculative bubble, we return to the possibility of a low discount rate in Japan.

8.4 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 would be explained by some com-

41. The price of land alone went up even more than the price of housing over this same period. The price/rental ratio for land increased by 14 percent between 1975 and 1986 (27 percent in the three big cities). The source is Iwata and Yoshida (1988, p. 510). Ito’s (1989) theory may, however, give us a reason why land price/rental ratios in Japan should be higher than in the United States, even aside from any difference in real growth rates of the economies. Ito shows that if the supply of available land increases at the growth rate of the economy, then the relative price of land will be constant. In terms of the equation, if the supply of land is more elastic in the United States than in Japan, then g_r will be lower, and, therefore, $P_{land}/rent$ will be lower in the United States.

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

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

Table 8.3 Increases in Prices of Nontraded Services in Tokyo

Category	Ratio of 1987/ 1972 Prices
Electric light	1.72
Gas	2.39
Water	5.83
Mail	4.10
Phone	1.00
Telegram	2.22
Freight	3.46
Rail	3.89
Tramcar	7.00
Bus	5.33
Newspaper	3.15
Receiving fee	2.24
Cinema	2.14
Bathing	5.93
Hairdressing	4.04
Cleaning	2.49
Lodging	2.40
House price	3.40
House rental	2.29
Tokyo CPI (prewar base)	2.47
National CPI	2.45

Source: *Economic Statistics Annual*, Bank of Japan (March 1988), pp. 329–30, except for “house price” and “house rental,” which are from Iwata and Yoshida (1988), p. 510.

bination 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.⁴⁴ 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,⁴⁵ as the result of a fall-off in the previously

44. It is easy enough to explain the real interest differential and international capital flows vis-à-vis the United States in the early 1980s by the U.S. fiscal expansion.

45. Indeed, Balassa and Noland (1988, p. 84) report that the Japanese corporate sector was in surplus in the years 1974–77, although others show only a declining deficit (where both financial and nonfinancial corporations are included; Lincoln 1988, table 3-2, pp. 76–77).

high level of investment (which helps explain the extension of the period of cheap capital well past 1973). But the high Japanese private saving rate is the factor most often cited as applying throughout the period.

8.4.1 Household Saving Rate

The Japanese household saving rate, at 23.0 percent of disposable income averaged over 1970–86, is among the highest among the industrialized countries. Other figures for comparison are the United States at 11.5 percent, the United Kingdom at 10.4 percent, and France at 17.7 percent (Blades 1988, p. 18). The question of why the saving rate is so high in Japan is another major topic in itself. We briefly run through some of the arguments that have been suggested.⁴⁶

Hayashi (1986) claims that much of the apparent differential in personal saving rates between Japan and the United States can be explained by four accounting differences. But even after adjustment, a substantial differential remains.⁴⁷

At least six reasons for the high Japanese saving rate have been given, by Hayashi, Horioka, and others.

1. *A high growth rate.* The older dissaving generation are always outweighed by the younger saving generation.⁴⁸

2. *Demographics.* Currently, Japan has one of the longest life expectancies and smallest ratio of aged to working-age population (15 percent, vs. 20 percent in the United States and 23 percent over all the OECD countries).⁴⁹ Horioka (1986) has estimated that the age ratio can explain a difference in saving rates of 11.5 percent.

An additional possible explanation for the high saving rate in Japan—not one of the six explanations that appear on standard lists—is that it is the most nonnuclear country of the G-5. Slemrod (1988) points out that a higher perceived threat of nuclear annihilation should reduce people's saving rate by reducing their expected horizons, and he offers supporting evidence from a cross-section of 20 countries. Survey results show that Americans report a

46. Horioka (1990) offers the most up-to-date and comprehensive of a number of surveys.

47. According to Blades (1988, pp. 18–19), adjusting for consumer durables in 1986 raises the U.S. household gross saving ratio from 11.5 percent to 22.1 percent, while only raising the Japanese ratio from 21.2 percent to 25.8 percent. When the saving ratios are averaged over 1970–86, adjusting raises the U.S. ratio to 23.6 percent and the Japanese ratio to 26.1 percent. See also Balassa and Noland (1988, pp. 80–96). Takayama et al. (1988) go so far as to say, on the basis of several accounting corrections, that the Japanese saving rate is not high at all.

48. As in the life-cycle hypothesis of Franco Modigliani.

49. Over the next 30 years, Japan will go from having the highest ratio of working age population to elderly out of the G-5 countries (5.9 in 1985) to the lowest (2.3 in 2020; see Shoven 1989). A simulation by Auerbach et al. (1989, p. 117), based on the rapid aging of the Japanese population, predicts that the national saving rate in Japan will decline from 22 percent (close to Germany's) to a minimum of 1 percent, over the period 1990 to 2028 (falling below the U.S. national saving rate in the year 2020).

higher perceived likelihood of world war than do the Japanese, and, indeed, Americans report the highest of all 20 countries.⁵⁰

3. *An underdeveloped social security system.* There are conflicting effects on the saving rate,⁵¹ and Horioka argues that they approximately cancel out.

4. *The bonus system of employee compensation.* The lump-sum payments at the end of each half-year might act as forced saving. This would require a sort of "calendar illusion." But Ishikawa and Ueda (1984) find that the bonus system does indeed have an effect on saving (though they estimate it to be at most three percentage points).

5. *The high price of land and housing.* Even before recent price increases (1985–87), housing prices in Japan were almost twice as high as those in the United States. They are 2.5 to 2.7 times higher if differences in floor space are taken into account (Horioka 1988, p. 218). As a result, housing constitutes 65 percent of saving in Japan as compared to 31 percent in the United States (Frankel 1988b, n. 33).

By itself, the saving implications of expensive housing are not as clear as often asserted.⁵² But a positive effect on saving does follow from the unavailability of consumer credit; Hayashi, Ito, and Slemrod (1988) report that the Japanese have to accumulate up to 40 percent of the purchase price as a down payment.⁵³ Also, mortgage interest is not tax deductible as it is in the United States. The Japanese appear to have a greater cultural bias against personal indebtedness than do Americans; rather than using credit cards to postpone payment for purchases, for example, the Japanese are fond of magnetic cards that allow them to *prepay* and then deduct purchases as they are made.⁵⁴

50. Not taken into account is any tendency for the Japanese to rate their odds of nuclear annihilation, conditional on world war breaking out, as lower than Americans.

51. On the one hand low Social Security benefits encourage workers to save more, but on the other it encourages them to retire early.

52. Sachs and Boone (1988) construct a model to answer the question of what would happen to saving if land prices fell, in response, for example, to the sorts of measures often urged on Japan by Americans: the ending of prohibitions on rice imports and the liberalization of land-use restrictions. Their model predicts that saving would *rise* rather than fall, due to the fall in wealth. Similarly, Shibuya (1988) estimates that the wealth effect would nearly eliminate any positive effects of land prices on saving; and Yoshikawa and Ohtake (1989) show that the estimated positive effect of higher land prices on saving by future home buyers may be more than offset by estimated reductions in saving on the part of those who abandon plans ever to buy a home.

53. Horioka (1988, p. 219) reports that Japanese families *plan* down-payment ratios of 45 to 55 percent, but that *actual* down payments are as low as 20 percent. He argues (p. 229) that an increase in the availability of mortgage credit would not increase total saving, but would only result in a combination of lower pre-purchase saving (to make the down payment) and higher post-purchase saving (to pay off the loan).

54. Arguing against the idea that Japanese are culturally predisposed to save more is the fact that the high saving rates are only a phenomenon of the postwar era (as pointed out by Hale 1987, p. 26 and Balassa and Noland 1988, p. 81). Also sometimes listed as reasons for high saving rates in Japan are obstacles to consumption such as the inefficient retailing system, the lack of space in living quarters for consumer durables, and the lack of leisure time in the work schedule (see, e.g., Balassa and Noland 1988, p. 94). But economic theory is dubious as to the implications for the

Balassa and Noland (1988, p. 92) argue that a special combination of high housing prices and the strategic bequest motive on the part of the elderly are the best explanation of high saving.⁵⁵ Horioka (1985, 1988) reports that, while opinion surveys in the United States report old age as the most important motive for saving, surveys in Japan place saving to buy a house as more important (together with education and marriage). Horioka (1986) estimates that high land prices explain a difference in saving rates of 5.0 percent.⁵⁶

6. *Tax incentives.* In the past, the tax system has deliberately increased the after-tax return to households in a number of ways. The Japanese could escape paying taxes on much of their savings by taking advantage of such exemptions as deposits in the *maruyu* system and the Postal Savings System. A family of four could legally hold \$455,000 in tax-free assets.⁵⁷ The 1987 tax reform, effective April 1988, abolished the tax-exempt savings accounts. But it did retain two prosaving features of the tax system. First, when a saver does pay tax on interest earnings or dividends, they are taxed separately from his income and at a rate lower than the top marginal rate. Second, although the December 1988 tax reform, effective April 1989, instated the taxation of capital gains on sales of securities (which were previously not taxed), the tax rate is still below that of the United States (especially since the 1986 U.S. tax reform) and other major countries. The saver gets his option of 1 percent of the value of the transaction or 20 percent of the capital gain (Ministry of Finance 1988; Shoven 1989).

Although one of the reasons behind the Japanese tax reform was foreign pressure (*gaiatsu*) to make the Japanese system less prosaving and therefore more like the U.S. system, the effect of this decrease in the after-tax return on the supply of saving and therefore on the real interest rate is not clear. In theory, the substitution effect and income effect go in opposite directions. Saxonhouse (1982) believes that the Japanese are, in fact, target savers: because their goal is to save enough to buy a home, a decrease in the after-tax rate of return means that they now need to save *more*, not less, to achieve the same goal. In empirical studies, a positive effect of the after-tax return on the saving rate has been difficult to find. (For Japan, see Makin 1985 and Hayashi 1986. Iwata, Suzuki, and Yoshida 1988, p. 129–31, however, break down the tax

saving rate of institutional impediments that apply to future consumption as much as to current consumption. Wealth is only of use to the household to the extent that it is consumed sooner or later.

55. Dekle (1989b) also focuses on the behavior of the Japanese elderly, finding that they are not dissaving as they should. Dekle (1989a) shows that the reason could be a combination of a strong bequest motive and a constraint against borrowing on home equity.

56. Hale (1987, p. 27) believes that "any set of structural reforms which reduce the price of housing while increasing the tax incentive to own it could have a more dramatic effect on savings and consumption than many policies seemingly targeted on savings behavior itself."

57. The figure is from Shoven (1989). Furthermore, many households held more tax-free accounts than the number to which they were legally entitled; the total number of accounts in the Postal Savings System was said to be twice the population.

rate and other variables by income class and do find evidence of an effect in this way.) A simulation analysis in Hayashi et al. (1988) concluded that the Japanese saving rate would go down by a few percentage points if Japan were to abolish the *maruyu*, but this was not a statistical test.⁵⁸

8.4.2 International Capital Mobility

Even if a tax reform or a land-use reform were to reduce the Japanese level of household saving toward that in Western countries, 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 abroad) at an unchanged rate of return.⁵⁹

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.⁶⁰

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,⁶¹ seeming to confirm the Feldstein-Horioka results. We saw in section 8.1 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.⁶² 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 differen-

58. So far, there has apparently been no sign of a significant decrease in the household saving rate in Japan since the April 1988 abolishment of the *maruyu*. (It should be noted that the latest tax reform also instituted a sales tax—indeed this was its politically most controversial feature—which could in theory have either a positive or negative effect on the saving/consumption decision, depending particularly on whether households believe that the government will raise the sales tax rate in the future.)

59. 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.

60. The “saving-retention” coefficient finally began to decline in the 1980s, however, according to the latest studies: Feldstein and Bacchetta (1989) and Frankel (1991). 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).

61. See, e.g., Mishkin (1984). Glick (1987) applies to Japan and other Pacific countries in particular.

62. 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).

tials, that the 1979–80 and 1983–84 liberalizations did indeed have the effects advertized (Otani and Tiwari 1981; Otani 1983; Frankel 1984, 1988b, 1991; Eken 1984; Ito 1986). By now covered interest parity holds as well for Japan (*vis-à-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.⁶³ 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 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.

8.4.3 Long-Term Real Appreciation of the Yen

It might be argued that real interest differentials and expectations of real depreciation exist only because of short-run factors such as sticky goods prices, and that they must vanish in the long run.⁶⁴ How then could the Japanese real interest rate have remained below the U.S. real interest rate for 30 years? One possible answer is that capital controls prevented equalization in

63. 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), Fukao (1987), Frankel and Froot (1987), Ito (1988), and Frankel (1988b).

64. The real appreciation of the dollar against the yen and European currencies beginning in 1981 was widely considered an example of Dornbusch "overshooting" caused by shifts in monetary or fiscal policy: the real exchange rate change would disappear over time as U.S. traded-goods prices adjusted downward in response to excess supply and Japanese traded-goods prices adjusted upward in response to excess demand.

the 1960s and 1970s,⁶⁵ that the differential after liberalization in the early 1980s was a transitory phenomenon, and that henceforth the differential will be zero.

But an alternative possibility is that investors have expected the yen to appreciate in real terms throughout the last 30 years. Let us decompose the real interest differential, $r - r^*$, by adding and subtracting the expected rate of appreciation of the yen, $appr^e$:

$$\begin{aligned} r - r^* &= (i - infl) - (i^* - infl^*), \\ &= (i - i^* - appr^e) + (appr^e - infl + infl^*), \end{aligned}$$

where i and i^* are the Japanese and U.S. nominal interest rates, respectively, and $infl$ and $infl^*$ are the Japanese and U.S. expected inflation rates, respectively. We see that, even if the expected rate of returns on domestic and foreign bonds are equalized when expressed in a common currency, that is, $i - i^* - appr^e = 0$, there will still be a nonzero *real* interest differential if there is a nonzero expected future real appreciation of the yen ($appr^e - infl + infl^*$). Expected real changes in the exchange rate would be ruled out if purchasing power parity held, but it is well known by now that purchasing power parity in fact fails to hold.

One reason to believe that there has indeed been such an expectation is that survey data show that market participants in the 1980s indeed expected a rapid appreciation of the yen against the dollar (Frankel and Froot 1987; Ito 1990; Froot and Ito 1989). A second reason to believe this is that the yen in fact appreciated steadily against the dollar in real terms over the postwar period. During the fixed exchange rate era, 1950–73, the yen appreciated against the dollar at an average logarithmic rate of 3.66 percent per year in real terms (using the two countries consumer Price Indexes [CPIs] to deflate). During the floating rate era, 1973–89, the real appreciation of the yen continued at an average rate of 3.46 percent per year. Even if one believes that the yen overshoot its equilibrium somewhat as of 1989—and many economists were saying that, to the contrary, the yen had not appreciated enough to be consistent with long-term fundamentals—the basic point about the trend in the real exchange rate would be little affected. With such a strong trend in the real exchange rate over the preceding 40 years, it is easy to believe that investors have long since come to incorporate into their long-term expectations a real appreciation of the yen of 3 percent per year. Thus it is easy to believe that, even if international arbitrage in the 1980s drove the U.S.-Japan interest differential to

65. One problem with identifying capital controls as the source of the U.S.-Japan real interest differential throughout the 1970s is that during the period 1976–78, when the covered interest differential was the largest in absolute magnitude, the nominal interest in Tokyo was *above* the yen interest rate in the London Euromarket, demonstrating that controls were acting to discourage capital inflow, not outflow, at least at the short-term end of the spectrum.

equality with expected appreciation of the yen, that this could have left a real interest differential as large as 3 percent.

How could the yen appreciate steadily against the dollar in real terms over such a long period? Many consider the tendency for purchasing power parity to hold at least in the long run to be virtually the most fundamental and traditional principle of international monetary economics. The observed trend also violates, to the extent that it is statistically significant, the currently popular hypothesis that the real exchange rate follows a random walk.

A number of explanations have been attempted for the long-term trend in the real yen, including a relatively low elasticity of imports with respect to income in Japan (Krugman 1989) and a relatively rapid rate of productivity growth in Japanese manufacturing (Marston 1987). A natural explanation is the classical observed pattern, most often attributed to Balassa (1964), that a rapidly growing country tends (1) to experience an increase in the price of its nontraded goods relative to its internationally traded goods (because of higher productivity growth in the traded-goods sector or else because nontraded goods are superior goods in consumption), and therefore (2) to exhibit an apparent real appreciation of its currency when the deflation is done using CPIs, which include a large share of nontradable goods within them.

Let us look at the real exchange rate defined in terms of consumer price indices:

$$(3) \quad E_{\text{real}} = E [\text{CPI}^* / \text{CPI}].$$

We will represent the CPI in each country as a weighted average of nontraded goods and traded goods (in Cobb-Douglas form). We use a and a^* to represent the weights of nontraded goods in the domestic and foreign country's price indices, respectively:

$$(4) \quad \begin{aligned} E_{\text{real}} &= E [P_n^{*a^*} P_t^{*(1-a^*)} / P_n^a P_t^{(1-a)}] \\ &= [(P_n^* / P_t^*)^{a^*} / (P_n^* / P_t^*)^a] [EP_t^* / P_t]. \end{aligned}$$

If the "law of one price" *does* hold for traded goods, then $P_t = EP_t^*$, and the last bracketed term in (4) drops out:

$$(5) \quad E_{\text{real}} = [(P_n^* / P_t^*)^{a^*} / (P_n^* / P_t^*)^a].$$

Equation (5) tells us that the real exchange rate will change if the *relative* price of nontraded goods changes in either the foreign country or the domestic country, even though purchasing power parity may hold perfectly well for the tradable share.

This description sounds like it was specially designed for Japan, where tradable goods consist primarily of manufactured, agricultural, and mineral products, and nontradables include housing, golf-club memberships, and other services. The model in Ito (1989) shows that if the supply of land is inelastic in Japan and elastic in the United States, the yen will appear to appre-

ciate in real terms as the economies grow (where the price of housing services is included in the relevant CPI).

Testing the hypothesis of a change in the relative price of nontraded goods, however, is more difficult than it might seem. Most sectors are at least partly traded in character. Table 8.3 singles out 17 specific services that are fairly clearly *not* traded and shows the relative change in their prices in Tokyo over the period 1972–87. Ten of the services, including particularly the forms of urban transportation, went up in price more than the general CPI, and seven less.⁶⁶ This provides some support for the hypothesis, though less than one might have expected.

There is an alternative way to view the decomposition of the economy into traded and nontraded. Virtually all sectors use at least some amount of internationally traded goods as intermediate inputs in production (e.g., energy). At the same time, virtually all sectors involve at least some domestic value added before the product in question is sold to the consumer, even if it is only shipping, marketing, and retailing. Indeed, the amount of resources devoted to the distribution system is notoriously high in Japan. It is possible that each sector has experienced an increase in the price of nontraded value added and inputs relative to its traded value added and inputs. Such a trend would explain a real appreciation of the yen calculated with CPIs, or even more disaggregated industry prices, even if the law of one price held perfectly for the traded component. This hypothesis may show up in the increasing ratio of the CPI to producer price indices or unit labor costs in Japan. It is also relevant to the recent literature on pricing markups for Japanese imports and exports.⁶⁷ In any case, the hypothesis bears further investigation.

Regardless of whether the relative price of nontraded goods does in fact prove to be the correct explanation of the real appreciation of the yen, it is undeniable that a strong sustained trend of real appreciation has taken place, with the implication that a real interest differential of 2 or even 3 percent is perfectly consistent with highly integrated financial markets.

I 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), that 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

66. The source is the Bank of Japan. If the price of housing and the rental rate are added to the list, then the number increasing faster than the CPI is 11 out of 19. The answers are the same regardless whether the Tokyo CPI is used (Management and Coordination Agency, a prewar base) or a national CPI (IFS).

67. On pricing-to-market by Japanese firms, see Branson and Marston (1989), Froot (1988), Marston (1990), and Ohno (1989).

cost of capital to some Japanese firms.⁶⁸ But 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, it does to the present. How can one explain that price/earnings ratios and price/rental ratios were not also high in the past, that is, that they rose sharply in the 1980s?

8.5 Internal Corporate Financing and Relationship Banking, Versus the Market System

The standard formula for the price/earnings ratio and the price/rental ratio, $1/(r - g)$, assumes 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, that is, a common pool of funds into which most savers deposit and from which most investors draw off.⁶⁹ This description applies 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 Meerschwan (in this volume) explains at greater length.

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.⁷⁰ Equally familiar is the claim that large corporations or *keiretsu* take profits from one activity and cross-subsidize investment in another. But it has seldom been clear why Japanese industry should want to do this.⁷¹

68. 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 nontraded 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.

69. 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.

70. Of 12 government financial institutions—which as recently as 1980 supplied 17 percent of funds for investment in plant and equipment—the Japan Development Bank and the Small Business Finance Corporation were particularly notable in channeling subsidized investment funds to selected industries (Lee 1988, pp. 25–36). The more general low-interest rate policy of the government before 1973 was explicit (e.g., Tamura 1987).

71. See Abegglen and Stalk (1985), Gerlach (1987) and Hodder and Tschogl (1985). If the investment is expected to be profitable in the long run, then it should take place 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.

Recent theoretical developments have helped us understand better how the cost of internal finance can be less than the cost of external finance.⁷² One route is asymmetric information, between the firm's managers and the typical stockholder or bond holder in the market, regarding the rate of return on an investment; another route is incentive or "agency" problems. "Internal finance" in the United States would be 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.

Retained earnings are also important in Japan, important in particular to understanding why the cost of capital remained low in the 1970s. Ever since the Japanese economic growth rate fell off with the oil shock of 1973, the number of profitable investment projects has fallen short of 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. Retained earnings appear to be a cheaper source of financing than issuing corporate debt or equity, because they get around problems of incomplete information or incentive incompatibility.

It can be argued that in Japan "internal finance" de facto includes as well borrowing by a firm from its main bank under a long-term relationship. 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 information and incentive problems.⁷³ Hodder (1988b) concludes that the advantages of "lender monitoring" are key, and that they may explain why studies like Ando and Auerbach (1988) find that the cost of capital is lower in Japan than in the United States.⁷⁴

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. It has

72. For example, Bermanke and Gertler (1989) in the macroeconomic literature, and Myers and Majluf (1984) and Jensen and Meckling (1976) in the finance literature. The first two focus on information costs, the last on incentive problems.

73. For example, Crum and Meerscham (1986), Hamada and Horiuchi (1987), Hodder (1988a, 1988b), and Hoshi, Kashyap, and Scharfstein (1990a, 1990b). 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) argues that this difference constitutes in itself a way that the Japanese system is better able to circumvent agency problems.

74. 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. 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).

long been true that variables such as cash flow did a better job econometrically of explaining business fixed investment than theoretically preferable variables such as the real interest rate and Tobin's Q (at least when each factor was considered on its own; e.g., Jorgenson 1971; Meyer and Kuh 1957). The new theories of information and incentive problems, however, now provide the desired rigorous theoretical basis for including cash flow. Fazzari, Hubbard, and Petersen (1988) have 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 on 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 Scharfstein (1990a) apply a similar methodology to Japan, where the segregation of firms can be more persuasively 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.⁷⁵ 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).

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

75. 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 nonaffiliated firms.

process that accelerated in the 1980s as the result of international liberalization as well as domestic deregulation.⁷⁶ The share of bank lending in total external financing fell from 84 percent in 1971–75, to 57 percent in 1981–85, as many firms found they could borrow more easily or more cheaply on the open market. But if the relevant interest rate was higher in the 1980s than it was in the past, this raises some difficult questions.⁷⁷ 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 today. (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 or the growth rate of the economy than like the observed interest rate or the still lower cost of internal finance.⁷⁸ The individual small investor did not have such opportunities; he was given little alternative to depositing his savings in a low-interest-rate account.⁷⁹ 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 it allowed for the firm to buy back its own shares, when it should have had plenty of profitable new projects to invest in (Hatsopoulos and Brooks 1989, p. 12). 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: the removal of

76. Crum and Meerscham (1986) and Meerscham (in this volume), e.g., discuss the decline of “relationship banking” and its replacement by the market.

77. 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. 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 percent in the period 1970–74 to 46.3 percent 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.

78. 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.

79. As noted in Meerscham (in this volume), only preexisting shareholders received advantageous new-share subscription rights.

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), 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, the legalization of warrant bonds in 1981, the legalization of noncollateralized bonds for sufficiently safe corporations beginning in 1983, and the liberalization of issues of Euroyen 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: establishment of new short-term financial markets (in yen-denominated banker's acceptances, June 1985,⁸⁰ short-term bonds, November 1986, and commercial paper, November 1987), 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), establishment of an offshore market in Japan (December 1986), the admission of major American securities companies to the Tokyo Stock Exchange (approximately 22 by the end of 1987), and inclusion of foreign firms in the syndicate through which the Japanese government sells its bonds and in the trust business (nine banks authorized after October 1985). In addition, 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).⁸¹

Note that 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.

In a follow-up paper, Hoshi, Kashyap, and Scharfstein (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 1977–82, and divide it into a subsample that shifted emphasis thereafter from bank borrowing to direct market finance and a subsample 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.

80. Volume in the yen-denominated Bankers' Acceptances market soon began to decline, however, in favor of other instruments, and it died out completely in November 1989 (*Nihon Keizai Shimbun*, 14 December 1989).

81. Shinkai (1988). Hoshi, Kashyap, and Scharfstein (1990b). Crum and Meerschwam (1986). Feldman (1986). Frankel (1984), Sakakibara and Kondoh (1984). Suzuki (1987). and Ido (1989). among many other sources.

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 questionable 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 an (artificially) high level of investment. Such a proposition would be consistent with the legendary Japanese corporate emphasis on maximizing market share at the short-run expense of current profits (e.g., Abegglen and Stalk 1985; Crum and Meerschwam 1986; Meerschwam, in this volume). An alternative line of argument, adopted by Hatsopoulos, Krugman, and Summers (1988), is 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.⁸² Perhaps the United States has recently been working to "drag the Japanese down to its level."

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, although he also concludes that it must have been advantageous for them to enter into these relationships in the first place.

Hoshi, Kashyap, and Scharfstein (1990b) 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.⁸³ The alternative possibility is that the change is not desirable from the

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

83. It is noteworthy that agencies to rate the creditworthiness of corporations (the analogues of Moody's or Standard and Poor's) did not develop in Japan until recently.

viewpoint of the well-established firms. Unfortunately for this hypothesis, there is little evidence that banks and other financial institutions are supplying less credit to their domestic clients (or offering less-favorable terms) and instead taking advantage of the higher interest rates in the United States by lending abroad. Still, it may not be possible for trust and long-term relationships to survive in an environment where newcomers deal only in explicit contracts.

Even under this theory, which agrees that the typical *keiretsu* firm may face a higher cost of capital now than in the past, the deregulation and internationalization of Japanese financial markets over the last 10 years is advantageous to one group of firms: those that never had access to preferential financing from main banks or government agencies in the past. While small firms lack the reputation necessary to borrow abroad even today, there are many large and medium-sized firms that were never members of *keiretsu* or favored by the government and had little means of financing expansion before the advent of free financial markets. For this group, internationalization has probably lowered the cost of capital, whether they now finance themselves by issuing bonds in the Euromarket or in newly liberalized domestic markets.⁸⁴

8.6 Conclusions

The overall conclusions that emerge from the literature may be summarized as follows. (1) The cost of capital was lower in Japan than in the United States in the 1970s and 1980s. (2) One aspect of this difference was lower real interest rates. (3) Low real interest rates and high expected growth rates can go far toward explaining the high *levels* of equity and land prices (relative to earnings and rents, respectively) but not the great *increases* of the 1980s. (4) The high Japanese saving rate was responsible for the low real interest rates; Japanese tax policy plays no clear role. (5) Financial liberalization narrowed cost-of-capital differences in the 1980s; now Japanese saving goes to finance investment abroad almost as easily as at home.

Further conclusions of this paper that are perhaps novel are as follows. (6) It is possible for the real interest rate in Japan to be below that in the United States, despite international arbitrage. (7) The main relevant effect of the internationalization in Japan may have been to accelerate the process whereby corporate finance becomes market oriented, so that (8) affiliated firms are losing the special privilege of borrowing at a cheaper rate, while (9) unaffiliated firms are now able to borrow more cheaply than before, at the going interest rate. Finally, (10) the increased availability of funds that can be used for asset-market arbitrage allowed the great run-up in equity prices and land prices in the 1980s.

84. Many Japanese corporations now borrow in the Euromarkets in, e.g., Luxembourg. Often convertible and warrant issues are ultimately acquired by *Japanese* residents. In this way internationalization facilitates an end run around domestic Japanese rigidities, and makes Japanese finance more market oriented, even when neither the borrower nor the lender is foreign.

References

- Abegglen, James, and George Stalk, Jr. 1985. *Kaisha, The Japanese Corporation*. New York: Basic Books.
- Aggarwal, Raj, Ramesh Rao, and Takato Hiraki. 1990. Regularities in Tokyo Stock Exchange Security Returns: P/E, Size, and Seasonal Influences. *Journal of Financial Research* 13, (Fall): 249–63.
- Ando, Albert, and Alan Auerbach. 1985. The Corporate Cost of Capital in the U.S. and Japan: A Comparison. NBER Working Paper no. 1762, October.
- . 1988. The Cost of Capital in the U.S. and Japan: A Comparison. *Journal of the Japanese and International Economies*, 2:134–58.
- Aron, Paul. 1989. Japanese P/E Multiplies: The Tradition Continues. *Japanese Research Report* no. 35. Daiwa Securities America, Inc., October 23.
- Auerbach, A., L. Kotlikoff, R. Hagemann, and G. Nicoletti. 1989. The Economic Dynamics of an Aging Population: The Case of Four OECD Countries. *OECD Economic Studies* no. 12 (Spring): 97–130.
- Balassa, Bela. 1964. The Purchasing Power Parity Doctrine: A Reappraisal. *Journal of Political Economy* 72:584–96.
- Balassa, Bela, and Marcus Noland. 1988. *Japan in the World Economy*. Washington, D.C.: Institute for International Economics.
- Baldwin, Carliss. 1986. The Capital Factor: Competing for Capital in a Global Environment. In *Competition in Global Industries*, ed. Michael Porter, 185–223. Boston: Harvard Business School Press.
- Bernanke, Ben, and Mark Gertler. 1989. Agency Costs, Net Worth and Business Fluctuations. *American Economic Review* 79:14–31.
- Bernheim, B. Douglas, and John Shoven. 1986. Taxation and the Cost of Capital: An International Comparison. In *The Consumption Tax: A Better Alternative?*, ed. C. E. Walker and M. A. Bloomfield, pp. 61–85. Cambridge, Mass.: Ballinger.
- Blades, Derek. 1988. Household Saving Ratios for Japan and Other OECD Countries. In *Global Role of the Japanese Economy With Affluent Savings and Accumulated Wealth*. Papers and proceedings of the Fifth EPA International Symposium. Tokyo, October 13–14.
- Boone, Peter. 1989a. Perspectives on the High Price of Japanese Land. EPA Discussion Paper no. 45. Economic Planning Association, Tokyo.
- . 1989b. High Land Values in Japan: Is the Archipelago Worth Eleven Trillion Dollars? Manuscript. Harvard University, November.
- Boone, Peter, and Jeffrey Sachs. 1989. Is Tokyo Worth Four Trillion Dollars? An Explanation for High Japanese Land Prices. Manuscript. Harvard University.
- Branson, William, and Richard Marston. 1989. Price and Output Adjustment in Japanese Manufacturing. NBER Working Paper no. 2878. Cambridge, Mass., March.
- Bronte, Stephen. 1982. *Japanese Finance: Markets and Institutions*. London: Euro-money Publications.
- Crum, M. Colyer, and David Meerscham. 1986. From Relationship to Price Banking: The Loss of Regulatory Control. In *America vs. Japan*, ed. T. McCraw. Boston: Harvard Business School Press.
- Dekle, Robert. 1989a. A Simulation Model of Saving, Residential Choice, and Bequests of the Japanese Elderly. *Economic Letters* 29:129–33.
- . 1989b. Saving, Bequests, and Living Arrangements of the Japanese Elderly. *Journal of the Japanese and International Economies* 4, no. 3 (September).
- Eken, Sena. 1984. Integration of Domestic and International Financial Markets: The Japanese Experience. *International Monetary Fund, Staff Papers* 31:499–548.
- Fazzari, Steven, R. Glenn Hubbard, and Bruce Petersen. 1988. Investment and Finance Reconsidered. *Brookings Papers on Economic Activity*, no. 1: 141–96.

- Feldman, Robert. 1986. *Japanese Financial Markets: Deficits, Dilemmas, and Deregulation*. Cambridge, Mass.: MIT Press.
- Feldstein, M., and P. Bacchetta. 1991. National Savings and International Investment. In *National Saving and Economic Performance*, ed. B. D. Bernheim and J. Shoven. Chicago: University of Chicago Press.
- Feldstein, M., and C. Horioka. 1980. Domestic Saving and International Capital Flows. *Economic Journal* 90:314–29.
- Frankel, Jeffrey. 1984. The Yen/Dollar Agreement: Liberalizing Japanese Capital Markets. *Policy Analyses in International Economics*, no. 9. Washington, D.C.: Institute for International Economics.
- . 1988a. International Capital Flows and Domestic Economic Policies. In *The United States in the World Economy*, ed. Martin Feldstein. Chicago: University of Chicago Press.
- . 1988b. U.S. Borrowing From Japan. KSG Working Paper 174D, Harvard University (in *Structural Change in the American Financial System*, ed. G. Luciani; excerpts [trans. into Japanese] also appear in *Kinyu Journal*, July 1988 and February 1989).
- . 1991. Quantifying International Capital Mobility in the 1980s. In *National Saving and Economic Performance*, ed. B. D. Bernheim and J. Shoven. Chicago: University of Chicago Press.
- Frankel, J., and K. Froot. 1987. Short-term and Long-term Expectations of the Yen/Dollar Exchange Rates: Evidence from Survey Data. *Journal of the Japanese and International Economies* 1:249–74.
- French, Kenneth, and James Poterba. 1989. Are Japanese Stock Prices Too High? CRSP Seminar on the Analysis of Security Prices, University of Chicago, April; rev., NBER, August.
- Friend, Irwin, and Ichiro Tokutsu. 1987. The Cost of Capital to Corporations in Japan and the U.S.A. *Journal of Banking and Finance* 11:313–27.
- Froot, Kenneth. 1988. Adjustment of the U.S. and Japanese External Imbalances. In *Global and Domestic Policy Implications of Correcting External Imbalances*. Papers and Proceedings of the Fourth EPA International Symposium, March 15–17. Tokyo: Economic Planning Agency, pp. 287–303.
- Froot, Kenneth, and Takatoshi Ito, 1989. On the Consistency of Short-Run and Long-Run Exchange Rate Expectations. *Journal of International Money and Finance* 8, no. 4: 487–510.
- Fukao, Mitsuhiro. 1987. A Risk Premium Model of the Yen-Dollar and DM-Dollar Exchange Rates. *OECD Economic Studies* 9 (Autumn): 79–104.
- . 1988. Balance of Payments Imbalances and Long-Term Capital Movements: Review and Prospects. In *Correcting External Imbalances*, ed. Masaru Yoshitomi. Tokyo: Economic Planning Agency.
- Fukao, Mitsuhiro, and T. Okubo. 1984. International Linkage of Interest Rates: The Case of Japan and the United States. *International Economic Review* 25 (February).
- Gerlach, Michael. 1987. Alliances and the Social Organization of Japanese Business. Ph.D. diss., Yale University.
- Glick, Reuven. 1987. Interest Rate Linkages in the Pacific Basin. *Economic Review* 3:31–42.
- Hale, David. 1987. Tax Reform in the U.S. and Japan: The Movement towards International Tax Convergence. Paper presented to the U.S.-Japan Consultative Group on International Monetary Affairs. San Diego, February.
- . 1989. The Japanese Ministry of Finance and Dollar Diplomacy during the Late 1980s: or, How the University of Tokyo Law School Saved the United States from the University of Chicago Economics Department. Manuscript. Kemper Financial Services, Inc., July.

- Hamada, Koichi, and Akiyoshi Horiuchi. 1987. The Political Economy of the Financial Market. In *The Political Economy of Japan: Vol. 1, The Domestic Transformation*, ed. Kozo Yamamura and Yasukichi Yasuba, pp. 223–60. Stanford, Calif.: Stanford University Press.
- Hardouvelis, Gikas, and Steven Peristiani. 1989. Do Margin Requirements Matter? Evidence from the Japanese Stock Market. Working paper. Federal Reserve Bank of New York, October.
- Hatsopoulos, George. 1983. High Cost of Capital: Handicap of American Industry. Study sponsored by the American Business Conference and Thermo Electron Corporation, April.
- Hatsopoulos, George, and Stephen Brooks. 1986. The Gap in the Cost of Capital: Causes, Effects, and Remedies. In *Technology and Economic Policy*, ed. Ralph Landau and Dale Jorgenson, pp. 221–80. Cambridge, Mass.: Ballinger.
- . 1989. The Cost of Capital in the United States and Japan. In *Technology and Capital Formation*, ed. D. Jorgenson and R. Landau. Cambridge, Mass.: MIT Press.
- Hatsopoulos, George, Paul Krugman, and Larry Summers. 1988. U.S. Competitiveness: Beyond the Trade Deficit. *Science*, July 15, pp. 299–307.
- Hayashi, Fumio. 1986. Why Is Japan's Saving Rate So Apparently High? *NBER Macroeconomics Annual 1986* 1:147–234. Cambridge, Mass.: MIT Press.
- Hayashi, Fumio, and Tohru Inoue. 1989. The Relationship of Firm Growth and Q with Multiple Capital Goods: Theory and Evidence From Panel Data on Japanese Firms. Institute for Empirical Macroeconomics Discussion Paper no. 13. Federal Reserve Bank of Minneapolis, May.
- Hayashi, Fumio, Takatoshi Ito, and Joel Slemrod. 1988. Housing Finance Imperfections, Taxation, and Private Savings: A Comparative Analysis of the U.S. and Japan. *Journal of the Japanese and International Economies* 2, no. 3 (September).
- Hodder, James. 1988a. Corporate Capital Structure in the United States and Japan: Financial Intermediation and Implication of Financial Deregulation. In *Government Policy towards Industry in the USA and Japan*, ed. J. Shoven, chap. 9, pp. 241–63. Cambridge: Cambridge University Press.
- . 1988b. Capital Structure and Cost of Capital in the U.S. and Japan. Manuscript. Stanford University, July.
- . 1991. Is the Cost of Capital Lower in Japan? *Journal of the Japanese and International Economies* 5, no. 1 (March): 86–100.
- Hodder, James, and A. Tschoegl. 1985. Some Aspects of Japanese Corporate Finance. *Journal of Financial and Quantitative Analysis* 20:173–90.
- Homma, Masaki. 1987. An Overview of Tax Reform in the U.S. and Japan. Paper presented to the U.S.-Japan Consultative Group on International Monetary Affairs. San Diego, February.
- Homma, M., N. Atoda, F. Hayashi, and K. Hata. 1984. *Setsubi Toshi to Kigyo Zeisei* (Investment and corporate tax structure). Economic Planning Agency: Tokyo.
- Homma, M., T. Maeda, and K. Hashimoto. 1986. The Japanese Tax System. *Brookings Discussion Papers in Economics*. June
- Horioka, Charles. 1985. Household Saving in Japan: The Importance of Target Saving for Education and Housing. *Kyoto University Economic Review* 55, no. 1 (April): 41–78.
- . 1986. Why Is Japan's Private Savings Rate so High? *Finance and Development* 23 (December): 22–25.
- . 1988. Saving for Housing Purchase in Japan. In *Global Role of the Japanese Economy with Affluent Savings and Accumulated Wealth*. Papers and proceedings of the Fifth EPA International Symposium. Tokyo, October 13–14.
- . 1990. Why Is Japan's Household Saving Rate So High? A Literature Survey. *Journal of the Japanese and International Economies* 4, no. 1 (March): 49–92.

- Hoshi, Takeo, Anil Kashyap, and David Scharfstein. 1990a. Corporate Structure, Liquidity, and Investment: Evidence from Japanese Panel Data. *Quarterly Journal of Economics*.
- . 1990b. Bank Monitoring and Investment: Evidence from the Changing Structure of Japanese Corporate Banking Relationships. In *Asymmetric Information, Corporate Finance, and Investment*, ed. R. Glenn Hubbard. Chicago: University of Chicago Press.
- Ido, Kiyoto. 1989. Internationalization and Implementation of the New Foreign Exchange Control Law. *FAIR Fact Series: Japan's Financial Markets*, vol. 19.
- Ishikawa, Tsuneo, and Kazuo Ueda. 1984. The Bonus Payment System and Japanese Personal Savings. In *The Economic Analysis of the Japanese Firm*, ed. M. Aoki. Amsterdam: Elsevier Science Publishers.
- Ito, Takatoshi. 1986. Capital Controls and Covered Interest Parity. *Economic Studies Quarterly* 37:223–41.
- . 1988. Use of (Time-Domain) Vector Autoregressions to Test Uncovered Interest Parity. *Review of Economics and Statistics* 70:296–305.
- . 1989. Japan's Structural Adjustment: The Land/Housing Problem and External Balance. Manuscript, International Monetary Fund. Rev. February, NBER Summer Institute.
- . 1990. Foreign Exchange Rate Expectations: Micro Survey Data. *American Economic Review* 80, no. 3 (June): 434–49.
- Iwata, Kazumasa, Ikuo Suzuki, and Atsushi Yoshida. 1988. Capital Costs of Housing Investment in Japan. Discussion Paper no. 44. Economic Planning Agency, Tokyo, December.
- Iwata, Kazumasa, and Atsushi Yoshida. 1988. Housing, Land and Taxation System in Japan. In *Global and Domestic Policy Implications of Correcting External Imbalances*. Papers and proceedings of the Fourth EPA International Symposium. Tokyo: Economic Planning Agency.
- . 1987. Capital Cost of Business Investment in Japan and the United States under Tax Reform. In *Technology and Capital Formation*, ed. D. Jorgenson and R. Landau. Cambridge, Mass.: MIT Press.
- Jensen, M., and W. Meckling. 1976. Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics* 3:305–60.
- Jorgenson, Dale. 1971. Econometric Studies of Investment Behavior: A Review. *Journal of Economic Literature* 9:1111–47.
- Krugman, Paul. 1989. Differences in Income Elasticities and Trends in Real Exchange Rates. *European Economic Review* 33, no. 5 (May): 1031–47.
- Lawler, Patrick, Bonnie Loopesko, and Marc Dudev. 1988. An Analysis of Some Aspects of the Japanese Stock Market. November 10 (this paper is not to circulate or be quoted without permission of authors).
- Lee, Hiro. 1988. Imperfect Competition, Industrial Policy, and Japanese International Competitiveness. Ph.D. diss., University of California, Berkeley, September.
- Lincoln, Edward. 1988. *Japan: Facing Economic Maturity*. Washington, D.C.: Brookings.
- McDonald, Jack. 1989. The *Mochiai* Effect: Japanese Corporate Cross-Holdings. *Journal of Portfolio Management* 16, no. 1 (Fall): 90–95.
- McKinnon, Ronald, and David Robinson. 1989. Dollar Devaluation, Interest Rate Volatility, and the Duration of Investment. CEPR Conference on Economic Growth and the Commercialization of New Technologies. Stanford, Calif., September 11–12.
- Makin, John. 1985. Saving Rates in Japan and the United States: The Roles of Tax Policy and Other Factors. Paper prepared for Savings Forum, Philadelphia, May.
- Marston, Richard. 1987. Real Exchange Rates and Productivity Growth in the United

- States and Japan. *Real-Financial Linkages in Open Economies*, ed. S. Arndt. Cambridge, Mass.: MIT Press.
- . 1990. Pricing to Market in Japanese Manufacturing. *Journal of International Economics* 29 (November): 217–36.
- Meyer, John, and Ed Kuh. 1957. *The Investment Decision*. Cambridge, Mass.: Harvard University Press.
- Ministry of Finance. 1988. Main Points of Tax Reform. Tokyo, December 24.
- Mishkin, Frederic. 1984. Are Real Interest Rates Equal across Countries? An Empirical Investigation of International Parity Conditions. *Journal of Finance* 39:1345–58.
- Murphy, R. Taggart. 1989. Power without Purpose: The Crisis of Japan's Global Financial Dominance. *Harvard Business Review* (March–April), pp. 71–83.
- Myers, Stewart, and N. Majluf. 1984. Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have. *Journal of Financial Economics*, 187–221.
- Noguchi, Yukio. 1985. Tax Structure and Saving-Investment Balance. Paper presented to the U.S.-Japan Consultative Group on International Monetary Affairs. Hakone, March.
- . 1987. Land Price Swollen by Bubbles (in Japanese). *Toyo Keizai* 77 (November): 38–45.
- Ohno, Kenichi. 1989. Export Pricing Behavior of Manufacturing: A U.S.-Japan Comparison. *International Monetary Fund Staff Papers* 36, no. 3 (September): 550–79.
- Otani, Ichiro. 1983. Exchange Rate Instability and Capital Controls: The Japanese Experience, 1978–81. In *Exchange Rate and Trade Instability: Causes, Consequences and Remedies*, ed. D. Bigman and T. Taya. Cambridge, Mass.: Ballinger.
- Otani, Ichiro, and Siddath Tiwari. 1981. Capital Controls, and Interest Rate Parity: The Japanese Experience, 1978–81. *International Monetary Fund Staff Papers* 28, no. 4 (December): 793–815.
- Prowse, Stephen David. 1989. Firm Financial Behavior in the U.S. and Japan: The Role of Agency Relationships. NBER Summer Institute, August 11.
- Sachs, Jeffrey and Peter Boone. 1988. Japanese Structural Adjustment and the Balance of Payments. *Journal of the Japanese and International Economies* 2, no. 3.
- Sakakibara, Eisuke, and Akira Kondoh. 1984. *Study on the Internationalization of Tokyo's Money Markets*. Center for International Finance Study Series no. 1. Tokyo, June.
- Saxonhouse, Gary. 1982. Japanese Saving Behavior: A Household Balance Sheet Approach. Manuscript. University of Michigan, November.
- Semiconductor Industry Association. 1980. U.S. and Japanese Semiconductor Industries: A Financial Comparison. Report prepared by Chase Financial Policy, June.
- Shibuya, Hiroshi. 1988. Japan's Household Savings: A Life-Cycle Model with Implicit Annuity Contract and Rational Expectations. Manuscript. International Monetary Fund, February.
- Shinkai, Yoichi. 1988. The Internationalization of Finance in Japan. In *The Political Economy of Japan: volume 2, The Changing International Context*, ed. T. Inoguchi and D. I. Okimoto. Stanford, Calif.: Stanford University Press.
- Shoven, John. 1989. The Japanese Tax Reform and the Effective Rate of Tax on Japanese Corporate Investments. In *Tax Policy and the Economy*, ed. L. Summers. Cambridge, Mass.: MIT Press.
- Shoven, John, and Toshiaki Tachibanaki. 1988. The Taxation of Income from Capital in Japan. In *Government Policy towards Industry in the United States and Japan*, ed. J. Shoven. Cambridge: Cambridge University Press.
- Slemrod, Joel. 1988. Fear of Nuclear War and Intercountry Differences in the Rate of Saving. NBER Working Paper no. 2801. Cambridge, Mass., December.

- Stein, Jeremy. 1989. Efficient Capital Markets, Inefficient Firms: A Model of Myopic Corporate Behavior. *Quarterly Journal of Economics* 104:655–69.
- Suzuki, Yoshio. 1987. *The Japanese Financial System*. Oxford: Clarendon Press.
- Takagi, Keizo. 1989. The Rise in Land Prices in Japan: The Determination Mechanism and the Effect of the Taxation System. *Monetary and Economic Studies* 7, no. 2 (August).
- Takagi, Shinji. 1989. The Japanese Equity Market: Past and Present. *Journal of Banking and Finance* 13 (March): 537–70.
- Takayama, Noriyuki, et al. 1988. Household Asset Holdings and the Saving Rate in Japan. In *The Global Role of the Japanese Economy with Affluent Savings and Accumulated Wealth*. Papers and proceedings of the Fifth EPA International Symposium. Tokyo, October 13–14.
- Takenaka, Heizo. 1986. Economic Incentives for Industrial Investment: Japanese Experience. Institute for Fiscal and Monetary Policy, Ministry of Finance, Japan, February.
- Tamura, Tatsuro. 1987. Changes in Corporate Fund Raising and Management, pt. 2. *FAIR Fact Series: Japan's Financial Markets*, vol. 29.
- Ueda, Kazuo. 1990. Are Japanese Stock Prices too High? *Journal of the Japanese and International Economies* 3, no. 4 (December): 351–70.
- Yamamura, Kozo. 1982. Success that Soured: Administrative Guidance and Cartels in Japan. In *Policy and Trade Issues of the Japanese Economy*, ed. K. Yamamura, pp. 77–112. Seattle: University of Washington Press.
- Yoshikawa, Hiroshi, and Fumio Ohtake. 1989. An Analysis of Female Labor Supply, Housing Demand and the Saving Rate in Japan. *European Economic Review* 33, no. 5: 997–1023.

Comment Robert Dekle

Jeffrey Frankel's main aim in the paper is to try to explain the high Japanese stock and land prices by the fundamentals valuation equation. Ruling out speculative bubbles, the price-rental or price-earnings ratios will be high when the expected rate of economic growth is high or the real interest rate is low. The puzzle, as stated by the author, is this: Why have the price-rental ratios risen so rapidly in the 1980s compared to the 1960s when today the expectations of future economic growth are so much lower and the observed real interest rate is probably higher? The paper proposes an innovative answer. In the past, capital in Japan was rationed by the banking system, and only the large blue chip firms could raise funds at the low real interest rate. The use of these funds, however, was strictly monitored by the banks, and the firms could not use these funds to freely engage in large-scale purchases of land and equities. Hence, in the 1960s and early 1970s, there was imperfect arbitrage between the low cost of capital and the high expected future returns to holding land or equities. The deregulation of Japanese financial markets in the late

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1970s and 1980s enabled smaller firms and individuals to take advantage of this arbitrage opportunity, and the result was the bidding up of asset prices.

The argument, unfortunately, is not entirely convincing. First, the effective cost of capital for the highly leveraged large companies in the 1960s was not as low as the author alleges. It is well known that many Japanese banks during this period demanded “compensating balances” from the consumer firms, adding to the firms’ cost of borrowing, the spread between the deposit rate, and the return from productive investment. Yoshio Suzuki estimates that the effective loan rates to large firms in the 1964–73 period were between 8 and 12 percent, which were well above the regulated interest rates of 3–4 percent.

Second, it is unclear whether the demand for funds by small and medium-sized enterprises actually exceeded the supply of funds. During the late 1960s, the local banks, which primarily lend to small and medium-sized enterprises, had more deposits than the demand for loans. The surplus was channeled through the Japanese “call money” market to the large city banks, which lend mostly to the large firms.¹ If they so desired, the small and medium-sized sector should have been able to borrow and purchase land and equities.

Third, it is somewhat misleading to argue that the Japanese government until recently regulated speculation in the asset markets. The stock market crash in 1964–65 was exacerbated by securities companies using their market power to prop up prices.² The surge in land prices between 1972–73 was largely caused by companies purchasing land nationwide in anticipation of Premier Tanaka’s massive regional public works projects.

Consequently, it appears that even before the recent financial deregulation, investors were able to and did take full advantage of arbitrage opportunities between the real rate of interest and the expected return on land and stocks.

What then are the causes for the recent rise in the land price-rental and equity-price earnings ratios? The paper reads as if company earnings and land rents are driven by the same mechanism. For an office-space leasing company, rents and earnings may move identically, but for firms producing goods that are intensive in physical capital, land rents and earnings are likely to diverge. Corporate profits in Japan have drastically fallen as a share of GNP in the period between 1970 and 1985, and one reason for the fall is the decline in the marginal product of physical capital. As an economy grows and accumulates capital, it may be possible to observe corporate profits falling, and the returns to the fixed factor, land, rising. For example, falling returns to physical capital and rising returns to land may be observed in a three-factor (land, labor, capital) Cobb-Douglas production function.

If corporate profits have fallen, why have Japanese stock prices risen? There

1. The call market essentially corresponds in function to the federal funds market in the United States.

2. As a consequence of the crash, Yamaichi Securities was almost driven to bankruptcy.

are two popular hypotheses. The first is called the “restructuring hypothesis” and explains the high cross-section correlation between stock and land prices. Take the example of Ishikawajima Harima Heavy Industries, a shipbuilder with high stock prices but with depressed corporate profits. Ishikawajima Harima owns much land in Tokyo Bay, an area expected to receive large government public works funding over the next decade. There is to be a landfill and major office buildings and retail complexes, and apartments are to be constructed. In the future, if Ishikawajima is able to use its land efficiently, say, by converting its shipbuilding factories to retail outlets, then the firm’s profits should soar. The present high price for Ishikawajima’s stock partly reflects the expectation that the firm, by restructuring, will be able to use its assets efficiently and raise its future profits.

Cross-section econometric studies have shown that firms with high price-earnings ratios generally own expensive land. The “restructuring” hypothesis does not, however, explain why land prices have doubled over the last three years. The second hypothesis relies on imperfect international capital mobility and excess Japanese liquidity to explain both high land and equity prices. From the fall of 1986 until now, the growth in the Japanese money supply has been much higher than in the previous half-decade. It has been said that the Bank of Japan had embarked on a loose monetary policy to prop up the dollar. Exchange rate risk has limited the flow of Japanese funds abroad and, given the artificially low rate of return on Japanese bank deposits, funds have flowed into real estate and stocks, bidding up the price of these assets.