The Cost of Capital: How High Is It?

Nominal interest rates reflect both financial market pressures and inflationary expectations. Yet what matters for investment decisions are *real* rates, *i.e.*, rates that are in some sense net of expected inflation. Since real rates cannot be observed directly, measuring them requires ingenuity. The typical way this is done is to subtract an estimate of the expected rate of inflation over some time horizon from a nominal interest rate. A representative estimate based on the seasoned Aaa corporate bond rate appears in Chart 1. There are, however, two problems involved in estimating real rates in this way. First, expectations of inflation can be measured only imperfectly. Second, the difference between a nominal interest rate and the corresponding real rate reflects not just the expected rate of inflation but a premium compensating investors for uncertainty of inflation as well. The approach taken in this article avoids the problem of the inflationary premium and is less sensitive to errors in measuring expected inflation. We develop a new measure of one real rate in particular—the cost of capital. This real rate also appears in Chart 1.

Our measure tells a different story about the recent intensity of financial market pressures than the standard ones do. The standard ones, as illustrated by the lower line in Chart 1, declined over the 1970s, bottomed out in the late 1970s, and then rose sharply. By 1981 the standard measures of real interest rates stood at levels that were often three or four times as high as their 1960-72 averages. If real rates actually had risen this much, the outlook for investment spending would indeed have been bleak. Our measure, however, suggests that financial market pressures were much less intense than these other measures indicate. In 1981, our measure of the cost of capital was also at a record high level but was still less than twice its 1960-72 average.

What is a real rate of interest?

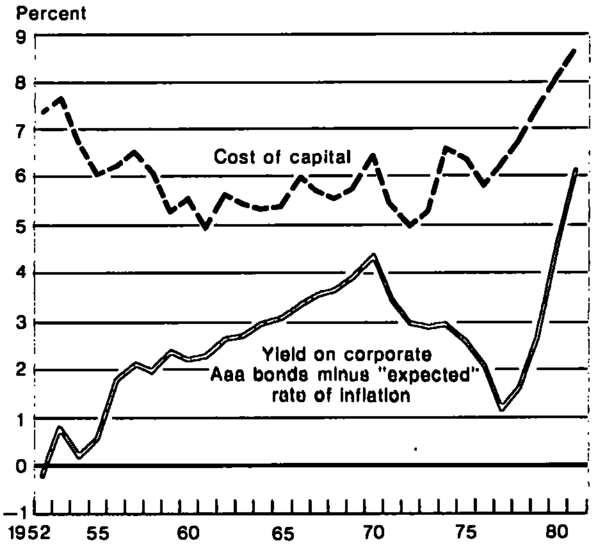
Conceptually, a real rate of interest represents the terms on which current consumption may be exchanged for future consumption. How does this general definition relate to actual assets and rates of return? In purchasing a security, an investor gives up current consumption and acquires a claim to a prospective (albeit risky) stream of payments with which to purchase future consumption. If the security's payments are effectively denominated in *goods* rather than in dollars, the yield is then (and only then) a real rate of interest. In other words, the future payments must be *indexed* in the general sense that, if all prices were to rise x percent, so would the payments.

Suppose instead that the investor were to acquire a security entitling him to a fixed number of dollars over some specified period. The purchasing power of this stream of dollar-denominated payments depends on the price level prevailing in future periods. The higher the expected rate of inflation, the less the future purchasing power of the prospective payments. Investors will respond to a decline in the future purchasing power of a security by reducing the price they are willing to pay for that security. A lower price for a fixed-income security translates directly into a higher nominal interest rate. In short, the higher the expected rate of inflation, the higher the nominal interest rate on a fixed-income security.

Along similar lines, it is often argued that the observed interest rate on a fixed-income security is

Chart 1

Alternative Real Rates of Interest



The annual values of the cost of capital were constructed by the authors using the methodology described in this article; the expected rate of inflation used in constructing the alternative real rate was assumed to be equal to the average inflation rate of the implicit price deflator for consumption expenditures over the previous five years.

the sum of two elements—the expected rate of inflation plus the "real" interest rate. The logic of the argument can best be seen by starting with the case where the expected rate of inflation is zero. Under that assumption, the prospective payments on a fixed-income security would be denominated in effect in goods so that the interest rate on that security would thus be a real rate. Alternatively, if the expected rate of inflation were positive, an inflation premium would be added to the *real* rate prevailing in the zero inflation case. It is generally presumed that the inflation premium will be equal to the expected rate of inflation on the grounds that this is supposedly the appropriate discount factor to use in converting the stream of dollar-denominated payments into an indexed stream with constant purchasing power. What remains of the nominal interest rate after deducting the expected rate of inflation is presumed to be the real rate.

If the prospective inflation rate were known with certainty, subtracting the expected rate of inflation from the interest rate on a fixed-income security would indeed result in a meaningful real rate (*i.e.*, the rate on an asset with a comparable indexed payments stream). When the inflation rate is uncertain, however, the dollar-denominated security will be susceptible to inflation risk whereas the indexed security will be risk free. (Here again, we are using the term indexed in the same general sense as we defined previously.) Accordingly, the nominal interest rate on the dollar-denominated security would have to be raised to compensate the holder for the uncertainty assumed. Thus, with an uncertain inflation rate, the nominal interest rate minus an expected inflation measure overstates the yield on an asset with an analogous indexed income stream.

Cost of capital

There are, in theory, many different real interest rates, each corresponding to a particular prospective indexed payments stream with its own distinctive risks and characteristics. The total capital income earned by businesses—*i.e.*, companies' net income after deducting labor and materials costs, taxes, and wear and tear on their assets—is one such indexed payments stream. Part of the total capital income of companies goes to cover their debt payments; the rest accrues to equity holders as dividends and retained earnings.

A good case can be made that total capital income closely approximates an indexed payments (income) stream (Appendix 1). Assuming that this approximation is indeed a close one, we have developed a procedure for measuring the real rate of interest corresponding to this payments stream—the cost of capital.

In principle, the market value of a company's debt and equity securities reflects both its earnings prospects and the discount rate—*i.e.*, the cost of capital—which participants in the securities markets apply to those prospects. Our method for estimating the cost of capital involves three steps: (a) totaling the aggregate market values of companies' outstanding debt and equity; (b) estimating the prospective total capital income of those companies; and (c) solving for that internal rate of return which equates the present value of prospective total capital income to the observed market value of existing debt and equity.

More formally, let E(t) denote the expected total capital income in period t, denominated in constant dollars relative to some base period, and let V be the current market value of the debt and equity securities. Then the cost of capital—the real rate (denoted as ρ) appropriate to that income stream—is the solution to the following expression:

$$(1)\ V = \int_0^\infty E(t)e^{-\rho t}\,dt$$

The cost of capital, thus defined, serves as the "hurdle" rate for new investment projects, that is, as the minimum rate of return that a new project must yield to be profitably undertaken. A new project will enhance a company's earnings prospects to some extent. Yet, for the project to be profitable, it must boost prospective earnings by enough that their present value (calculated using the cost of capital as the discount rate) exceeds the cost of the project. This is equivalent to saying that a profitable project is one for which the aftertax rate of return exceeds the cost of capital.

"Permanent income" of nonfinancial corporations

The hallmark of our approach to measuring the cost of capital is the way in which we estimate corporations' longer run earnings prospects. It is a longstanding idea in the corporate finance literature that the dividends which a company pays are tied to its management's assessment of the firm's longer run earnings prospects. Along similar lines, it has also been argued that management may use dividend payouts as a signal through which it indicates its view of longer run earnings prospects to stockholders. These hypotheses suggest that dividends have a natural role to play in shedding light on the expected income stream.

We propose then to use dividends, along with interest payments, as the basis for estimating expected longer run total corporation income, *i.e.*, the "permanent income" earned by businesses on their stock of fixed assets. The concept of permanent income is one frequently employed by economists to describe a longer run "average" of prospective earnings. Thus, for example, the permanent income (PI) corresponding to the income stream E(t) in equation (1) is that constant income level which, if paid indefinitely, would have the same present discounted value as the income stream E(t):

(2) $PI \int_0^\infty e^{-\rho t}\,dt = \int_0^\infty E(t)e^{-\rho t}\,dt$

Equations (1) and (2) together imply that the cost of capital is equal to the ratio of total permanent capital income to the market value of securities:

(3) $\rho = PI/V$

Whereas the market value of securities is directly observable, total permanent capital income is not.

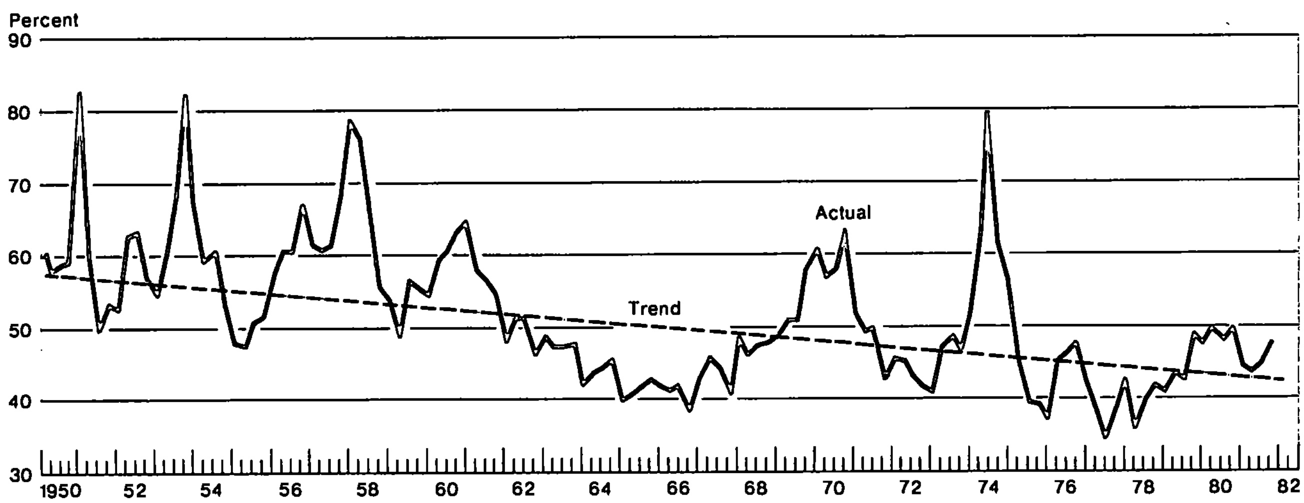
Total permanent capital income goes partly to stockholders and partly to debt holders. The notion that dividend payments are tied to longer run stockholders' earnings can be expressed as:

(4) $DIV = \alpha\, PIE$

where:
DIV = dividend payments
α = the "payout" ratio
PIE = permanent income of stockholders

Chart 2

Dividend - "Income" Ratio of Nonfinancial Corporations



Source: See text under measuring the cost of capital.

The permanent income of debt holders is equal to interest receipts minus the expected purchasing power loss due to inflation:

(5) $PID = INT - \pi D$

where:
PID = permanent income of debt holders
INT = interest receipts
π = expected rate of inflation
D = market value of corporate debt

Total permanent capital income thus amounts to:

(6) $PI = (DIV/\alpha) + INT - \pi D$

The need to estimate the expected inflation rate remains. However, if the debt to market value ratio is 0.4, for example, a 1 percentage point error in expected inflation introduces an error of only 0.4 percentage point. In the usual real rate measure shown in Chart 1, the error introduced would be a full percentage point.

Measuring the cost of capital

All the elements that make up the cost of capital, as defined above, are either directly available or can be derived from standard data sources. Dividends and interest payments, for example, are reported for nonfinancial corporations in the national income and product accounts. (For a detailed description of these and all the other data series, see Appendix 2.) Estimates of the market values of the debt and equity securities of nonfinancial corporations were derived using procedures similar to those devised by the Council of Economic Advisers several years ago. The expected rate of inflation (π in equation 5) was taken to be equal to the average rate of inflation over the past five years, using the implicit price deflator for personal consumption expenditures in the national income and product accounts.

The only other item needed to calculate the cost of capital summarized in equations (3) and (6) is the payout ratio (α). The payout ratio is, by definition, the fraction of permanent stockholder income that is paid out as dividends. The ratio of dividends to *actual* (*i.e.,* as opposed to permanent) annual stockholder income is plotted in Chart 2.[1] This series has fallen over the past thirty years from roughly 60 percent in the late 1940s and 1950s to about 45 percent or so currently. We fitted a trend line to these observations, and the values along this trend line are our estimates of the payout ratio.

Combining all the elements yields the measure of the cost of capital plotted in Chart 1. In contrast to the alternative estimate in that chart, our measure of the cost of capital exhibited considerable stability during the 1960s and early 1970s. While the cost of capital climbed to steadily higher record levels in recent years, the run-up was not nearly so sharp as that of the alternative estimate. The cost of capital had averaged around 5½ percent from 1960 to 1972 and was only slightly higher than that as recently as 1976. By the first quarter of 1982 (not shown in Chart 1), it had risen to 9.9 percent, the highest level on record.

A number of factors have contributed to this sharp run-up in the cost of capital. Part of the explanation lies in the progressive tightening of monetary policy in recent years in an effort to curb inflation. Another contributing factor has been the diminished importance of credit rationing. With the abolition of usury ceilings plus the phasing-out of Regulation Q ceilings, the financial markets have come to rely much more heavily on interest rates to clear the markets and correspondingly less on credit-rationing devices. Finally, one other contributing factor has been the very strong demand for new capital goods, spurred to a large degree by the manifold increase in energy prices. The burst in energy prices over the 1970s rendered much of the nation's preexisting capital stock obsolete, creating a huge replacement demand for capital goods that are more efficient in energy usage. This situation is reminiscent of what happened the last time when the cost of capital rose very high. That was in the late 1940s and early 1950s when there was also a period of "capital shortage". Then there was a strong worldwide demand for capital goods as businesses sought to replenish their stocks of plant and equipment which had been neglected or destroyed during World War II.

Comparison with alternative estimates

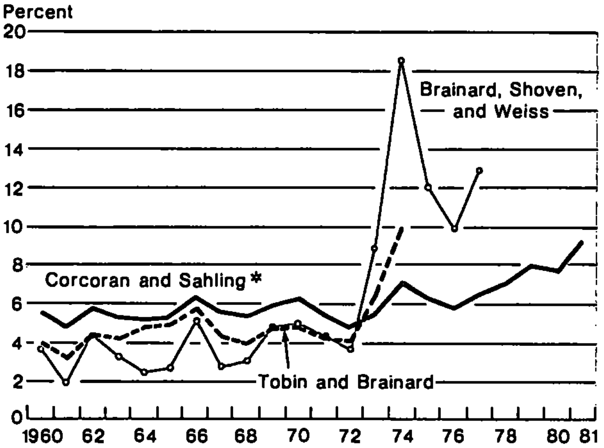
How accurate is our measure of the cost of capital? Gauging the accuracy of something which cannot be observed directly is, of course, difficult to do, but one approach is to compare our measure with two others—one derived by Tobin and Brainard and the other by Brainard, Shoven, and Weiss.[2] These alternative mea-

[1] As the denominator of this ratio, stockholders' earnings were defined as the aftertax profits of nonfinancial corporations, minus the inventory valuation adjustment, minus the capital consumption adjustment, and plus the loss of purchasing power on the outstanding debt of these corporations. (For additional discussion, see P.J. Corcoran, "Inflation, Taxes, and Corporate Investment Incentives", this *Quarterly Review* (Autumn 1977), pages 1-10.

[2] James Tobin and William Brainard, "Asset Markets and the Cost of Capital", in *Economic Progress, Private Values, and Public Policy: Essays In Honor of William Fellner* (North-Holland, 1977); William C. Brainard, John B. Shoven, and Lawrence Weiss, "The Financial Valuation of the Return to Capital", *Brookings Papers on Economic Activity* (No. 2: 1980).

Chart 3

Alternative Measures of the Cost of Capital



* This series is based on fourth-quarter values rather than on the annual averages plotted in Chart 1.

Sources: J. Tobin and W. Brainard, "Asset Markets and the Cost of Capital", in Economic Progress, Private Values and Public Policy: Essays in Honor of William Fellner (North-Holland, 1977); W. Brainard, J. Shoven, and L. Weiss, "The Financial Valuation of the Return to Capital", Brookings Papers on Economic Activity (No. 2: 1980), Table 1 (column 4), page 482; and the authors' own estimates.

Table 1

Alternative Real Rate Measures

In percent

Period	Corcoran and Sahling	Tobin and Brainard	Brainard, Shoven, and Weiss
Average 1960-72 ...	5.6	4.4	3.7
1972	4.9	4.1	3.7
1974	7.1	9.9	18.6
1977	6.4	*	12.9

* Not applicable.

sures are based on an empirical methodology very different from ours. Their focus is on estimating a theoretical financial model capable of explaining variations in a firm's total market value. Both studies estimate their models using highly detailed data for *individual* firms from the Standard & Poor's Compustat tape. The basic approach of both studies can be summarized in terms of equation (1): In both, an expected income stream accruing to debt and equity holders is specified (E); the market value of outstanding securities (V) is calculated using actual current securities prices; and the cost of capital is then computed as the internal rate of return which equates the present discounted value of E with the observed market value of securities. Tobin and Brainard use their estimated model to derive a cost-of-capital measure for a "representative firm", whose risk and other characteristics are unchanged over time. However, the Brainard, Shoven, and Weiss measure is not standardized in this way.

Annual estimates of all three measures are plotted in Chart 3. (Note, however, that Tobin and Brainard's measure extends out only to 1974, while Brainard, Shoven, and Weiss's extends through 1977.) Prior to 1972 our measure moved in broadly parallel fashion to theirs. Our measure appears to be less volatile than theirs, but this is partly because we in effect used average securities prices over the last quarter of the year. In contrast, the other two studies used end-of-year securities prices as recorded on the Compustat tape, thereby imparting additional volatility to these two measures.

Beyond 1972 the conformity among the three measures breaks down. Between 1972 and 1974, Tobin and Brainard's measure more than doubles and Brainard, Shoven, and Weiss's catapults to 18.6 percent (Table 1). Our measure also posts a sizable jump by its own historical standards, but the increase is not nearly so large as those posted by the other two measures.

Part of the post-1972 run-up in the cost of capital recorded by Tobin and Brainard's and Brainard, Shoven, and Weiss's measures, however, appears to be spurious. In estimating prospective longer run corporate earnings, both studies rely on the questionable assumption that the productivity of the stock of fixed-capital goods held up unimpaired throughout the 1960s and 1970s. Most of the observed decline in the market value of securities is thus presumed to reflect a rise in the cost of capital.

Yet a good case can be made that the productivity of existing fixed capital did indeed decline after 1972.[3] If the permanent income associated with a dollar of existing fixed capital has declined in recent years, then the estimates of expected longer run corporate earnings employed in both studies turn out to be unreasonably optimistic. More fundamentally, worsened

[3] See M.N. Baily, "Productivity and the Services of Capital and Labor", *Brookings Papers on Economic Activity* (No. 1: 1981).

productivity of capital and higher real interest rates are *competing* explanations of the poor performance of stock prices in the sixties and seventies. Neither Tobin and Brainard's measure nor Brainard, Shoven, and Weiss's makes any allowance for worsened productivity of capital, apart from cyclical influences.

In contrast, this difficulty is not present in our own measure. If management anticipates poorer productivity and earnings, it is factored into dividend payouts —under our hypothesis that these payouts are tied to permanent stockholder income. Thus, the validity of the real interest rate measure presented in this article does not depend on any particular pattern of capital productivity.

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Appendix 1: Is the Income to Debt and Equity Holders after Corporate Tax Invariant to the Price Level?

If all prices begin to rise in concert at a faster rate than previously, the total gross capital income accruing to businesses will increase in the same proportion. However, if corporate tax liability does not rise proportionately, neither will the aftertax debt and equity income.

Let total annual capital income before corporate tax be denoted by:

$$TCI_{bt} = P_{bt} + IVA + CCA + INT$$

where:

P_{bt} = before-tax profits for tax purposes
IVA = accounting inventory charges less inventory charges valued at current market prices
CCA = tax depreciation charges less depreciation valued at current market prices
INT = net interest payments

Corporate tax liability may be written as:

$$T = \tau P_{bt}$$
$$= \tau TCI_{bt} - \tau(IVA + CCA + INT)$$

Aftertax total income equals:

$$TCI_{at} = TCI_{bt} - T$$
$$= (1-\tau)\, TCI_{bt} + \tau(IVA + CCA + INT)$$

Now let the ratio of (IVA + CCA + INT) to TCI_{bt} be denoted by:

$$\lambda = \frac{IVA + CCA + INT}{TCI_{bt}}$$

The condition that TCI_{at} be exactly indexed with respect to movements in the price level within the tax year is that λ be unchanged in response to changes in the current year inflation rate. On the one hand, a rise in the inflation rate will make IVA and CCA more negative. This reflects the increasing inadequacy of accounting depreciation and inventory charges relative to charges based on current market prices. On the other hand, a rise in the inflation rate will also make net interest payments (INT) more positive. This occurs for several reasons. First, the rise in inflation will lead to higher interest rates. As existing fixed-rate indebtedness is turned over at higher interest rates and outstanding floating rate loans are marked up, payments will rise. Secondly, firms may respond to the higher inflation rate itself by issuing new debt that would otherwise not have been issued. The reason for this is that a percentage point increase in both inflation and interest rates offers a bigger tax advantage for debt.

If the total increase in interest payments just offsets the larger negative magnitudes for IVA and CCA, then λ will be unchanged and the indexing condition exactly satisfied. How large does this increase in interest payments have to be? Let the following simplified expressions represent IVA and CCA:

$$IVA = -\pi\beta\, M(t-1)$$

where:

π = actual inflation in current period t
β = fraction of inventory stock using FIFO inventory accounting
$M(t-1)$ = market value of inventory stock at end of previous period

Appendix 1: Is the Income to Debt and Equity Holders after Corporate Tax Invariant to the Price Level? *(continued)*

$$CCA = TD - (1+\pi)\delta K(t-1)$$

where:

TD = tax depreciation

δ = rate of depreciation and obsolescence

$K(t-1)$ = value of capital stock (plant and equipment) at end of previous period

Note that $\delta K(t-1)$ is measured empirically as the national income and product accounts capital consumption allowance (including CCA). Then, for each year, we calculated how much aggregate net interest payments of nonfinancial corporations would have to rise in response to a 1 percent inflation hike to satisfy the indexing condition exactly. A 1 percent unanticipated rise in the inflation rate raises π by .01. The new levels of IVA and CCA are given by:

$$IVA' = IVA - \beta M(t-1)(.01)$$

$$CCA' = CCA - \delta K(t-1)(.01)$$

To find the required higher level of interest payments we solve for INT' in the following equation:

$$\lambda = \frac{IVA' + CCA' + INT'}{1.01\ TCI_{bt}}$$

If IVA and CCA were always zero, net interest payments would have to rise by 1 percent of their original level. Since IVA and CCA are declining, however, net interest payments must rise by *more* than 1 percent of their original level to keep λ unchanged.

Interest payment increases can occur passively as the average yield on outstanding debt rises or more actively through an increase in the level of loans. If the level of loans were assumed to be unchanged, we estimated that the average yield on outstanding nonfinancial corporate debt would generally have to rise about 1 percentage point to keep λ unchanged. If all loans were floating rate or short maturity debt, this would correspond to a percentage increase in the yield on newly issued obligations. Since only about one third of net debt consists of these loans, an increase in new issues is generally required. Even if the indexing condition does not hold exactly within the time frame of the tax year, interest payments could still be adjusted upward subsequently to offset the higher future tax liabilities.

The basic argument for financial policy having this indexing condition is that it eliminates inflation risk for those wealth holders holding the "market bundle" of corporate debt and equity securities. If the condition holds for individual corporations, such corporations provide a service to investors by enabling them to hold portfolios with a small number of securities which are free of inflation risk.

Appendix 2: Measurement of the Cost of Capital

As outlined in the text, the cost of capital (ρ) is defined as the ratio of permanent income (PI) to total market value (V) of outstanding securities and loans; *i.e.*,

$$\rho = \frac{PI}{V} = \frac{PI}{S+D}$$

and

$$PI = \frac{DIV}{\alpha} + INT - \pi D$$

where:

DIV = dividends*

INT = net interest payments†

π = expected rate of inflation‡

S = market value of equities§

D = market value of debt§

α = trend payout ratio as estimated in text

The quarterly values of the cost of capital are shown in Table 2.

* Dividends are measured as the series shown for nonfinancial corporations in Table 1.13 in the *Survey of Current Business* plus repatriated earnings of wholly owned foreign subsidiaries to domestic companies. The latter series is unpublished and available annually from the Bureau of Economic Analysis.

The repatriated earnings series represents the profits of domestically owned foreign subsidiaries. Beginning in 1980 the treatment of profits of domestically owned foreign subsidiaries in the national income and product accounts was revised; their present treatment presumes (a) that all such earnings are repatriated to the parent U.S. corporations and (b) that all such repatriated earnings are paid out to shareholders. The dividend series appearing in the national income and product accounts Table 1.13 is reduced by the amount of these earnings.

Under the pre-1980 treatment of dividends, these earnings were treated as retained earnings and hence did not act to reduce the dividend series in Table 1.13. By adding these earnings back to the national income and product accounts dividend series, we are essentially reverting to the pre-1980 treatment of dividends.

Appendix 2: Measurement of the Cost of Capital *(continued)*

† Net interest payments of nonfinancial corporations is equal to "monetary interest paid" less "monetary interest received". See Table 8.2 in "The National Income and Product Accounts of the United States, 1929-74, Statistical Tables"; a supplement to the *Survey of Current Business* (1977) and Table 8.7 in "The National Income and Product Accounts, 1976-79", special supplement to the *Survey of Current Business* (July 1981).

‡ The expected rate of inflation is measured as the average gain in the PCE implicit deflator over the past five years; *i.e.*,

$$\pi(t) = \left\{\frac{PCE(t)}{PCE(t-20)}\right\}^{1/5} - 1$$

where t denotes time measured in quarterly time periods.

§ The market value of debt securities (D) is computed by the formula

$$D = INT\left\{1 - (1/(1+r))^5\right\}/r + F\left\{\frac{1}{1+r}\right\}^5$$

where INT is defined in footnote †, r is the Baa rate on corporate bonds (divided by 100), and the face value of the securities (F) is measured by the following variables from the flow-of-funds accounts for nonfinancial corporations:

F = credit market instruments — (liquid assets — demand deposits — currency + consumer credit)

The market value of equity is computed by the formula

$$S = DIV/d$$

where d is the dividend-price ratio for the Standard & Poor's 500 industrial stocks.

Table 2

The Cost of Capital

Year Quarter	Percent	Year Quarter	Percent	Year Quarter	Percent	Year Quarter	Percent
1947:1	5.15	1954:1	7.47	1961:1	5.12	1968:1	5.78
2	5.61	2	6.77	2	4.93	2	5.52
3	5.69	3	6.46	3	4.96	3	5.49
4	5.81	4	6.29	4	4.91	4	5.37
1948:1	6.53	1955:1	6.23	1962:1	5.08	1969:1	5.61
2	5.86	2	6.08	2	5.64	2	5.57
3	5.81	3	5.78	3	5.98	3	5.89
4	6.50	4	6.14	4	5.84	4	5.95
1949:1	7.08	1956:1	6.37	1963:1	5.60	1970:1	6.20
2	7.49	2	6.20	2	5.45	2	6.72
3	7.29	3	6.06	3	5.44	3	6.74
4	7.52	4	6.44	4	5.40	4	6.25
1950:1	7.86	1957:1	6.68	1964:1	5.37	1971:1	5.62
2	7.60	2	6.35	2	5.37	2	5.35
3	8.02	3	6.29	3	5.36	3	5.49
4	8.46	4	6.87	4	5.34	4	5.46
1951:1	7.48	1958:1	6.58	1965:1	5.35	1972:1	5.12
2	7.58	2	6.32	2	5.38	2	5.02
3	7.43	3	5.94	3	5.48	3	5.00
4	7.44	4	5.49	4	5.43	4	4.91
1952:1	7.32	1959:1	5.33	1966:1	5.57	1973:1	4.95
2	7.48	2	5.32	2	5.77	2	5.20
3	7.25	3	5.21	3	6.19	3	5.38
4	7.43	4	5.30	4	6.31	4	5.64
1953:1	7.16	1960:1	5.50	1967:1	5.94	1974:1	5.83
2	7.68	2	5.54	2	5.73	2	6.19
3	7.92	3	5.58	3	5.60	3	6.95
4	7.86	4	5.57	4	5.61	4	7.05

Appendix 2: Measurement of the Cost of Capital *(continued)*

Table 2

The Cost of Capital

Year Quarter	Percent	Year Quarter	Percent	Year Quarter	Percent	Year Quarter	Percent
1975:1	6.86	1977:1	6.00	1979:1	7.26	1981:1	8.21
2	6.29	2	6.21	2	7.45	2	8.38
3	6.31	3	6.25	3	7.22	3	8.96
4	6.25	4	6.53	4	7.95	4	9.30
1976:1	5.75	1978:1	6.91	1980:1	8.10	1982:1	9.88
2	5.87	2	6.59	2	8.38		
3	5.76	3	6.70	3	7.78		
4	5.88	4	7.08	4	7.82		