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# THE CORPORATE COST OF CAPITAL IN JAPAN AND THE U.S.: A COMPARISON

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# The Corporate Cost of Capital in Japan and the U.S.: A Comparison

ABSTRACT

This paper presents evidence about the costs of corporate capital in Japan and the U.S. for a sample of large companies, and evaluates a variety of hypotheses about why the cost might be lower in Japan.

We find that the before-tax return to capital in Japan appears slightly lower than in the U.S. when corrected book measures of earnings are used, but that this result would be reversed if market returns to Japanese equity were used in place of corrected earnings to measure the cost of equity.

To whatever extent the cost of capital may actually be lower in Japan, we show that this is unlikely to be due either to a lower overall corporate tax burden or the particular tax advantages of corporate borrowing.

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## 1. Introduction

Very high real interest rates and a trade deficit that exceeded 100 billion dollars in 1984 have caused much concern over the ability of American firms to keep up with their foreign competitors. A great deal of the discussion of this topic has focused particularly on Japan, since Japan alone accounted for a large fraction of this enormous overall 1984 trade deficit through its success in exporting to the U.S. goods once supplied primarily by domestic producers.

Attempts to explain this favorable Japanese performance have taken many forms. Some have suggested that Japan may impose barriers to American firms' attempts at establishing markets, either through explicit policy actions, or collusion among government, producers, distributors and banks, or a lack of faith in the quality of U.S.-produced goods. Others have argued that the U.S. trade imbalance is the inevitable result of our elevated real exchange rate, which makes American goods more expensive than those of our trading partners. This high real exchange rate is, in turn, attributed by many to the unprecedented peacetime fiscal deficits currently being experienced.

While each of these potential explanations may be important, there is a third on which we focus in this paper: the cost of capital. Some have suggested[1] that Japanese firms enjoy a lower before-tax cost of raising funds in capital markets that allows them

to gain a competitive advantage in the capital intensive industries where they have made particularly striking progress during the past two decades, such as autos and steel.

This explanation is not entirely independent of those already mentioned. The mechanism through which the high real exchange rate is supposed to have occurred is the strong foreign demand for U.S. assets brought on by high domestic real interest rates; one of the forms of Japanese industrial policy is said to work through the direction of funds to promising enterprises. There are, however, many additional factors that could contribute to a cost of capital differential between the two countries. The purpose of this paper is to state clearly what these might be, and adduce evidence that will shed light on their validity. Something more than claims of unfair competition should be required as evidence before such a complex proposition as a major difference in capital cost is accepted as a "fact." Hence, we begin with some basic calculations for our sample of Japanese and American firms to see whether there is convincing prima facie evidence of a lower cost of capital in Japan.

Our approach involves the use of market and financial statement data for a representative but non-random sample of 19 American and 21 Japanese firms to answer first the question of whether the cost of capital really has been systematically lower in Japan.

In the case of an affirmative answer, our next step is to test predictions based on different theories of why these costs differ. Because we consider only a small sample of firms, our results must be regarded with caution in extrapolating to economy-wide conclusions. Nevertheless, we consider this to be an important

first step in determining where further research should be directed.

## 2. Is the Cost of Capital Lower in Japan?

For several reasons, one cannot simply look at the real interest rates in the U.S. and Japan to determine what the cost of capital is in each country. Because of differences in tax treatment, financial policies and legal and financial institutions, to cite just some of the complicating factors, there is no simple way to translate an interest rate into a relevant measure of the cost of capital without additional information.

One alternative approach is to look at total before-tax returns to debt and equity over a period of several years. A still simpler approach is to look exclusively at equity alone by examining earnings-price ratios. In each case, one assumes that, over a sufficiently long period of time, these ex post measures reflect their ex ante expectations. There are several problems with such measures of which we are well aware, but they are frequently used and cited and easy to calculate, making their presentation a good place to begin our empirical analysis.

Listed in the first column of Tables 1a and 1j are the names of the American and Japanese firms used in our study. The second column of each table lists total market value of debt plus equity at the end of the company's 1981 fiscal year.

Our selection criteria included availability of data, firm size, and coverage of important industries. For each country, we have one representative of the airline industry (Delta Airlines and All Nippon Airways) and two retailers (Sears and Macy's, Mitsukoshi

Table 1a
Sample Companies-U.S.

| Name | 1981 Market Value (Million $) | E/P (66-81) Before Tax | R/K (66-81) Before Tax |
|---|---|---|---|
| AT&T | 97,680.5 | 17.8 | 12.5 |
| Chrysler | 3,912.5 | -15.1 | 5.2 |
| CDC | 1,889.5 | 9.3 | 9.2 |
| Delta | 1,228.2 | 15.1 | 13.4 |
| DEC | 4,798.9 | 6.1 | 6.0 |
| Dow | 9,435.6 | 13.7 | 11.7 |
| Kodak | 11,851.8 | 10.3 | 10.9 |
| Exxon | 35,322.3 | 31.4 | 26.7 |
| Ford | 6,903.0 | 15.3 | 18.0 |
| GE | 15,297.8 | 12.3 | 11.9 |
| GM | 17,744.9 | 18.4 | 18.3 |
| IBM | 37,128.7 | 9.5 | 9.4 |
| Macy | 1,128.1 | 20.4 | 18.8 |
| Merck | 6,787.1 | 7.3 | 7.3 |
| Nat. Semi. | 561.2 | 7.1 | 7.4 |
| Pfizer | 5,155.9 | 9.1 | 8.9 |
| P&G | 7,668.8 | 10.6 | 10.3 |
| Sears | 16,244.9 | 10.4 | 9.5 |
| USS | 5,228.3 | 18.0 | 13.1 |

# Table 1j
## Sample Companies - Japan

| Name | 1981 Market Value (Billion Yen) | Pension Reserve | E/P (66-81) (Without Adj for Pension Reserve) | E/P (66-81) (With Adj. for Pension Reserve) | R/K (66-81) Before Tax (Without Adj. for Pension Reserve) | R/K (66-81) Before Tax (With Adj. for Pension Reserve) |
|---|---|---|---|---|---|---|
| Fuji | | | | | | |
| Fuji | 466.1 | 46.3 | 14.4 | 16.7 | 11.9 | 14.7 |
| Fujitsu | 744.1 | 13.9 | 8.0 | 8.5 | 7.4 | 7.8 |
| Kao | 179.2 | 2.4 | 15.0 | 15.4 | 10.0 | 10.6 |
| Kawasaki | 1,585.2 | 46.6 | 12.9 | 14.3 | 9.2 | 9.8 |
| Konishiro | 190.1 | 15.6 | 9.3 | 12.6 | 7.8 | 10.0 |
| Lion | 117.3 | 6.5 | 27.2 | 28.9 | 15.7 | 17.4 |
| Mitsubishi | 831.8 | 13.8 | 9.3 | 10.0 | 7.1 | 7.4 |
| Mitsukoshi | 234.4 | 19.9 | 10.4 | 11.2 | 10.0 | 11.4 |
| National | 1,999.1 | 67.3 | 15.4 | 16.3 | 14.7 | 16.6 |
| NEC | 1,093.4 | 20.4 | 6.8 | 7.4 | 6.6 | 7.0 |
| Nippon Air | 555.2 | 12.8 | 2.6 | 3.2 | 4.5 | 4.8 |
| Nippon Steel | 2,969.4 | 154.7 | 14.2 | 15.7 | 9.5 | 10.3 |
| Nissan | 1,638.4 | 69.5 | 17.0 | 17.6 | 11.4 | 12.0 |
| Oki | 237.6 | 7.5 | 6.3 | 7.4 | 6.6 | 7.3 |
| Shionogi | 193.2 | 12.4 | 21.1 | 23.2 | 15.4 | 18.2 |
| Sony | 1,113.6 | 19.1 | 8.0 | 8.4 | 7.6 | 8.0 |
| Sumitomo | 641.0 | 15.8 | 6.8 | 7.5 | 7.0 | 7.5 |
| Taisho | 179.9 | 2.5 | 14.3 | 14.5 | 13.5 | 13.8 |
| Takashimaya | 139.1 | 6.9 | 13.1 | 14.2 | 9.7 | 10.5 |
| Takeda | 662.0 | 55.5 | 16.6 | 19.1 | 11.6 | 14.7 |
| Toshiba | 1,238.8 | 25.0 | 10.4 | 11.0 | 7.9 | 8.2 |

and Takashimaya). In steel, cameras and film, and consumer products, we have one American and two Japanese firms (U.S. Steel, Kawasaki Steel and Nippon Steel; Kodak, Fuji Film and Konishiroku Photo; Procter and Gamble, Kao Soap and Lion). In the automobile industry, we include all three major companies (GM, Ford and Chrysler) because of differences in their recent experience. We include only Nissan from Japan because the largest producer, Toyota, underwent a major merger during the sample period that makes its data difficult to use.

In the consumer and business electronics area, we include General Electric for the U.S. and Sony, National (Matsushita) and Toshiba for Japan. Companies in the computer and semiconductor industries include IBM, Control Data, Digital Equipment and National Semiconductor for the U.S. and Fujitsu, NEC and Oki Electric for Japan. There is a substantial amount of overlap in the areas of business of these two groups of companies.

Drug and pharmaceutical companies included in the sample from the U.S. are Merck and Pfizer, while Shinogi and Taisho are included for Japan. In the related chemical industry, we have Dow Chemical and Mitsubishi Chemical, Sumitomo Chemical and Takeda Chemical. Finally, although we do not have any suitable Japanese counterparts, we include AT&T and Exxon in the sample of U.S. firms because of their importance.

Data for the Japanese companies come primarily from the NEEDS - Nikkei Financial Tape. This data file is based on public balance sheet and income statement information provided by the companies on an annual basis. Our version of the file extends from 1964 to 1983, with individual companies having data either for 1964-82 or 1965-83

depending on their fiscal years.

For the United States, we use Standard and Poor's Compustat file which has comparable data for the American companies from 1963 to 1982, with most companies having data from 1963-81 or 1963-82, depending on their fiscal years. The two exceptions are DEC and National Semiconductor, for which data is not available before 1966.

In Tables 1a and 1j, we also report average rates of return for each company for the period 1966-81, including the before-tax earnings-price ratio and the total before-tax return to debt plus equity. For purposes of computing the latter statistic, we add interest payments to earnings to obtain the total return to capital. Debt is defined for each country to be the sum of long-term debt and short-term financial liabilities. Thus, although we include financial trade credit, we exclude the general category of accounts payable from debt. One exception to this rule is "accrued employees' severance indemnities", which we do exclude from debt.[2] In the third column of Table 1j, we report the size of this account, which we shall hereafter refer to as "Pension Reserves". Columns 4 and 5 and 6 and 7 in Table 1j show how much difference the exclusion of this item makes in the earnings price ratio and the total return on capital. In the remainder of this paper, we exclude this account from debt unless otherwise noted.

From these tables there is only mixed evidence in support of the proposition that Japanese firms enjoy a lower cost of capital. If one concentrates on total returns to capital, there are some industries in which Japanese firms have a substantially lower return (e.g., airlines, steel, and, excluding Chrysler, which should be considered a special case because of its near bankruptcy, autos),

but others in which the reverse is true (e.g., pharmaceuticals) and many in which there is no clear pattern. For the U.S. sample of companies, the median average return to capital for the period was 10.3 percent, while it was 9.5 percent for the Japanese sample, and 10.3 percent with the correction made for pension reserve accounting. Given the size of our sample, this does not constitute very strong evidence that returns are systematically lower in Japan.

## 3. Corrected Measures of the Return to Capital

There are many problems with the use of book value earnings data to measure the cost of capital. Perhaps the most serious is the distortion caused by inflation to book value measures of income.[3] Because of the general lack of inflation adjusted financial data, we must make such corrections ourselves to the book value information. This is especially important for a cross-country comparison, since historical patterns of the rate of inflation in the two countries are substantially different and accounting practices, debt equity ratios and tax structures, three factors that affect the relationship among inflation, profitability and accounting biases, are also markedly different. The most critical distortions to remove are the misstatement of depreciation and the cost of goods sold and the absence of any accounting for real gains and losses on nominal liabilities and assets. Given the nature of the data for each country, certain assumptions must be made in order to carry out each of these three corrections. These are described as we discuss how the corrections were performed.

3a. Depreciation

We assume that depreciation would be properly measured in the absence of inflation. This reflects our fervent belief less than our inability to assume otherwise. To restate depreciation based on original cost in current dollar terms requires information on the vintage structure of each year's overall depreciation, since the price factor by which book depreciation must be inflated depends on the age of the asset to which the depreciation applies. We produce an estimated vintage structure in the following manner.[4] We first assume that the net (of depreciation) capital stock listed in the first year requires no correction. This is reasonable, given, the low rates of inflation in both countries in the years immediately preceding the mid-1960s. We then assume that each corporation's depreciable assets are written off using the declining balance method at a single rate. Finally, using the perpetual inventory method, we solve for the value of this rate that would yield the listed book value for net capital in the last year for which data are available. That is, the declining balance rate, $\delta$, is defined implicitly by:

$$(1) \quad K_T = K_o*(1-\delta)^T + I_1*(1-\delta)^{T-1} + \ldots I_T$$

where $K_t$ is the book value of net capital at the end of year t and $I_t$ is the book value of gross investment during year t. Since all these values of I and K are positive, the solution for $\delta$ is unique. There are additional problems presented by each country's data set. For Japan, there are no separate figures listed for gross

investment. We impute an investment series from the sum of depreciation and the first difference of the net capital stock. For the U.S., there are no separate figures for land and depreciable assets, only the sum. This should lower the estimate of the average depreciation rate, since land is nondepreciable. In addition, the treatment of assets acquired through merger rather than direct investment is inconsistent; they appear in the capital stock, but are not in reported investment.[5] We performed calculations for the U.S. using both reported investment and, as was necessary for Japan, imputed investment. Estimated values of $\delta$ were generally lower and more reasonable (given previous estimates) when imputed investment was used. Because of this, as well as to be as consistent as possible in our methodologies for the two countries, we present calculations based on imputed rather than actual investment. This generally leads to a somewhat higher estimate of the overall return to capital (in the neighborhood of 1 percentage point before-tax) than when actual investment is used. The depreciation rates are interesting in their own right, and are given in the second column of Tables 2a and 2j. The variation across companies is consistent with general expectations. Firms in the computer industry, for example, evidence very rapid rates compared to retailers, whose capital is largely in the form of buildings.

It is difficult to know how much the generally more rapid depreciation rates for Japan are due to the omission of land from the calculations.[6] To the extent that this does not completely explain the difference, one might hypothesize that some of the gap in rates of return in the two countries lies in different procedures for measuring depreciation.

Table 2a

Depreciation Rates and Average Adjusted Rates of Return-U.S.

| Name | Depreciation Rate | D/D+E (66-81) | E/P (66-81) Before Tax | E/P (66-81) After Tax | R/K (66-81) Before Tax | R/K (66-81) After Tax |
|---|---|---|---|---|---|---|
| AT&T | 6.7 | 44.3 | 12.9 | 7.5 | 9.3 | 4.5 |
| Chrysler | 14.0 | 51.4 | -9.6 | -14.4 | 3.2 | -2.5 |
| CDC | 35.1 | 38.5 | 10.9 | 8.9 | 7.2 | 4.0 |
| Delta | 13.2 | 22.2 | 14.7 | 8.6 | 11.6 | 6.1 |
| DEC | 18.4 | 4.3 | 4.9 | 2.5 | 4.6 | 2.2 |
| Dow | 14.1 | 30.8 | 15.1 | 9.8 | 10.7 | 5.9 |
| Kodak | 12.8 | 1.1 | 9.3 | 4.6 | 9.7 | 4.8 |
| Exxon | 9.0 | 18.2 | 30.9 | 12.0 | 25.2 | 9.3 |
| Ford | 20.8 | 29.3 | 15.5 | 6.8 | 15.5 | 6.9 |
| GE | 15.9 | 13.3 | 13.0 | 8.0 | 11.6 | 6.7 |
| GM | 32.2 | 9.4 | 17.3 | 8.8 | 16.4 | 7.9 |
| IBl | 21.3 | 2.8 | 8.6 | 4.2 | 8.4 | 4.0 |
| Macy | 8.3 | 32.1 | 22.4 | 12.7 | 18.1 | 9.1 |
| Merck | 9.7 | 3.0 | 6.8 | 3.8 | 6.5 | 3.6 |
| Nat. Semi. | 31.1 | 9.9 | 8.3 | 4.3 | 7.7 | 3.7 |
| Pfizer | 10.7 | 15.0 | 8.8 | 5.4 | 7.5 | 4.1 |
| P&G | 6.8 | 6.5 | 10.2 | 5.3 | 9.4 | 4.7 |
| Sears | 8.7 | 31.1 | 9.7 | 6.1 | 6.9 | 3.4 |
| USS | 8.0 | 44.9 | 17.8 | 13.1 | 10.3 | 6.1 |

Table 2j
Sample Companies-Japan

| Name | Depre-ciation Rate | D/D+E (66-81) | E/P (66-81) Before Tax | E/P (66-81) After Tax | R/K (66-81) Before Tax | R/K (66-81) After Tax |
|---|---|---|---|---|---|---|
| Fuji | 24.4 | 28.2 | 15.8 | 9.2 | 12.0 | 6.1 |
| Fujitsu | 34.1 | 38.3 | 8.8 | 5.5 | 5.2 | 2.2 |
| Kao | 28.0 | 40.0 | 17.7 | 10.4 | 9.1 | 4.2 |
| Kawasaki | 13.2 | 73.0 | 22.0 | 16.8 | 7.2 | 3.5 |
| Konishiroku | 22.1 | 50.3 | 12.6 | 7.6 | 6.5 | 2.5 |
| Lion | 20.4 | 52.6 | 28.4 | 15.1 | 13.5 | 5.8 |
| Mitsubishi | 18.3 | 76.2 | 17.0 | 14.1 | 4.0 | 1.4 |
| Mitsukoshi | 15.9 | 9.8 | 11.4 | 6.6 | 10.8 | 5.9 |
| National | 44.0 | 11.0 | 16.0 | 8.8 | 15.5 | 8.4 |
| NEC | 34.6 | 52.4 | 8.6 | 6.1 | 4.0 | 1.5 |
| Nippon Air | 19.8 | 48.2 | 12.5 | 11.3 | 5.1 | 3.3 |
| Nippon Steel | 15.0 | 72.5 | 23.1 | 17.9 | 7.5 | 3.7 |
| Nissan | 30.3 | 48.5 | 18.4 | 11.8 | 8.9 | 4.3 |
| Oki | 30.2 | 54.8 | 7.2 | 4.6 | 3.8 | 1.1 |
| Shionogi | 20.2 | 30.5 | 20.0 | 10.2 | 13.8 | 6.2 |
| Sony | 30.1 | 15.0 | 7.5 | 3.9 | 6.3 | 2.9 |
| Sumitomo | 19.8 | 67.3 | 12.5 | 10.9 | 4.6 | 2.1 |
| Taisho | 18.1 | 7.7 | 12.1 | 6.1 | 11.0 | 5.4 |
| Takashimaya | 13.5 | 54.2 | 18.5 | 12.7 | 8.8 | 4.5 |
| Takeda | 24.0 | 31.5 | 15.6 | 7.1 | 10.2 | 3.8 |
| Toshiba | 31.8 | 65.2 | 10.0 | 6.3 | 3.6 | 0.6 |

With these estimated rates of economic depreciation, we went back and estimated current dollar capital stocks using the expression:

$$(2) \quad K^{C}_{T} = P_{T} * [K_{o} * (1-\delta)^{T}/P_{o} + I_{1} * (1-\delta) * ^{T-1}/P_{1} + \ldots I_{T}/P_{T}]$$

where $P_t$ is a price index (the gross national expenditure deflator for Japan and the gross domestic business product deflator for the U.S.). Depreciation in year t is estimated to be $\delta * K^{C}_{t-1}$, and the difference between this measure and the listed book measure is subtracted from earnings.

3b. Inventories

Companies can use any one of several accounting methods for all or part of their inventories and can shift from one method or combination of methods to another. Japanese firms list all methods used in each year for each stage of fabrication (materials, work in process, and finished goods). U.S. firms also include information on which method is the most common, but information is not broken down by stages of fabrication.

In the presence of inflation, only a system of indexed FIFO (First-In, First-Out) inventory accounting would correctly state the cost of goods sold in current dollars. Though this system is not in use, the same outcome occurs under the LIFO (Last-In, First-Out) method in the absence of relative price changes or decumulation of inventories. All other major methods systematically understate the cost of goods sold in the presence of inflation. Hence, this

correction will reduce measured returns to capital, potentially more for the U.S., which has experienced more inflation than Japan in the past two decades.

The algorithm used to restate the cost of goods sold proceeds as follows. First, we assume that firms use a combination of FIFO, LIFO and Average Cost accounting in each year. Other methods listed (such as Specific Cost) are assigned to whichever of these three major methods they most closely resemble, in our judgement.

Based on stated methods, we estimate, for Japan, the fraction of inventories carried under each method in each year. We then average these fractions over the sample period to obtain for each firm a single fraction corresponding to each of the three methods. Finally, we divide book inventories into three categories based on these fractions, and adjust each separately in a manner appropriate for the accounting method.

Our approach for the U.S. differs slightly, because there was a much more pronounced trend (toward the use of LIFO) over the sample period. To accommodate this fact, we calculate average fractions as for Japanese firms, but allow one break during the sample period where the fractions may change. Thus, a firm switching from FIFO to LIFO in 1973 will have a FIFO fraction of 1.0 through 1972 and a LIFO fraction of 1.0 thereafter.

To perform the inventory corrections, once these separate stocks have been estimated, we begin by assuming that all goods purchased in a given year had a price equal to that year's price index, and that the initial year's inventories are correctly stated. We then use book information on the cost of goods sold and the change in inventories to estimate a time series of the cost of goods sold in

current dollars. The method by which this is done is different for each of the three methods. For LIFO, no change in cost of goods sold is made unless book inventories declined, in which case the last previous year of accumulation not already run down in the intervening years is determined and an appropriate price correction made. For FIFO, a one-year price adjustment is necessary for those goods sold in the current year attributable to initial inventory stocks. For average cost, our correction is based on the assumption that goods purchased in the current year are added to stocks and the price corresponding to the cost of goods sold is the average price at which this pool of goods in inventory is carried.

Once a current dollar measure of the cost of goods sold has been calculated for each of the inventory method categories, the difference between their sum and book cost of goods sold is subtracted from book earnings.

### 3c. Nominal Assets and Liablilities

This correction to earnings is simple. We take the book value of nominal liablities net of nominal assets, multiply by the concurrent annual inflation rate, and add the resulting estimate of the capital gain on nominal liabilities to book earnings. Since we are studying nonfinancial companies, this is always a positive correction.

Nominal assets and liabilities include not only financial assets, but also accounts payable and receivable. The major balance sheet items not included are real assets: inventories, depreciable assets, and land.

Because of generally higher Japanese debt-equity ratios, one might expect this correction to increase estimated Japanese earnings (as applied to the total return to capital) by a greater fraction. However, Japan's more favorable inflation experience works in the opposite direction.

We have made no attempt, at this stage of research, to correct for deviations of the market values of long term liabilities from their book values resulting from changes in long-term interest rates.

### 3d. Results of the Corrections

Tables 3a and 3j report the results of these three corrections to before-tax book earnings-price ratios. Average (1966-1981) values of these series are presented in Tables 2a and 2j, column 4. For the U.S., these corrections increase estimated earnings-price ratios for many firms, and decrease them for slightly more. This may be seen by comparing the averages in Tables 1a and 2a. The direction of the effect depends on whether increases due to accounting for gains on liabilities offsets decreases that result from correct statement of inventory and depreciation costs.

For Japanese firms, the effect of the corections is much clearer, increasing estimated earnings for virtually all firms. This is probably due to the generally higher debt-equity ratios found in Japan. Average percentages of debt in total market value (debt plus equity) are shown for U.S. and Japanese firms in column 3 of Tables 2a and 2j, respectively. The median value of this statistic is 48.5 for Japanese firms, but only 18.2 percent for

# Table 3a
## Earnings-Price Ratios-U.S.
## (Corrected)

| Year | AT&T | Chrysler | CDC | Delta | Digital | Dow | Kodak | Exxon | Ford | G.E. | Gen. Motors |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1963 | ---- | ---- | ----- | ----- | ----- | ---- | ---- | ---- | ----- | ----- | ----- |
| 1964 | 8.76 | 16.87 | 5.77 | 17.36 | ----- | 8.15 | 6.62 | 8.43 | 13.43 | 5.69 | 9.86 |
| 1965 | 10.44 | 17.85 | 5.95 | 9.86 | ----- | 9.16 | 4.94 | 9.78 | 18.73 | 7.22 | 12.22 |
| 1966 | 12.91 | 24.09 | -2.23 | 9.06 | ----- | 12.11 | 5.88 | 13.68 | 23.32 | 9.31 | 14.53 |
| 1967 | 14.50 | 13.19 | 1.62 | 14.07 | 2.01 | 8.99 | 5.86 | 14.72 | -1.01 | 8.65 | 10.67 |
| 1968 | 15.25 | 23.00 | 3.57 | 9.60 | 2.51 | 11.71 | 6.36 | 13.96 | 18.48 | 8.65 | 13.44 |
| 1969 | 18.43 | 21.92 | 5.18 | 14.52 | 1.73 | 13.32 | 5.83 | 15.27 | 30.15 | 8.83 | 19.77 |
| 1970 | 17.02 | -4.99 | -4.75 | 12.49 | 4.41 | 10.84 | 5.98 | 16.24 | 17.14 | 7.13 | 3.04 |
| 1971 | 17.08 | 10.80 | 0.90 | 4.38 | 1.59 | 7.92 | 4.73 | 19.36 | 17.13 | 6.96 | 15.35 |
| 1972 | 15.10 | 19.68 | 5.66 | 4.94 | 2.31 | 7.21 | 3.99 | 19.14 | 20.56 | 6.61 | 17.45 |
| 1973 | 19.41 | 58.76 | 15.69 | 14.18 | 2.66 | 10.12 | 5.87 | 28.92 | 40.48 | 9.22 | 33.26 |
| 1974 | 26.96 | -14.43 | 3.68 | 31.06 | 7.94 | 24.45 | 9.88 | 76.98 | 15.69 | 19.00 | 12.97 |
| 1975 | 22.88 | -46.21 | 24.24 | 11.41 | 3.10 | 14.13 | 5.28 | 50.35 | 5.81 | 12.18 | 10.20 |
| 1976 | 16.54 | 51.66 | 15.77 | 12.13 | 4.71 | 12.82 | 7.41 | 31.69 | 27.23 | 13.38 | 23.02 |
| 1977 | 19.91 | 34.95 | 19.35 | 17.87 | 8.55 | 19.06 | 13.19 | 35.86 | 54.38 | 16.38 | 34.08 |
| 1978 | 24.31 | -54.71 | 28.32 | 24.61 | 8.79 | 22.51 | 16.16 | 37.65 | 56.23 | 20.45 | 32.69 |
| 1979 | 28.97 | -138.99 | 22.03 | 26.62 | 7.82 | 24.40 | 19.58 | 52.64 | 43.43 | 21.32 | 32.30 |
| 1980 | 31.36 | -135.31 | 18.89 | 8.03 | 7.34 | 23.81 | 15.67 | 31.26 | -75.23 | 18.59 | -7.01 |
| 1981 | 26.18 | -17.74 | 16.90 | 19.97 | 8.51 | 18.80 | 17.10 | 35.40 | -45.84 | 21.39 | 0.84 |
| 1982 | ----- | ----- | ----- | -3.74 | 9.90 | ----- | ----- | ----- | ----- | ----- | ----- |

| Year | IBM | Macy | Merck | Semi-Condu. | Pfizer | Proc & Gamble | Sears | US Steel |
|---|---|---|---|---|---|---|---|---|
| 1963 | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| 1964 | 8.11 | 8.26 | 5.49 | ----- | 8.02 | 7.39 | 5.64 | 17.93 |
| 1965 | 5.97 | 10.88 | 4.82 | ----- | 6.40 | 8.21 | 5.83 | 18.16 |
| 1966 | 5.52 | 15.89 | 5.75 | ----- | 7.96 | 8.56 | 8.87 | 27.66 |
| 1967 | 4.18 | 10.72 | 5.49 | 2.81 | 6.51 | 8.23 | 7.44 | 15.36 |
| 1968 | 5.49 | 11.62 | 5.58 | 3.93 | 7.60 | 9.70 | 7.73 | 14.40 |
| 1969 | 4.78 | 14.01 | 4.84 | 4.96 | 5.90 | 7.94 | 7.43 | 15.73 |
| 1970 | 5.35 | 11.51 | 5.98 | 2.80 | 5.96 | 8.67 | 6.43 | 7.33 |
| 1971 | 4.72 | 8.99 | 5.32 | 5.55 | 5.35 | 6.52 | 5.44 | 7.31 |
| 1972 | 4.81 | 10.44 | 4.00 | 5.95 | 5.55 | 5.39 | 5.26 | 9.86 |
| 1973 | 7.82 | 27.34 | 5.02 | 12.44 | 6.01 | 6.85 | 7.91 | 22.69 |
| 1974 | 12.59 | 47.52 | 6.96 | 23.98 | 8.92 | 8.76 | 10.83 | 51.25 |
| 1975 | 9.20 | 23.12 | 6.65 | 4.63 | 11.70 | 8.17 | 8.64 | 22.77 |
| 1976 | 9.27 | 23.96 | 7.31 | 3.95 | 10.57 | 9.05 | 9.20 | 9.99 |
| 1977 | 11.26 | 25.34 | 9.99 | 13.04 | 13.23 | 11.68 | 13.06 | 0.44 |
| 1978 | 11.81 | 32.88 | 8.81 | 20.98 | 13.48 | 12.51 | 19.40 | 13.20 |
| 1979 | 12.80 | 31.76 | 9.78 | 19.08 | 12.93 | 16.30 | 18.11 | -27.16 |
| 1980 | 12.70 | 32.85 | 8.93 | 8.92 | 10.50 | 18.55 | ----- | 31.55 |
| 1981 | 15.14 | 30.21 | 7.84 | -8.29 | 9.37 | 15.86 | ----- | 63.02 |
| 1982 | ----- | 13.22 | ----- | ----- | ----- | 13.54 | ----- | ----- |

# Table 3j
## Earnings-Price Ratios-Japan
## (Corrected)

| Year | All Nippon Air. | Fuji Photo | Fujitsu | Kao Soap | Kawaskai Steel | Konishiroku Photo | Lion | Mitsubishi Chemical | Mitsukoshi | National | NEC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1964 | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| 1965 | ----- | 15.12 | ----- | ----- | ----- | ----- | 29.46 | ----- | ----- | 10.83 | ----- |
| 1966 | 42.45 | 11.46 | 12.77 | 13.54 | 19.21 | 11.91 | 30.50 | 16.81 | 11.05 | 14.61 | 4.53 |
| 1967 | 9.21 | 17.64 | 13.34 | 22.24 | 19.33 | 11.87 | 28.10 | 9.66 | 10.49 | 21.94 | 6.70 |
| 1968 | 32.37 | 15.12 | 14.46 | 20.96 | 27.55 | 0.07 | 33.02 | 20.53 | 11.38 | 16.29 | 11.11 |
| 1969 | 16.48 | 16.43 | 6.58 | 19.23 | 17.32 | -14.49 | 52.07 | 20.84 | 13.77 | 11.15 | 5.42 |
| 1970 | 19.76 | 15.00 | 7.27 | 16.49 | 22.81 | 6.66 | 49.79 | 36.10 | 13.32 | 23.91 | 9.70 |
| 1971 | 19.35 | 15.26 | 9.70 | 23.50 | 30.08 | 15.17 | 42.51 | 23.89 | 13,24 | 16.98 | 11.47 |
| 1972 | 8.66 | 13.90 | 7.86 | 15.70 | 21.62 | 9.94 | 31.74 | 16.86 | 9,90 | 14.98 | 8.70 |
| 1973 | 14.57 | 18.92 | 8.49 | 19.92 | 19.22 | 15.24 | 44.51 | 13.42 | 7.85 | 20.93 | 10.04 |
| 1974 | 16.72 | 28.44 | 13.04 | 50.00 | 62.49 | 38.10 | 53.87 | 31.09 | 13,40 | 24.55 | 22.07 |
| 1975 | 7.10 | 8.60 | 2.92 | 13.56 | 18.92 | 25.45 | 7.92 | 43.94 | 11,06 | 9.66 | 8.18 |
| 1976 | 7.09 | 11.25 | 2.01 | 9.58 | 9.90 | 16.50 | 20.36 | 11.15 | 11.16 | 14.65 | 5.55 |
| 1977 | 1.87 | 12.76 | 7.36 | 5.62 | 11.78 | 13.86 | 17.73 | 5.95 | 12,02 | 16.40 | 7.48 |
| 1978 | 0.87 | 13.98 | ----- | 10.37 | 9.47 | 12.67 | 13.64 | 8.26 | 11.10 | 13.93 | 6.24 |
| 1979 | 2.36 | 13.67 | ----- | 16.26 | 10.16 | 13.62 | 13.53 | 2.87 | 10,35 | 13.61 | 5.77 |
| 1980 | 0.17 | 20.21 | ----- | 17.94 | 32.21 | 13.63 | 4.99 | 5.00 | 11.78 | 11.86 | 7.96 |
| 1981 | 1.04 | 20.57 | ----- | 7.84 | 19.37 | 10.56 | 9.40 | 5.69 | 10.39 | 9.83 | 6.46 |
| 1982 | 0.35 | 15.77 | ----- | 7.03 | 21.85 | 16.99 | 10.44 | 0.58 | 8.16 | 8.08 | 7.38 |
| 1983 | 0.01 | ----- | ----- | 7.51 | 7.59 | 13.24 | ----- | -5.12 | -4.08 | ----- | 5.51 |

| Year | Nippon Steel | Nissan Motor | Oki Elec. | Shionogi | Sony | Sumitomo Chemical | Taisho | Takashimaya | Takeda Chemical | Toshiba |
|---|---|---|---|---|---|---|---|---|---|---|
| 1964 | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| 1965 | ----- | ----- | ----- | ----- | 4.97 | 13,49 | ----- | ----- | ----- | ----- |
| 1966 | 26.31 | 18.48 | 2.94 | 26.74 | 10.34 | 18,53 | 10.39 | 20.27 | 23.43 | -8.34 |
| 1967 | 33.22 | 12.46 | 4.05 | 29.49 | 10.32 | 19,27 | 1.23 | 19.06 | 23.07 | 0.10 |
| 1968 | 52.97 | 22.78 | 10.01 | 27.84 | 6.49 | 21,29 | 16.36 | 23.84 | 26.05 | 14.93 |
| 1969 | 41.73 | 20.22 | 5.64 | 19.40 | 2.67 | 16,62 | 14.52 | 24.39 | 19.49 | 15.19 |
| 1970 | 30.43 | 26.50 | 8.56 | 18.73 | 4.20 | 27,79 | 13.17 | 20.97 | 17.12 | 19.67 |
| 1971 | 29.43 | 30.32 | 10.31 | 31.62 | 4.57 | 18,78 | 18.01 | 22:47 | 22.68 | 12.74 |
| 1972 | 20.54 | 14.06 | 12,63 | 28.15 | 4.19 | 5,50 | 16.47 | 17.15 | 15.39 | 3.40 |
| 1973 | 14.52 | 17.57 | 11.01 | 17.52 | 5.75 | 14.38 | 13.50 | 14.75 | 8.91 | 6.50 |
| 1974 | 42.47 | 28.92 | 21.88 | 22.64 | 10.67 | 33,45 | 14.18 | 33.99 | 8.48 | 23.51 |
| 1975 | 13.63 | 8.40 | 5.03 | 28.72 | 3.39 | 13,31 | 10.18 | 18.24 | 19.85 | 5.36 |
| 1976 | 5.83 | 17.19 | 4.16 | 14.51 | 7.17 | 0.69 | 9.47 | 14.12 | 10.45 | 1.48 |
| 1977 | 11.72 | 20.16 | 2.76 | 9.95 | 9.06 | 1.27 | 9.85 | 15.51 | 10.21 | 11.24 |
| 1978 | 1.11 | 13.03 | 4.25 | 8.57 | 10.32 | -1.69 | 10.18 | 12.63 | 9.32 | 8.48 |
| 1979 | 4.76 | 12.20 | -3.08 | 11.04 | 12.24 | 5.66 | 9.53 | 11.57 | 11.66 | 12.32 |
| 1980 | 23.12 | 17.60 | 7.70 | 14.40 | 8.90 | 5.77 | 12.87 | 12.62 | 16.84 | 21.89 |
| 1981 | 27.51 | 14.76 | 6.91 | 10.56 | 8.95 | -0.32 | 13.44 | 14.79 | 7.34 | 12.09 |
| 1982 | 13.98 | 15.34 | 7.54 | 7.46 | 8.69 | -6.09 | 14.10 | 15.64 | 7.94 | 13.95 |
| 1983 | 3.51 | 11.09 | 3.01 | 10.18 | ----- | ----- | 15.42 | 12.96 | 8.31 | 10.80 |

American firms.

Tables 4a and 4j present corresponding corrected measures of the total returns to debt plus equity.[7] Average (1966-81) values of these series are presented in the sixth column of tables 2a and 2j. As before, the denominator of this measure is the sum of equity and the book value of financial liabilities, while the numerator is the sum of corrected earnings and corrected interest payments, equal to interest payments less the inflation rate multiplied by the book value of financial liabilities. Since the addition of interest payments offsets most of the inflation gain on nominal liabilities included in corrected earnings, the effect of inflation corrections on the overall return to capital is clearly negative for firms in both countries. For the U.S., the reduction in the average value of R/K ranges between -0.4% and 3.2%. For Japan, the average reduction is typically somewhat larger, ranging from -0.3% to 4.6%.

The median average before-tax return to capital in the U.S. falls from 10.3 percent without correction to 9.4 percent. The median value for Japan falls substantially more, from 10.3 percent to 7.5 percent. These larger reductions strenghten the case that the return to capital is systematically lower in Japan.

This is evident in several industries. Consider, for example, computers where the inflation corrections are much larger for Japanese than for U.S. firms. Here, average rates of return for the three Japanese companies range between 3.8% and 5.2%. while the range is 4.6% - 8.4% for U.S. firms. In chemicals, the range is 4.0% - 10.2% in Japan, compared to Dow's 10.7% for the U.S. There remain exceptions to this rule, in the drug industry, for example, but the result is clearer when corrected measures are used. In our

# Table 4a
## Return to Capital-U.S.
## (Corrected)

| Year | AT&T | Chrysler | CDC | Delta | Digital | Dow | Kodak | Exxon | Ford | G.E. | Gen. Motors |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1963 | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ---- | ----- | ----- |
| 1964 | 7.61 | 15.17 | 5.43 | 14.87 | ----- | 7.34 | 6.62 | 8.14 | 12.64 | 5.63 | 9.80 |
| 1965 | 8.54 | 16.09 | 5.18 | 9.16 | ----- | 7.96 | 4.94 | 9.33 | 17.00 | 7.07 | 12.11 |
| 1966 | 9.76 | 19.75 | -1.15 | 8.22 | ----- | 9.50 | ----- | 12.43 | 19.58 | 8.70 | 14.13 |
| 1967 | 10.49 | 10.89 | 1.70 | 12.73 | 2.02 | 7.50 | ----- | 12.89 | -0.33 | 8.13 | 10.52 |
| 1968 | 10.53 | 18.19 | 3.64 | 8.20 | 2.49 | 8.90 | 6.29 | 12.12 | 16.92 | 8.04 | 13.19 |
| 1969 | 11.42 | 12.36 | 4.28 | 10.75 | 1.70 | 9.16 | 5.79 | 12.60 | 26.27 | 8.08 | ----- |
| 1970 | 9.83 | -2.95 | -1.53 | 10.33 | 4.23 | 7.39 | 5.94 | 13.54 | 15.25 | 6.70 | 3.05 |
| 1971 | 9.65 | 6.48 | 1.78 | 3.93 | 1.73 | 6.00 | 4.73 | 16.14 | 15.11 | 6.51 | 14.76 |
| 1972 | 9.27 | 13.49 | 5.25 | 4.65 | 2.28 | 6.15 | 3.99 | 16.64 | 18.44 | 6.39 | 16.85 |
| 1973 | 10.41 | 21.24 | 8.72 | 11.49 | 2.67 | 8.31 | 5.85 | 24.86 | 29.18 | 8.41 | 30.83 |
| 1974 | 10.99 | -2.32 | 0.71 | 18.48 | 7.75 | 18.25 | 9.78 | 27.54 | 8.79 | 14.73 | 11.03 |
| 1975 | 9.81 | -10.35 | 9.08 | 6.76 | 2.73 | 11.27 | 5.25 | 40.03 | 4.92 | 10.25 | 9.64 |
| 1976 | 9.91 | 29.94 | 10.26 | 9.26 | 4.74 | 10.63 | 7.36 | 26.50 | 21.69 | 12.16 | 22.26 |
| 1977 | 11.25 | 16.05 | 12.22 | 14.45 | 8.28 | 12.87 | 13.08 | 29.41 | 40.54 | 14.50 | 31.81 |
| 1978 | 12.57 | -17.13 | 17.07 | 21.16 | 7.39 | 13.23 | 15.89 | 30.60 | 40.81 | 17.91 | 38.76 |
| 1979 | 13.16 | -32.62 | 14.57 | 21.94 | 6.71 | 15.33 | 19.18 | 41.83 | 26.89 | 19.14 | 29.68 |
| 1980 | 13.75 | -29.64 | 15.18 | 7.18 | 6.19 | 14.62 | 15.57 | 26.98 | -26.04 | 17.05 | -4.22 |
| 1981 | 13.10 | -2.61 | 12.96 | 15.73 | 8.75 | 11.77 | 16.97 | 28.61 | -10.41 | 19.64 | 3.05 |
| 1982 | ----- | ----- | ----- | -1.71 | 9.87 | ----- | ----- | ----- | ----- | ----- | ----- |

| | IBM | Macy | Merck | Semi-Condu. | Pfizer | Proc & Gamble | Sears | US Steel |
|---|---|---|---|---|---|---|---|---|
| 1963 | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| 1964 | 8.02 | 8.37 | 5.49 | ----- | 7.86 | 7.26 | 5.33 | 15.08 |
| 1965 | 5.89 | 10.27 | 4.82 | ----- | 6.36 | 8.00 | 5.33 | 15.23 |
| 1966 | 5.43 | 13.19 | 5.75 | ----- | 7.79 | 8.31 | 7.49 | 17.38 |
| 1967 | 4.14 | 10.44 | 5.47 | 2.81 | 6.50 | 8.04 | 6.46 | 10.50 |
| 1968 | 5.45 | 9.84 | 5.57 | 3.99 | 7.43 | 9.36 | 6.62 | 8.69 |
| 1969 | 4.72 | 11.77 | 4.83 | 4.64 | 5.83 | 7.72 | 6.51 | 8.75 |
| 1970 | 5.26 | 9.93 | 5.96 | 3.42 | 5.81 | 8.47 | 5.70 | 4.10 |
| 1971 | 4.69 | 8.48 | 5.25 | 5.31 | 5.06 | 8.43 | 4.80 | 4.09 |
| 1972 | 4.82 | 9.87 | 3.98 | 5.92 | 5.25 | 5.27 | 4.71 | 6.03 |
| 1973 | 7.77 | 19.70 | 4.98 | 12.03 | 5.77 | 6.64 | 6.73 | 13.83 |
| 1974 | 12.36 | 27.29 | 6.87 | 21.21 | 7.27 | 8.31 | 6.98 | 30.01 |
| 1975 | 9.10 | 16.74 | 6.17 | 4.67 | 8.48 | 7.26 | 5.50 | 14.48 |
| 1976 | 9.25 | 20.22 | 7.10 | 3.78 | 8.90 | 8.62 | 6.83 | 6.72 |
| 1977 | 11.19 | 21.35 | 9.52 | 12.08 | 10.23 | 10.90 | 8.22 | 0.44 |
| 1978 | 11.71 | 28.02 | 8.42 | 17.48 | 10.04 | 11.51 | 11.21 | 5.32 |
| 1979 | 11.78 | 25.73 | 9.12 | 15.98 | 9.95 | 14.38 | 9.44 | -11.47 |
| 1980 | 12.08 | 28.35 | 8.63 | 8.51 | 8.62 | 15.33 | ----- | 13.53 |
| 1981 | 14.14 | 28.34 | 7.04 | -6.36 | 7.81 | 13.93 | ----- | 31.65 |
| 1982 | ----- | 15.37 | ----- | ----- | ----- | 12.66 | ----- | ----- |

# Table 4j
## Return to Capital-Japan
## (Corrected)

| Year | All Nippon Air. | Fuji Photo | Fujitsu | Kao Soap | Kawaskai Steel | Konishiroku Photo | Lion | Mitsubishi Chemical | Mitsukoshi | National | NEC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1964 | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| 1965 | ----- | 11.45 | ----- | ----- | ----- | ----- | 15.21 | ----- | ----- | 11.24 | ----- |
| 1966 | 10.69 | 8.76 | 7.88 | 10.12 | 9.25 | 7.80 | 16.29 | 6.04 | 10.36 | 12.63 | 3.75 |
| 1967 | 2.30 | 13.02 | 7.48 | 16.09 | 8.90 | 5.47 | 16.32 | 3.82 | 10.40 | 19.19 | 4.25 |
| 1968 | 10.98 | 11.37 | 9.12 | 13.20 | 9.28 | 2.08 | 16.48 | 6.40 | 11.51 | 15.00 | 5.82 |
| 1969 | 8.11 | 12.73 | 5.42 | 12.51 | 6.68 | -2.52 | 25.96 | 5.76 | 13.48 | 10.80 | 4.16 |
| 1970 | 9.73 | 10.94 | 5.33 | 9.08 | 5.46 | 3.15 | 23.28 | 5.39 | 11.35 | 21.08 | 5.42 |
| 1971 | 8.86 | 10.52 | 7.11 | 13.03 | 8.75 | 6.06 | 26.83 | 4.97 | 10.94 | 16.04 | 6.19 |
| 1972 | 5.02 | 10.77 | 6.17 | 9.81 | 5.69 | 5.10 | 22.96 | 3.30 | 8.25 | 14.87 | 4.69 |
| 1973 | 6.75 | 11.78 | 3.74 | 11.88 | 2.96 | 5.05 | 18.86 | 0.36 | 6.14 | 19.86 | 2.13 |
| 1974 | 3.28 | 10.34 | 2.43 | 11.36 | 6.69 | 6.31 | 8.59 | -2.49 | 8.32 | 22.59 | 0.06 |
| 1975 | 2.74 | 7.29 | 1.69 | 3.46 | 7.73 | 8.66 | 1.41 | 6.71 | 10.25 | 11.23 | 2.88 |
| 1976 | 3.69 | 10.09 | 1.72 | 4.08 | 4.46 | 10.92 | 9.33 | 2.83 | 11.56 | 15.37 | 2.43 |
| 1977 | 1.89 | 10.86 | 4.53 | 3.66 | 4.51 | 10.20 | 6.18 | 3.16 | 12.87 | 17.47 | 3.41 |
| 1978 | 1.36 | 11.79 | ----- | 5.77 | 4.25 | 8.97 | 7.98 | 3.90 | 11.88 | 15.14 | 3.47 |
| 1979 | 2.38 | 12.42 | ----- | 9.22 | 6.25 | 9.56 | 6.81 | 3.79 | 11.07 | 13.96 | 4.09 |
| 1980 | 1.46 | 18.76 | ----- | 6.49 | 11.98 | 8.50 | 3.07 | 4.23 | 12.38 | 12.55 | 5.89 |
| 1981 | 2.22 | 20.12 | ----- | 5.34 | 11.84 | 8.55 | 5.12 | 5.54 | 11.49 | 10.64 | 5.76 |
| 1982 | 2.99 | 15.76 | ----- | 5.31 | 12.08 | 13.21 | 6.39 | 3.64 | 8.23 | 9.00 | 6.34 |
| 1983 | 3.24 | ----- | ----- | 5.71 | 7.95 | 10.40 | ----- | 2.84 | -1.24 | ----- | 5.70 |

| | Nippon Steel | Nissan Motor | Oki Elec. | Shionogi | Sony | Sumitomo Chemical | Taisho | Takashimaya | Takeda Chemical | Toshiba |
|---|---|---|---|---|---|---|---|---|---|---|
| 1964 | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| 1965 | ----- | ----- | ----- | ----- | 5.10 | 9.53 | ----- | ----- | ----- | ----- |
| 1966 | 9.16 | 9.11 | 2.63 | 13.68 | 6.72 | 8.29 | 8.96 | 9.09 | 14.09 | -1.41 |
| 1967 | 11.37 | 6.78 | 2.73 | 13.56 | 7.65 | 6.81 | 1.24 | 8.78 | 13.73 | 1.00 |
| 1968 | 12.05 | 10.56 | 4.33 | 13.04 | 4.92 | 7.85 | 14.05 | 10.55 | 16.02 | 5.58 |
| 1969 | 8.66 | 8.02 | 4.18 | 12.30 | 2.25 | 6.82 | 13.49 | 10.56 | 14.64 | 6.99 |
| 1970 | 7.61 | 7.29 | 5.15 | 14.52 | 3.35 | 7.35 | 12.38 | 7.49 | 13.08 | 5.42 |
| 1971 | 7.67 | 8.64 | 6.56 | 20.79 | 4.35 | 5.90 | 16.54 | 9.55 | 15.40 | 3.25 |
| 1972 | 5.23 | 8.42 | 6.81 | 21.41 | 3.97 | 3.51 | 15.03 | 8.47 | 10.35 | 1.79 |
| 1973 | 4.16 | 7.76 | 3.04 | 13.10 | 4.76 | 2.67 | 11.92 | 6.06 | 4.56 | -0.96 |
| 1974 | 7.37 | 4.50 | 2.67 | 14.33 | 6.60 | 3.92 | 10.53 | 6.91 | 0.14 | -2.19 |
| 1975 | 6.60 | 3.00 | 1.81 | 20.66 | 3.41 | 3.13 | 9.29 | 7.93 | 12.26 | 0.91 |
| 1976 | 3.53 | 9.68 | 2.35 | 11.50 | 6.68 | 2.24 | 8.95 | 7.49 | 6.20 | 1.30 |
| 1977 | 5.43 | 13.11 | 1.91 | 9.13 | 8.49 | 1.74 | 9.37 | 8.65 | 6.44 | 4.30 |
| 1978 | 2.85 | 9.81 | 3.25 | 8.12 | 8.78 | 0.74 | 9.75 | 8.58 | 6.97 | 4.66 |
| 1979 | 4.96 | 9.61 | 0.50 | 10.62 | 11.05 | 4.45 | 9.36 | 8.95 | 9.77 | 6.66 |
| 1980 | 11.40 | 13.85 | 6.19 | 13.64 | 8.99 | 5.40 | 12.41 | 9.36 | 13.18 | 11.67 |
| 1981 | 11.18 | 12.49 | 6.13 | 10.47 | 8.76 | 2.55 | 12.89 | 11.88 | 6.73 | 9.00 |
| 1982 | 9.98 | 12.30 | 6.75 | 7.60 | 8.62 | 0.96 | 13.78 | 10.69 | 7.31 | 10.59 |
| 1983 | 6.38 | 9.37 | 4.50 | 10.22 | ----- | ----- | 14.95 | 10.64 | 7.82 | 8.98 |

sample, there are clear differences in rates of return (with Japan having a lower rate) in airlines, film and photographic equipment, steel, autos, computers and chemicals. While we would emphasize again that caution is necessary in regarding results from such a small sample, there seems to be some evidence that a difference in returns to capital exists. The remainder the the paper is devoted to considering the potential sources of this difference, and whether it reflects a true difference in underlying capital costs.

## 4. Explaining Differences in the Rate of Return

In this section, we explore two types of explanations for the apparent rate of return differential between the U.S. and Japan. One approach is to try to explain why the costs of capital do differ; another is to show why the rate-of-return calculations of the previous section may need further adjustment before they can be identified with costs of capital. Explanations of these two types would obviously have different policy implications.

### 4a. Taxation

Although there are no scholarly sources that we know of to cite, there is certainly a common perception in the U.S. that business taxes are at the root of our problems of competition with Japan. This argument is difficult to substantiate using our data.

Tables 5a and 5j present corrected after-tax earnings-price ratios for U.S. and Japanese firms, respectively, calculated by subtracting income taxes paid from the corrected before-tax earnings

# Table 5a
## After-Tax Earnings-Price Ratios-U.S.
## (Corrected)

| Year | AT&T | Chrysler | CDC | Delta | Digital | Dow | Kodak | Exxon | Ford | G.E. | Gen. Motors |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1963 | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| 1964 | 4.70 | 8.96 | 3.31 | 8.97 | ----- | 5.13 | 3.31 | 5.46 | 5.44 | 3.05 | 4.37 |
| 1965 | 5.98 | 9.01 | 3.08 | 5.46 | ----- | 6.00 | 2.55 | 6.06 | 8.88 | 3.93 | 5.63 |
| 1966 | 7.51 | 12.47 | -1.91 | 5.06 | ----- | 7.80 | 2.99 | 8.25 | 10.56 | 4.98 | 6.79 |
| 1967 | 8.40 | 6.73 | 0.64 | 7.69 | 1.11 | 5.72 | 2.96 | 8.76 | -1.72 | 4.96 | 4.83 |
| 1968 | 8.54 | 10.79 | 1.67 | 5.47 | 1.32 | 7.80 | 2.85 | 7.89 | 7.15 | 4.98 | 5.61 |
| 1969 | 10.56 | 17.05 | 3.63 | 8.65 | 0.90 | 9.39 | 2.61 | 7.57 | 17.70 | 5.53 | 11.07 |
| 1970 | 10.68 | -3.45 | -1.56 | 7.24 | 2.41 | 6.88 | 2.80 | 9.14 | 9.24 | 4.54 | 2.31 |
| 1971 | 10.93 | 6.80 | 2.76 | 3.08 | 0.65 | 5.38 | 2,20 | 10.04 | 8.54 | 4.18 | 7.70 |
| 1972 | 9.26 | 10.99 | 4.69 | 2.84 | 1.27 | 4.48 | 1.97 | 7.18 | 10.92 | 3.87 | 8.68 |
| 1973 | 12.47 | 35.98 | 11.62 | 7.85 | 1.45 | 6.30 | 2.94 | 11.11 | 22.94 | 5.57 | 17.55 |
| 1974 | 18.70 | 5.68 | 16.91 | 18.91 | 4.34 | 14.05 | 4.71 | 22.86 | 9.21 | 12.73 | 4.98 |
| 1975 | 15.55 | -50.54 | 18.66 | 8.03 | 1.42 | 8.53 | 2.40 | 13.69 | 2.13 | 7.97 | 3.55 |
| 1976 | 9.39 | 34.26 | 12.57 | 6.99 | 2.51 | 7.58 | 3.67 | 10.10 | 14.62 | 8.07 | 11.73 |
| 1977 | 12.05 | 22.67 | 14.31 | 9.99 | 4.81 | 11.43 | 6.43 | 9.71 | 29.91 | 9.59 | 18.00 |
| 1978 | 15.25 | -44.11 | 20.06 | 13.33 | 4.80 | 13.99 | 7.93 | 11.22 | 32.90 | 12.13 | 22.91 |
| 1979 | 19.44 | -138.25 | 15.53 | 15.66 | 3.66 | 15.55 | 10.48 | 17.71 | 34.84 | 13.05 | 17.50 |
| 1980 | 21.43 | -139.58 | 12.94 | 5.34 | 3.65 | 16.58 | 8.49 | 15.68 | -57.13 | 11.73 | -4.18 |
| 1981 | 17.57 | -18.71 | 10.53 | 12.13 | 3.74 | 15.26 | 8.93 | 20.89 | -42.45 | 14.02 | 1.87 |
| 1982 | ----- | ----- | ----- | -1.69 | 5.25 | ----- | ----- | ----- | ----- | ----- | ----- |

| | IBM | Macy | Merck | Semi-Condu. | Pfizer | Proc & Gamble | Sears | US Steel |
|---|---|---|---|---|---|---|---|---|
| 1963 | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| 1964 | 4.86 | 3.33 | 3.00 | ----- | 4.60 | 3.61 | 3.13 | 10.81 |
| 1965 | 3.23 | 5.48 | 2.71 | ----- | 3.51 | 4.23 | 3.22 | 10.50 |
| 1966 | 2.91 | 8.50 | 3.10 | ----- | 4.25 | 4.47 | 4.89 | 17.40 |
| 1967 | 2.34 | 5.55 | 3.07 | 1.93 | 3.51 | 4.22 | 4.24 | 11.91 |
| 1968 | 2.70 | 5.89 | 2.80 | 2.61 | 3.81 | 5.06 | 3.95 | 10.10 |
| 1969 | 2.26 | 7.26 | 2.33 | 3.64 | 2.89 | 3.71 | 3.64 | 12.02 |
| 1970 | 2.62 | 6.04 | 3.07 | 0.58 | 3.08 | 3.96 | 3.33 | 6.43 |
| 1971 | 2.21 | 4.83 | 2.78 | 3.19 | 2.90 | 3.26 | 2.94 | 7.31 |
| 1972 | 2.36 | 5.38 | 2.19 | 3.55 | 3.03 | 2.74 | 2.97 | 7.20 |
| 1973 | 4.04 | 14.05 | 2.82 | 7.44 | 3.54 | 3.46 | 4.47 | 13.96 |
| 1974 | 6.17 | 30.64 | 3.96 | 13.15 | 5.75 | 4.68 | 6.83 | 31.47 |
| 1975 | 4.05 | 14.53 | 3.82 | 1.88 | 8.27 | 4.25 | 4.80 | 15.28 |
| 1976 | 4.23 | 13.07 | 4.22 | 1.74 | 7.03 | 4.69 | 5.73 | 7.35 |
| 1977 | 5.38 | 13.98 | 5.86 | 5.99 | 9.10 | 5.96 | 9.11 | 1.80 |
| 1978 | 5.64 | 18.96 | 4.93 | 11.00 | 9.07 | 6.45 | 14.02 | 12.76 |
| 1979 | 6.03 | 18.63 | 5.66 | 10.19 | 8.72 | 8.92 | 14.28 | -7.86 |
| 1980 | 6.81 | 19.02 | 5.17 | 4.29 | 6.69 | 10.82 | ----- | 24.77 |
| 1981 | 7.18 | 17.31 | 4.85 | -6.81 | 5.42 | 8.07 | ----- | 38.41 |
| 1982 | ----- | 6.92 | ----- | ----- | ----- | 7.18 | ----- | ----- |

# Table 5j
## After-Tax Earnings-Price Ratios-Japan
## (Corrected)

| Year | All Nippon Air. | Fuji Photo | Fujitsu | Kao Soap | Kawaskai Steel | Konishiroku Photo | Lion | Mitsubishi Chemical | Mitsukoshi | National | NEC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1964 | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| 1965 | ----- | 9.07 | ----- | ----- | ----- | ----- | 14.80 | ----- | ----- | 4.74 | ----- |
| 1966 | 42.31 | 6.71 | 7.64 | 6.97 | 14.37 | 7.20 | 15.79 | 14.42 | 6.74 | 7.35 | 2.91 |
| 1967 | 9.21 | 9.86 | 7.54 | 13.73 | 14.87 | 7.88 | 15.42 | 5.92 | 6.20 | 12.51 | 4.26 |
| 1968 | 32.37 | 9.74 | 10.02 | 13.09 | 21.80 | -0.57 | 18.93 | 16.21 | 6.59 | 8.94 | 7.47 |
| 1969 | 14.70 | 11.18 | 4.49 | 11.69 | 13.39 | -14,99 | 30.85 | 17.02 | 8.62 | 6.38 | 3.47 |
| 1970 | 16.89 | 10.34 | 4.65 | 7.62 | 18.91 | 6.66 | 27.66 | 32.49 | 8.62 | 13.50 | 7.09 |
| 1971 | 15.95 | 10.52 | 5.51 | 15.21 | 22.96 | 12.84 | 23,77 | 19.57 | 8,24 | 9.62 | 7.80 |
| 1972 | 8.52 | 8.67 | 4.25 | 8.66 | 18.36 | 7.19 | 16,91 | 14.24 | 6,38 | 8.59 | 6,22 |
| 1973 | 12.02 | 11.10 | 4.69 | 12.43 | 18.55 | 8.84 | 23,63 | 12.50 | 5,34 | 12.60 | 7,64 |
| 1974 | 15.21 | 19.97 | 10.57 | 38.71 | 55.69 | 26.30 | 34,95 | 29.11 | 9,55 | 13.54 | 17.62 |
| 1975 | 6.77 | 4.50 | 2.03 | 7.95 | 14.63 | 19.46 | -0,59 | 37.75 | 5.59 | 5.90 | 6,33 |
| 1976 | 6.27 | 4.80 | 0.71 | 3.39 | 9.9 | 7.87 | 8,37 | 10.28 | 5,25 | 6.94 | 4.16 |
| 1977 | 0.23 | 6.54 | 4.29 | 1.34 | 9.97 | 7.27 | 6,60 | 1.85 | 5,73 | 8.29 | 5.08 |
| 1978 | -0.07 | 7.21 | ----- | 4.92 | 7.24 | 7.20 | 4,37 | 6.78 | 5,29 | 7.95 | 4.52 |
| 1979 | 1.16 | 6.89 | ----- | 8.57 | 0.84 | 7.22 | 7.94 | 2.62 | 5,09 | 7.33 | 3,94 |
| 1980 | 0.01 | 9.32 | ----- | 10.17 | 16.14 | 6.02 | 2038 | 2.70 | 6.09 | 6.71 | 4.92 |
| 1981 | -0.60 | 9.71 | ----- | 2.07 | 11.04 | 4.61 | 4.47 | 2.71 | 5,41 | 4.85 | 4.02 |
| 1982 | 0.34 | 7.69 | ----- | 1.31 | 13.54 | 8.49 | 4.89 | 0.45 | 3.95 | 4,42 | 4,05 |
| 1983 | -0.06 | ----- | ----- | 2.41 | 6.39 | 7.20 | ----- | -4.74 | -4.01 | ----- | 3.17 |

| Year | Nippon Steel | Nissan Motor | Oki Elec. | Shionogi | Sony | Sumitomo Chemical | Taisho | Takashimaya | Takeda Chemical | Toshiba |
|---|---|---|---|---|---|---|---|---|---|---|
| 1964 | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| 1965 | ----- | ----- | ----- | ----- | 1.34 | 11.33 | ----- | ----- | ----- | ----- |
| 1966 | 21.21 | 13.37 | 0.34 | 16.43 | 4.95 | 15.89 | 6.80 | 15.57 | 13.86 | -8,34 |
| 1967 | 25.28 | 7.61 | 1.34 | 18.62 | 6.11 | 16.20 | 0.41 | 14.15 | 13.26 | -2.19 |
| 1968 | 44.13 | 16.06 | 6.03 | 17.28 | 4.29 | 19.23 | 9.38 | 16.79 | 13.18 | 9,92 |
| 1969 | 33.67 | 14.71 | 3.29 | 11.28 | 1.62 | 13.17 | 8.64 | 16.87 | 9.87 | 9,94 |
| 1970 | 25.87 | 18.19 | 6.01 | 10.54 | 2.62 | 24.56 | 7.53 | 16.26 | 9.34 | 14,11 |
| 1971 | 25.18 | 20.02 | 7.07 | 17.86 | 2.11 | 16.80 | 10.02 | 15.00 | 12.67 | 10.31 |
| 1972 | 18.64 | 8.50 | 8,91 | 16.43 | 2.03 | 5.00 | 8.87 | 11.47 | 9.40 | 1.63 |
| 1973 | 13.54 | 11.37 | 7.21 | 8.90 | 3.23 | 12.27 | 6.20 | 0.91 | 3.02 | 4,73 |
| 1974 | 36.05 | 22.42 | 17.68 | 9.16 | 4.58 | 30.80 | 4.57 | 27.02 | 0.15 | 19.37 |
| 1975 | 10.10 | 5.48 | 3.48 | 13.28 | 1.13 | 13.31 | 4.09 | 13.24 | 9.36 | 3.48 |
| 1976 | 5.83 | 7.79 | 2.40 | 3.95 | 3.16 | 1.24 | 3.97 | 10.46 | 2.21 | -0.35 |
| 1977 | 8.65 | 10.93 | 2.17 | 3.05 | 4.91 | 1.27 | 4.72 | 9.66 | 2.34 | 6.37 |
| 1978 | 0.56 | 7.35 | 2.91 | 2.81 | 5.58 | -1.69 | 5.00 | 7.43 | 1.36 | 6.16 |
| 1979 | -1.38 | 6.76 | -3.48 | 4.65 | 6.74 | 1.95 | 4.72 | 5.81 | 4.11 | 6.62 |
| 1980 | 11.87 | 8.98 | 3.91 | 6.05 | 4.35 | 4.07 | 6.40 | 5.30 | 6.68 | 12.65 |
| 1981 | 7.49 | 8.67 | 4.37 | 4.31 | 4.92 | -0.32 | 6.68 | 7.52 | 3.27 | 7.00 |
| 1982 | 7.48 | 8.59 | 6.15 | 2.47 | 5.01 | -6.09 | 6.85 | 6.34 | 3.45 | 8.08 |
| 1983 | 2.73 | 6.85 | 1.08 | 2.96 | ----- | ----- | 7.55 | 4.46 | 3.76 | 6.26 |

used to produce Tables 3a and 3j. In similar fashion, we produce after-tax returns to capital, presented in Tables 6a and 6j, by adding to after-tax corrected earnings corrected interest payments less the imputed tax deduction for such payments defined to equal to nominal interest payments multiplied by the relevant corporate tax rate. These correpsond to the financial concept of earnings before interest, after taxes. One may think of them as the after-tax returns the firms would earn if they were unlevered. Averages for these two measures for the period 1966-81 are provided in columns 5 and 7 of Tables 2a and 2j.

By comparing before-tax and after-tax returns to capital, one can assess the impact of the corporate tax system, holding financial policy constant. Both returns are those the firm would earn if unlevered, and the difference thus represents the tax burden on the firm's real, rather than financial activity.

Even a cursory comparison of before-tax and after-tax rates of return shows that it is Japanese, not American firms that are taxed more heavily on their real income. All but five of the 21 Japanese firms have average after-tax rates of return to capital that are less than half of their before-tax rates of return. This is true for only 10 of the 19 American firms. Moreover, because of the substantial tax reduction introduced by the 1981 tax act, the trend beyond the 1966-81 period over which these averages were taken should be toward even more favorable comparative tax treatment in the U.S.[8]

There are well-known pitfalls involved in using average rates of return to infer marginal effective rates relevant to the cost of capital for new investment. It would be preferable to use such

# Table 6a
## After-Tax Return to Capital-U.S.
## (Corrected)

| Year | AT&T | Chrysler | CDC | Delta | Digital | Dow | Kodak | Exxon | Ford | G.E. | Gen. Motors |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1963 | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| 1964 | 3.96 | 7.99 | 3.05 | 7.57 | ----- | 4.52 | 3.31 | 5.20 | 5.09 | 3.01 | 4.34 |
| 1965 | 4.66 | 8.03 | 2.50 | 4.97 | ----- | 5.00 | 2.55 | 5.68 | 7.98 | 3.81 | 5.57 |
| 1966 | 5.30 | 9.97 | -1.57 | 4.44 | ----- | 5.71 | ----- | 7.31 | 8.64 | 4.53 | 6.56 |
| 1967 | 5.65 | 5.33 | 0.52 | 6.79 | 1.12 | 4.43 | ----- | 7.46 | -1.38 | 4.51 | 4.74 |
| 1968 | 5.25 | 8.11 | 1.47 | 4.33 | 1.28 | 5.25 | 2.80 | 6.51 | 6.36 | 4.37 | 5.46 |
| 1969 | 5.62 | 8.83 | 2.52 | 5.68 | 0.88 | 5.41 | 2.57 | 5.74 | 14.99 | 4.68 | ---- |
| 1970 | 5.19 | -3.02 | -1.02 | 5.32 | 2.23 | 3.83 | 2.76 | 7.19 | 7.88 | 3.93 | 2.23 |
| 1971 | 5.11 | 3.05 | 1.34 | 2.24 | 0.72 | 3.42 | 2.18 | 7.97 | 7.21 | 3.66 | 7.32 |
| 1972 | 4.83 | 6.95 | 3.39 | 2.42 | 1.23 | 3.38 | 1.96 | 6.06 | 9.53 | 3.56 | 8.31 |
| 1973 | 5.39 | 11.59 | 4.92 | 5.79 | 1.44 | 4.56 | 2.91 | 9.20 | 15.65 | 4.74 | 16.05 |
| 1974 | 5.52 | -2.23 | 0.26 | 9.59 | 4.10 | 9.47 | 4.60 | 15.93 | 3.05 | 8.82 | 3.55 |
| 1975 | 4.57 | -16.26 | 3.79 | 3.14 | 1.01 | 5.99 | 2.35 | 9.93 | 0.35 | 5.94 | 2.96 |
| 1976 | 4.53 | 18.05 | 6.08 | 4.47 | 2.42 | 5.71 | 3.62 | 8.16 | 11.02 | 6.99 | 11.20 |
| 1977 | 5.51 | 7.97 | 7.29 | 7.36 | 4.48 | 6.63 | 6.33 | 7.58 | 21.53 | 8.03 | 16.54 |
| 1978 | 6.20 | -17.06 | 10.35 | 10.81 | 3.53 | 6.63 | 7.73 | 8.46 | 22.80 | 10.03 | 20.36 |
| 1979 | 6.81 | -37.39 | 8.83 | 12.16 | 2.66 | 8.15 | 10.17 | 13.21 | 19.86 | 11.11 | 15.60 |
| 1980 | 7.16 | -35.70 | 9.12 | 4.14 | 2.62 | 8.31 | 8.34 | 12.91 | -22.60 | 10.12 | -3.50 |
| 1981 | 6.65 | -7.79 | 6.65 | 8.65 | 3.80 | 6.95 | 8.76 | 15.37 | -13.92 | 12.08 | 1.16 |
| 1982 | ----- | ----- | ----- | -1.37 | 5.19 | ----- | ----- | ----- | ----- | ----- | ----- |

| | IBM | Macy | Merck | Semi-Condu. | Pfizer | Proc & Gamble | Sears | US Steel |
|---|---|---|---|---|---|---|---|---|
| 1963 | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| 1964 | 4.78 | 3.46 | 3.00 | ----- | 4.46 | 3.53 | 2.88 | 8.93 |
| 1965 | 3.16 | 4.94 | 2.71 | ----- | 3.44 | 4.08 | 2.81 | 8.62 |
| 1966 | 2.83 | 6.51 | 3.10 | ----- | 4.07 | 4.28 | 3.82 | 10.31 |
| 1967 | 2.29 | 5.06 | 3.06 | 1.88 | 3.42 | 4.08 | 3.42 | 7.52 |
| 1968 | 2.64 | 4.36 | 2.79 | 2.59 | 3.60 | 4.80 | 3.01 | 5.23 |
| 1969 | 2.19 | 5.31 | 2.32 | 3.16 | 2.75 | 3.53 | 2.74 | 5.55 |
| 1970 | 2.53 | 4.44 | 3.05 | 0.70 | 2.86 | 3.80 | 2.57 | 2.58 |
| 1971 | 2.15 | 3.99 | 2.71 | 2.87 | 2.59 | 3.16 | 2.29 | 2.95 |
| 1972 | 2.34 | 4.68 | 2.17 | 3.45 | 2.71 | 2.64 | 2.42 | 3.41 |
| 1973 | 3.95 | 9.05 | 2.77 | 7.07 | 3.13 | 3.25 | 3.21 | 7.37 |
| 1974 | 5.97 | 14.62 | 3.83 | 11.05 | 4.04 | 4.24 | 2.84 | 16.77 |
| 1975 | 3.84 | 8.44 | 3.31 | 1.86 | 4.96 | 3.42 | 1.80 | 8.52 |
| 1976 | 4.20 | 10.11 | 3.96 | 1.51 | 5.20 | 4.29 | 3.56 | 4.11 |
| 1977 | 5.32 | 10.77 | 5.39 | 5.32 | 6.10 | 5.34 | 4.64 | -0.29 |
| 1978 | 5.55 | 14.73 | 4.52 | 8.51 | 5.75 | 5.63 | 6.23 | 3.22 |
| 1979 | 5.28 | 13.63 | 5.03 | 7.77 | 5.70 | 7.40 | 5.14 | -6.22 |
| 1980 | 6.20 | 15.10 | 4.79 | 3.78 | 4.57 | 8.24 | ----- | 8.61 |
| 1981 | 6.32 | 15.12 | 4.04 | -6.21 | 3.49 | 6.51 | ----- | 17.22 |
| 1982 | ----- | 7.85 | ----- | ----- | ----- | 6.47 | ----- | ----- |

# Table 6j
## After-Tax Return to Capital-Japan
## (Corrected)

| Year | All Nippon Air. | Fuji Photo | Fujitsu | Kao Soap | Kawaskai Steel | Konishiroku Photo | Lion | Mitsubishi Chemical | Mitsukoshi | National | NEC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1964 | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| 1965 | ----- | 6.95 | ----- | ----- | ----- | ----- | 8.20 | ----- | ----- | 5.55 | ----- |
| 1966 | 9.42 | 4.56 | 3.96 | 4.76 | 5.72 | 3.91 | 7.69 | 3.88 | 6.13 | 6.14 | 1.76 |
| 1967 | 0.85 | 6.73 | 3.32 | 9.41 | 5.55 | 2.34 | 8.17 | 1.01 | 6.03 | 10.68 | 1.77 |
| 1968 | 9.37 | 6.83 | 5.49 | 7.63 | 5.96 | 0.13 | 8.59 | 3.66 | 6.61 | 8.09 | 2.88 |
| 1969 | 6.21 | 8.18 | 3.30 | 7.04 | 3.88 | -4.50 | 14.63 | 3.31 | 8.33 | 6.08 | 2.04 |
| 1970 | 7.12 | 6.81 | 2.78 | 2.99 | 2.71 | 1.77 | 11.55 | 3.08 | 6.97 | 11.55 | 2.95 |
| 1971 | 6.16 | 6.50 | 3.47 | 7.68 | 4.92 | 3.74 | 14.37 | 2.32 | 6.39 | 8.92 | 3.25 |
| 1972 | 3.87 | 6.16 | 2.79 | 4.74 | 2.86 | 2.55 | 11.85 | 1.05 | 4.90 | 8.43 | 2.42 |
| 1973 | 4.27 | 5.49 | 0.37 | 6.22 | 0.78 | 0.69 | 7.51 | -1.57 | 3.60 | 11.53 | -0.24 |
| 1974 | 1.56 | 4.26 | -0.05 | 6.03 | 2.70 | 0.30 | 0.65 | -4.83 | 4.68 | 11.60 | -3.06 |
| 1975 | 1.40 | 2.83 | -0.16 | 0.10 | 3.41 | 4.68 | -3.14 | 3.20 | 4.77 | 6.61 | 0.22 |
| 1976 | 1.78 | 3.98 | -0.30 | 0.01 | 1.74 | 4.34 | 2.47 | 0.23 | 5.42 | 7.30 | 0.10 |
| 1977 | -0.26 | 5.15 | 1.57 | 0.09 | 1.36 | 4.71 | 0.79 | -0.27 | 6.23 | 8.86 | 0.82 |
| 1978 | -0.05 | 5.74 | ----- | 1.97 | 1.24 | 4.54 | 1.94 | 1.25 | 5.76 | 8.58 | 1.22 |
| 1979 | 0.94 | 6.19 | ----- | 4.39 | 1.81 | 4.74 | 3.40 | 1.59 | 5.52 | 7.52 | 1.99 |
| 1980 | 0.44 | 8.80 | ----- | 2.96 | 5.60 | 3.40 | 1.05 | 1.63 | 6.44 | 7.08 | 3.03 |
| 1981 | 0.10 | 9.57 | ----- | 1.25 | 6.03 | 3.56 | 1.91 | 2.26 | 6.03 | 5.32 | 3.03 |
| 1982 | 1.46 | 7.74 | ----- | 1.61 | 6.71 | 6.46 | 2.73 | 1.68 | 3.99 | 4.93 | 3.22 |
| 1983 | 1.72 | ----- | ----- | 2.01 | 4.96 | 5.62 | ----- | 0.89 | -2.10 | ----- | 3.20 |

| Year | Nippon Steel | Nissan Motor | Oki Elec. | Shionogi | Sony | Sumitomo Chemical | Taisho | Takashimaya | Takeda Chemical | Toshiba |
|---|---|---|---|---|---|---|---|---|---|---|
| 1964 | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| 1965 | ----- | ----- | ----- | ----- | 2.25 | 6.94 | ----- | ----- | ----- | ----- |
| 1966 | 5.56 | 5.52 | 0.000 | 7.48 | 2.59 | 5.48 | 5.63 | 5.58 | 7.61 | -3.11 |
| 1967 | 6.87 | 3.19 | 0.02 | 7.42 | 4.02 | 4.13 | 0.20 | 5.14 | 7.09 | -1.43 |
| 1968 | 8.17 | 6.39 | 1.38 | 7.08 | 2.84 | 5.36 | 7.80 | 6.20 | 7.47 | 2.48 |
| 1969 | 5.19 | 4.71 | 1.73 | 6.49 | 1.19 | 3.94 | 7.90 | 6.14 | 7.00 | 3.54 |
| 1970 | 4.28 | 3.16 | 2.57 | 7.48 | 1.67 | 4.46 | 6.94 | 4.23 | 6.53 | 2.22 |
| 1971 | 4.56 | 4.20 | 3.62 | 11.08 | 1.82 | 3.36 | 9.05 | 5.08 | 7.98 | 1.07 |
| 1972 | 2.66 | 4.21 | 3.65 | 12.02 | 1.81 | 1.86 | 7.93 | 4.52 | 5.68 | -0.42 |
| 1973 | 1.94 | 3.21 | -0.18 | 5.63 | 2.25 | 0.16 | 5.04 | 2.84 | -0.20 | -3.02 |
| 1974 | 2.83 | 0.37 | -0.68 | 3.32 | 0.97 | 1.06 | 1.88 | 2.51 | -5.92 | -5.01 |
| 1975 | 2.60 | 0.04 | -0.62 | 8.07 | 0.95 | 0.82 | 3.46 | 3.90 | 4.57 | -1.61 |
| 1976 | 1.21 | 3.29 | -0.03 | 2.85 | 2.73 | -0.26 | 3.61 | 3.97 | 0.29 | -1.35 |
| 1977 | 1.94 | 6.27 | -0.03 | 2.68 | 4.38 | -0.48 | 4.38 | 4.14 | 0.66 | 0.84 |
| 1978 | 0.31 | 5.02 | 0.89 | 2.61 | 4.42 | -0.95 | 4.70 | 4.24 | 0.64 | 1.96 |
| 1979 | 0.93 | 5.06 | -1.04 | 4.48 | 5.95 | 1.45 | 4.61 | 4.25 | 3.35 | 3.02 |
| 1980 | 5.44 | 6.86 | 2.83 | 5.76 | 4.39 | 2.78 | 6.14 | 3.81 | 5.06 | 6.15 |
| 1981 | 4.74 | 7.02 | 3.21 | 4.31 | 4.71 | 0.75 | 6.36 | 5.79 | 2.90 | 4.70 |
| 1982 | 5.08 | 6.70 | 4.34 | 2.61 | 4.86 | -0.84 | 6.68 | 4.47 | 3.14 | 5.81 |
| 1983 | 3.78 | 5.63 | 2.12 | 3.17 | ----- | ----- | 7.32 | 4.43 | 3.57 | 5.10 |

measures[9] in the current discussion, but they are not, as yet, available for Japan.

There is a second channel through which corporate taxes could affect the cost of capital. The previous calculations of before-tax and after-tax returns to capital are based on costs to the unlevered firm: earnings before interest and taxes (EBIT) and earnings before interest, after-taxes. To the extent that there are no differences in the after-tax costs of debt and equity finance, these are the appropriate statistics to use. If such differences do exist because of the corporate deductibility of interest payments, the extent to which this tax advantage is available in the two countries would also affect the cost of capital.

An extreme upper bound on the size of this advantage is the firm's annual tax deduction for interest payments. For example, if firm had a fifty percent debt-value ratio, a nominal interest rate of 8 percent and a tax rate of 40%, this would represent a maximum gain of 1.6 percentage points in its cost of capital. Even this would require that there be no offsetting costs to leverage, such as increased taxation at the individual level. Since equity income is taxed less heavily than interest income in both countries (capital gains are not taxed at all in Japan), one would not expect this to be the case, even if a full tax offset (as hypothesized by Miller 1977) is absent.

We have calculated these upper bounds for each company in each year. Averages for each company for the period 1966-1981 are given in Table 7a for the U.S. and 7j for Japan. The U.S. averages range from 0.07% for Kodak to 2.55% for Macy's with a median value of 0.70% (Exxon). For Japan the maximum, minimum and median are 2.34%

Table 7a
Maximum Tax Advantage from Debt - U.S.
Average 1966-81

| Name | Percent |
|---|---|
| AT&T | 1.33 |
| Chrysler | 2.49 |
| CDC | 1.67 |
| Delta | 0.86 |
| DEC | 0.15 |
| Dow | 1.18 |
| Exxon | 0.70 |
| Ford | 1.42 |
| GE | 0.64 |
| GM | 0.65 |
| IBM | 0.13 |
| Macy | 2.55 |
| Merck | 0.12 |
| Nat. Semi-Conduc. | 0.44 |
| Pfizer | 0.63 |
| Proctor & Gamble | 0.24 |
| Sears | 1.36 |
| US Steel | 1.26 |

Table 7j
Maximum Tax Advantage from Debt - Japan
Averages 1966-81

| Name | Percent |
|---|---|
| Fuji | 1.04 |
| Fujitsu | 1.01 |
| Kao | 0.46 |
| Kawasaki | 2.26 |
| Konishiroku | 1.29 |
| Lion | 1.53 |
| Mitsubishi | 1.95 |
| Mitsukoshi | 0.49 |
| National | 0.83 |
| Nec | 1.34 |
| Nippon Air | 1.11 |
| Nippon Steel | 2.34 |
| Nissan | 1.24 |
| Oki | 1.51 |
| Shinogi | 1.07 |
| Sony | 0.40 |
| Sumitono | 1.93 |
| Taisho | 0.16 |
| Takashimaya | 1.59 |
| Takeda | 0.69 |
| Toshiba | 1.64 |

for Nippon Steel, 0.16% for Taisho, and 1.24% (Nissan Motors), respectively.

These measures indicate only a very small difference in the maximum potential gains from leverage in Japan and the U.S. Given that these upper bounds may greatly overstate the gains from leverage in both countries, we would argue that greater Japanese ability to finance with tax-deductible debt is of negligible importance in explaining before-tax cost of capital difference between the two countries.

We conclude provisionally that corporate taxes cannot explain why Japanese firms would enjoy a lower cost of capital than those in the U.S.

### 4b. Differences in National Savings Rates

It appears from calculations of after-tax rates of return that Japanese corporations earn substantially less for the holders of their securities than do U.S. corporations. Some have been tempted to ascribe this result to the higher personal savings rate in Japan. There are two problems with this conclusion. First, savings rates do not necessarily translate into rates of capital accumulation in a world of open capital markets, since capital would flow abroad to gain higher rates of return.

There is some controversy about the openness of the Japanese capital market. However, there is a second factor that must be considered. The Japanese economy, including, of course, its capital stock, has been growing much more rapidly than that of the U.S. over the past two decades. A greater rate of investment out of GNP has

been required for Japan simply to maintain any given capital-output ratio. A comparison suggests that the capital-output ratios for productive sectors in Japan are no higher than comparable figures for the U.S.[10]

4c. Differences in Growth and Risk

One is accustomed to seeing some firms in the U.S. have higher price-earnings "multiples" than others. Systematic differences of this sort can be due to one of two factors. One is differences in risk. Riskier firms have higher rates of return to capital, on average, because investors are risk averse. It is a matter of semantics whether the riskier firm has a higher cost of capital, since it must earn the same risk-adjusted rate of return as the less risky firm. A second reason for variation in earnings-price ratios is related to growth; not simply growth itself, but the unusual investment opportunities that one normally associates with rapidly growing enterprises. Firms with access to projects with high marginal products would be expected to grow more quickly, and the excess returns on these future projects should be capitalized into the current stock price.[11]

This would certainly not represent a cost of capital difference, only a difference in the composition of economic earnings: a greater fraction would be accounted for by capital gains, (in excess of retained earnings) which are not included in our calculations thus far.

If Japanese firms are less risky than U.S. firms, or possess greater "exceptional growth opportunities," these could help explain

why the observed before-tax return to capital appears to be somewhat lower in Japan. To assess these possibilities, one must use data on total market returns to investors instead of the reported earnings of firms. For the U.S., this calculation is straightforward. To compute the annual return to equity, we add common and preferred dividends to the change in the value of the firm (net of new share issues), and divide this by the beginning of year value of the firm. This yields a measure of the rate at which the firm's equity is capitalized.[12]

Deriving similar statistics for Japan presents some difficulties involving the growth in equity. In Japan, there have been many more new issues of equity shares than in the U.S., and to complicate matters, some are given at no cost to current share holders (stock dividends), some are sold in the market at the market price, while still others are sold to existing stock holders at its face value (more frequently ¥50 per share, a fraction of the market price). Fortunately, we have been able to obtain, for each of the companies in our sample, the complete history of new issues including the price at which they were issued. We therefore define the rate of capital gain on shares as the increase in the market value of outstanding shares less capital paid in the form of new share purchases, divided by the market value of shares outstanding at the beginning of the period. The market rate of return on equity then is defined as the sum of the rate of capital gain so defined plus the dividends paid divided by the market value of shares outstanding at the beginning of the period.

The results of our calculations are presented in Table 8a and 8j. In these tables, we first list earnings-price ratio after tax,

Table 8a
Earnings Price Ratio After Tax and Market Return on Equity
(1971 - 1981)

| Company | E/P - After Tax Unadj | E/P - After Tax Adj | Market Ret/Equity |
|---|---|---|---|
| AT&T | 11.6 | 14.7 | 2.9 |
| Chrysler | -32.3 | -25.0 | 0.9 |
| CDC | 10.2 | 12.8 | 4.2 |
| Delta Air | 10.4 | 9.5 | 2.2 |
| Digital | 4.6 | 2.9 | 16.8 |
| Dow | 9.4 | 10.8 | 7.6 |
| Kodak | 6.7 | 5.5 | 2.1 |
| Exxon | 14.4 | 13.7 | 6.5 |
| Ford | 5.3 | 6.0 | -4.5 |
| GE | 8.7 | 9.4 | 4.2 |
| GM | 11.2 | 10.0 | -1.5 |
| IBM | 6.3 | 4.9 | -2.3 |
| Macy | 12.6 | 15.5 | 12.8 |
| Merck | 5.0 | 4.2 | 2.2 |
| Nat'l. Semi. | 6.3 | 5.1 | 43.6 |
| Pfizer | 6.6 | 6.3 | 1.8 |
| P & G | 6.2 | 5.8 | 0.7 |
| Sears | 8.4 | 7.2 | -6.6 |
| US Steel | 14.6 | 13.9 | 5.8 |

Table 8j
Earnings-Price Ratio After Tax and Market Return on Equity
(1971 - 1981)

| Company | E/P After Tax | | Mkt. Ret/Equity |
|---|---|---|---|
| | Pension Adj Only | Adj | |
| Fuji | 10.3 | 9.0 | 9.2 |
| Fujitsu | 4.5 | 4.6 | 2.7 |
| Kao | 7.3 | 10.3 | 15.1 |
| Kawasaki | 8.5 | 16.9 | 16.5 |
| Konishiroku | 9.3 | 10.4 | 24.3 |
| Lion | 13.6 | 12.1 | 19.7 |
| Mitsubishi | 6.0 | 12.7 | 16.9 |
| Mitsukoshi | 5.9 | 6.2 | 5.9 |
| National | 8.4 | 8.4 | 12.2 |
| NEC | 4.7 | 6.6 | 7.3 |
| Nippon Air | 2.3 | 6.0 | 16.9 |
| Nippon Steel | 7.4 | 12.4 | 20.2 |
| Nissan | 10.4 | 10.8 | 22.9 |
| Oki | 4.4 | 5.2 | 5.2 |
| Shionogi | 12.3 | 8.1 | 11.8 |
| Sony | 5.0 | 3.9 | 19.6 |
| Sumitomo | 4.3 | 7.7 | 18.5 |
| Taisho | 8.8 | 5.9 | 8.2 |
| Takashimaya | 7.1 | 11.3 | 9.1 |
| Takeda | 9.3 | 5.0 | 12.6 |
| Toshiba | 6.9 | 7.1 | 13.6 |

both unadjusted for inflation and adjusted for inflation, averaged over the period of 1971 to 1981, in columns 2 and 3. Column 3 would have been the same as column 5 of Tables 2a and 2j, except that in Table 8 it is averaged over shorter period of 1971 - 1981 rather than over 1966-81, because some detailed information on new issues records was missing on the Compustat tape before 1971.

Results are quite dramatic. On an inflation adjusted basis, the median earnings price ratio for the U.S. is 7.2 (Sears) while it is 8.1 (Shionogi) for Japan. Looking at the third columns of Tables 8a and 8j, we may conclude that there is little to distinguish between the distribution of the earnings price ratio for the U.S. (excluding Chrysler, which is a special case) from that for Japan. In terms of the market rate of return shown in the fourth column, however, the difference is enormous. The median for the U.S. is 2.2% (Delta Airlines and Merck), while it is 13.6% (Toshiba) for Japan.[13]

There may be any number of reasons not to take these figures too seriously. Among them, we may note that during the period covered, the capitalization rate in general in the U.S. may have risen significantly, and figures for the U.S. may include a large one time capital loss which may be distorting our results. Japan may still have been on the post-war declining trend of the general capitalization rate during this period, which appears to have ended in the early 1960s for the U.S.

We do not wish to assert here, on the basis of information presented in Tables 8a and 8j, that the required rate of return on equity has been this much higher in Japan than in the U.S. On the other hand, even a much smaller revision in this direction of the after-tax costs of equity reported earlier would be sufficient to

nullify any apparent difference in overall returns to capital in the two countries. Given all the evidence presented in this paper, therefore there do not seem to be any grounds to conclude that the cost of capital in Japan was significantly lower than in the U.S. for the period covered.

## 5. Conclusions

We have not as yet reached any firm conclusions about whether the Japanese cost of capital is lower than that in the U.S., but we have made some progress. There appears some evidence of lower before-tax rates of return in Japan, though given our sample size and selection method, this result is by no means definitive.

In searching for potential explanations, we have been able to rule out one that is among the most frequently cited, business taxation. Japanese real investments appear to be more, rather than less, heavily taxed than those undertaken in the U.S., and the maximum potential gain from the greater use of leverage is very small. It also appears that the understatement of capital gains by book value data is sufficient to explain any apparent gap in returns between the two countries.

We have based our analysis on samples of firms from the U.S. and from Japan, but we have chosen these firms very informally on the basis of their size, industry to which they belong, comparability, and availability of data. It would be quite useful to work with a somewhat larger and more systematically chosen sample. It would also be very useful to estimate ex-ante cost of capital measures, rather than working with purely ex-post

realization data. Finally, we hope to make parallel computations using data for industries and the whole economy, in order to supplement the results based on individual firm data reported here. Ultimately, one wishes to understand variations in the rate of return in the context of the savings and investment patterns of the countries involved, and how two or more countries may adjust to each other when their savings and investment behavior differ substantially.

FOOTNOTES

[1] See, especially, Hatsopoulos (1983).

[2] "Accrued employees' Severace Indemnities" is a special reserve account in Japanese corporations set up to meet a requirement of the tax law. To begin with, it must be understood that most employees of Japanese corporations are not given retirement annuities, but a large cash payment at the time of retirement, 3 to 4 times the annual salary for the last year of employment. The corporate tax law of Japan says that (1) corporations must estimate the amount of the total severance payments that must be undertaken if the company is to cease operations immediately and pay every employee the severance pay which he or she is entitled to; (2) "Accrued Employees' Severance Indemnities" should be 40% of the amount calculated under (1); (3) the retirement benefits actually paid during the fiscal year should be charged against this account; and (4) the difference between the amount defined under (2) and the remaining balance at the end of the fiscal year can be charged as current expenses, and it is deductible for corporate income tax purposes. In other words, this liability item is a book entry, a device to maintain the account for the retirement benefits on an accrual basis, and it is not an actual liability against which interest is paid. Indeed, there is no interest payment on this item in the income statment of a company. The entire contribution into this reserve account is treated as labor cost in the income statment. Thus, it is not appropriate to include this item in liabilities of corporations in Japan.

To bring the accounting with respect to this item to a cash basis as in the case for U.S. corporations, we have subtracted the

net change in this account from the current costs of Japanese companies.

[3] See, for example, Shoven and Bulow (1975,6), for an evaluation of the effects on American corporations.

[4] This procedure was also used by Auerbach (1984), where it is described and evaluated more fully.

[5] We are grateful to Bronwyn Hall for calling this problem to our attention.

[6] In principle, one could get a rough estimate by redoing the estimates for Japan with land included.

[7] The use of such corrected estimates of the return to corporate capital to infer the required return are familiar in the literature. See, for example, Feldstein and Summers (1977) or Feldstein et.al. (1983).

[8] For a discussion, see Auerbach (1983a).

[9] As found in Auerbach (1983a) or the international comparison volume edited by King and Fullerton (1984).

[10] For the U.S., for 1979, gross national produce originating in the non-financial corporate sector divided by the stock of reproducible tangible assets excluding inventories at the replacement cost is approximately 1.10 (Survey of Current Business, July 1983, p. 30, and Board of Governors of the Federal Reserve System, Balance Sheets of the United States, 1945-1982, p. 44). For Japan, one needs to make some approximations in terms of the sectors included to come as close as possible to the one ued for the U.S. We have taken fixed reproduciple assets other than inventories for non-financial incorporated enterprises (p. 309, Annual Report of National Accounts, 1985) less estimated residential structures owned by this

sector as the capital stock, while we have used GNP originating in the private producer sector less agriculture, finance and insurance, real estate, and service industries as output. The corresponding figure for Japan is 1.14.

[11] This can be rigorously shown using, for instance, the "q" theory of investment. Suppose there is the anticipation that an outward shift will occur in the production frontier in the future, increasing the marginal product of capital. This will increase investment, and market value, immediately, decreasing measured earnings in the short run because of capital deepening. Hence, one would observe a low earnings-price ratio in the short run. The capitalized value of higher future marginal products rises as their date of appearance nears, giving investors a sufficient overall return to equity.

[12] If the marginal source of equity funds is retained earnings, rather than new shares, then one should adjust dividends in this calculation, multiplying them by a factor less than 1 that represents the relative cost to the firm of delivering an after-tax dollar to the investor in the form of capital gains as opposed to dividends. This is the ratio $(1-\theta)/(1-c)$, where $\theta$ is the dividend tax rate and c is the accrual-equivalent of the capital gains tax. See Auerbach (1979, 1983b). This correction is important in the current context to the extent that dividend yields differ between the U.S. and Japan.

[13] This set of results is broadly consistent with those reported by Baldwin [1985], who found Japanese market returns to equity to be higher in the aggregate than those in the U.S. (but also riskier).

## REFERENCES

Auerbach, A.J., 1979, "Wealth Maximization and the Cost of Capital," QJE, August.

_____, 1983a, "Corporate Taxation in the U.S.," BPEA, 2.

_____, 1983b, "Taxation, Corporate Financial Policy and the Cost of Capital," JEL, September.

_____, 1984, "Taxation, Firm Financial Policy and the Cost of Capital: An Empirical Analysis," J. PUB. E., February.

Baldwin, C.Y., 1985, "The Capital Factor: Competing for Capital in a Global Environment," Harvard Business School, mimeographed.

Feldstein, M. and L.H. Summers, 1977, "Is the Rate of Profit Falling?", BPEA, 1.

_____ in Dicks-Mireaux and J. Poterba, 1983, "The Effective Tax Rate and the Pretax Rate of Return," J. PUB. E., July.

Hatsopoulos, G., 1983, High Cost of Capital: America's Industrial Handicap.

King, M. and D. Fullerton, eds., 1984, The Taxation of Income from Capital.

Miller, M., 1977, "Debt and Taxes," J FIN, May.

Shoven, J. and J. Bulow, 1975, "Inflation Accounting and Nonfinancial Corporate Profits: Physical Assets," BPEA, 3.

_____ and _____, 1976, "Inflation, Accounting and Nonfinancial Corporate Profits: Financial Assets and Liabilities." BPEA, 1.