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1 An Introductory Overview

The interaction of inflation and existing tax rules has powerful effects on the American economy. Inflation distorts the measurement of profits, of interest payments, and of capital gains. The resulting mismeasurement of capital income has caused a substantial increase in the effective tax rate on the real income from the capital employed in the nonfinancial corporate sector. At the same time, the deductibility of nominal interest expenses has encouraged the expansion of consumer debt and stimulated the demand for owner-occupied housing. The net result has been a substantial reduction in the accumulation of capital in nonfinancial corporations.

The rate of business fixed investment in the United States has fallen quite sharply since the mid-1960s. The share of gross national product devoted to net nonresidential fixed investment fell by more than one-third between the last half of the 1960s and the decade of the 1970s: the ratio of net fixed nonresidential investment to GNP averaged 0.042 from 1965 through 1969 but only 0.030 from 1970 through 1979. The corresponding rate of growth of the nonresidential capital stock declined by an even greater percentage: between 1965 and 1969, the annual rate of growth of the fixed nonresidential capital stock averaged 5.7 percent; in the 1970s, this average dropped to 3.8 percent. By the second half of the 1970s, the capital stock was growing no faster than the labor force, thereby eliminating the increase in capital per worker as a source of productivity growth.

This chapter is a slightly modified revised version of my paper "Inflation, Capital Taxation, and Monetary Policy," which was prepared for the October 1980 NBER Conference on Inflation and published in Hall (1982) © 1982 by the National Bureau of Economic Research. An earlier version of that paper was presented at the February 1980 Academic Consultants meeting with the Board of Governors of the Federal Reserve System.

The essays in this volume examine the interaction between tax rules and inflation and the impact of this interaction on net rates of return, on asset prices, and on real investment. Part 1 of this volume presents four theoretical studies of the way in which a steady and anticipated rate of inflation influences the long-run behavior of an economy. Each of those studies emphasizes a different aspect but all four feature an explicit analysis of the interaction of tax rules and inflation.

The present chapter begins with a summary and overview of the chapters in Parts 2–4. It then comments on the effects of the economy's fiscal structure for the impact of monetary policy. The next chapter then provides a brief nontechnical description of the four models of Part 1.

1.1 Inflation, Effective Tax Rates, and Net Rates of Return

Our tax laws were written for an economy with little or no inflation. With an inflation rate of 6 percent to 8 percent or more, the tax system functions very badly. The problem is particularly acute for the taxation of income from capital. Despite reductions in statutory rates over the past two decades, the effective tax rates on the income from savings have actually increased sharply in recent years because inflation creates fictitious income for the government to tax. Savers must pay tax not only on their real income from savings but also on their fictitious income as well.

Without legislative action or public debate, effective tax rates on capital income of different types have been raised dramatically in the last decade. This process of raising the effective tax rate on capital income is hard for the public at large or even for most members of Congress to understand. What appear to be relatively low rates of tax on interest income, on capital gains, and on corporate profits as measured under current accounting rules are actually very high tax rates, in some cases more than 100 percent, because our accounting definitions are not suited to an economy with inflation.

As anyone with a savings account knows, even a 10 percent interest rate was not enough in 1980 to compensate a saver for the loss in the purchasing power of his money that resulted from the 12 percent inflation. The present tax rules ignore this and tax the individual on the full nominal amount of his interest receipts. An individual with a 30 percent marginal tax rate would get to keep only a 7 percent return on an account that paid 10 percent. After adjusting this yield for the 12 percent inflation in consumer prices in 1980, such an individual was left with a real after tax return of *minus* 5 percent! The small saver was thus penalized rather than rewarded for attempting to save.

The effect of inflation on the taxation of capital gains is no less dramatic. In a study published in 1978 and presented in chapter 7, Joel Slemrod and I looked first at the experience of a hypothetical investor who bought a broad portfolio of securities like the Standard and Poors' 500 in 1957, held it for twenty years and sold it in 1977. An investor who did that would have been fortunate enough to have his investment slightly more than double during that time. Unfortunately, the consumer price level also more than doubled during that time. In terms of actual purchasing power, the investor had no gain at all on his investment. And yet, of course, the tax law would regard him as having doubled his money and would hold him accountable for a tax liability on this nominal gain.

After seeing this experience for a hypothetical investor, we were eager to know what has been happening to actual investors who have realized taxable capital gains and losses. Fortunately, the Internal Revenue Service has produced a very interesting set of data: a computer tape with a sample of more than 30,000 individual tax returns reporting realized capital gains or losses on corporate stock in 1973. While the sample is anonymous, it is the kind of scientific sample that can be used to make accurate estimates of national totals.

The results of this analysis were quite astounding. In 1973, individuals paid tax on \$4.6 billion of capital gains on corporate stock. When the costs of those securities are adjusted for the increase in the price level since they were purchased, that \$4.6 billion capital gain is seen correctly as a loss of nearly one billion dollars. Thus, people were paying tax on \$4.6 billion of capital gains when in reality they actually sold stock that represented a loss of nearly a billion dollars. Moreover, although people paid tax on artificial gains at every income level, the problem was most severe for those investors with incomes of less than \$100,000.

While the lower capital gains tax rates that were enacted in 1978 reduce the adverse effects of inflation, lowering the tax rate does not alter the fact that people will continue to pay taxes on nominal gains even when there are no real gains. They now pay a lower tax on those gains but they still pay a tax on what is really a loss.

Although interest recipients and those who realize nominal capital gains are taxed on fictitious inflation gains, by far the most substantial effect of inflation on tax burdens is the extra tax paid because of the overstatement of profits in the corporate sector. In the study presented in chapter 8, Lawrence Summers and I found that the mismeasurement of depreciation and inventories raised the 1977 tax burden on the income of nonfinancial corporations by \$32 billion. This represents a 50 percent increase in the total tax paid on corporate source income by corporations, their shareholders, and their creditors.

Some lawyers and economists have previously argued that inflation does not increase the effective tax rate on real corporate income because firms deduct nominal interest payments (rather than real interest payments) in calculating taxable profits. Equivalently, corporations are not taxed on the fall in the real value of their debts that results from inflation.

Although this argument is valid if one looks only at the taxes paid by the corporation, it is wrong when one considers the taxes paid by creditors and shareholders. As our calculations show, the extra tax paid by the creditors on the inflated interest payments is as large as the tax savings by corporations and their owners. Debt can therefore be ignored in evaluating the net impact of inflation on the total tax burden on corporate capital.

More recently, James Poterba, Louis Dicks-Mireaux, and I have updated these calculations and extended the analysis to include the taxes paid to state and local governments on the capital used by nonfinancial corporations (Feldstein, Poterba, and Dicks-Mireaux, 1981). We found that the 1979 effective tax rate on the total real capital income of the nonfinancial corporate sector was 69 percent. Thus, taxes now take about three-fourths of the total real capital income on corporate capital. This represents a return to the tax level of the mid-1950s before accelerated depreciation and the investment tax credit began reducing the total tax burden. Even if attention is limited to federal taxes, our calculation shows that by 1979 the federal government taxes on corporations, their shareholders, and their creditors equaled 65 percent of the total real capital income of the nonfinancial corporations net of the state and local taxes paid by corporations.

The implication of a 69 percent total effective tax rate on corporate income is clear. Since the real rate of return on corporate capital before all taxes was 9.0 percent in 1979 (Feldstein, Poterba, and Dicks-Mireaux, 1981), the net rate of return was only about 30 percent of this, or 2.7 percent.

1.2 Inflation, Tax Rules, and Asset Prices

A potentially important way in which inflation can alter the rate of real investment is by changing the cost to the firm of equity capital, that is, the ratio of share value per dollar of pretax earnings. In a smoothly functioning economy with no distortionary taxes, inflation should have no effect on the cost of equity capital: both the earnings per share and the share price should increase over time at a faster rate because of inflation but their ratio should be unaffected. In fact, taxes interfere with this neutrality and alter the ratio of the share price to the pretax earnings.[1]

In thinking about the relation between inflation and share prices, it is crucial to distinguish between the effect of a *high* constant rate of inflation and the effect of an *increase* in the rate of inflation expected for the future. When the steady-state rate of inflation is higher, share prices

1. The relation between inflation, tax rules, and share prices is discussed in chaps. 10, 11, and 13.

increase at a faster rate. More specifically, when the inflation rate is steady, share prices rise in proportion to the price level to maintain a constant ratio of share prices to real earnings. In contrast, an *increase* in the expected future rate of inflation causes a concurrent fall in the ratio of share prices to current earnings. Although share prices then rise from this lower level at the higher rate of inflation, the ratio of share prices to real earnings is permanently lower. This permanent reduction in the price-earnings ratio occurs because, under prevailing tax rules, inflation raises the effective tax rate on corporate source income.

An important reason for the lower ratio of price to pretax earnings is that an increase in the permanent rate of inflation raises the effective tax rate on equity capital. The magnitude of this increase reflects the role of historic cost depreciation, the use of FIFO inventory accounting, and the extent of corporate debt. A numerical calculation with realistic values will indicate how these separate effects are combined. Consider an economy with no inflation in which each share of stock represents the ownership claim to a single unit of capital (i.e., one dollar's worth of capital valued at its reproduction cost) and to the net earnings that it produces. The marginal product of capital (net of depreciation), f', is subject to a corporate income tax at effective rate t_1. In the absence of inflation, this effective rate of tax is less than the statutory rate (t) because of the combined effect of accelerated depreciation and the investment tax credit. The corporation borrows b dollars per unit of capital and pays interest at rate r. Since these interest payments are deducted in calculating corporate income that is taxed at the statutory rate t, the net cost of these borrowed funds is $(1 - t)br$. The net return to equity investors per unit of capital in the absence of inflation is $(1 - t_1)f' - (1 - t)br$.

What happens to this net return when the inflation rate rises? For simplicity, consider an instantaneous and unanticipated increase to inflation at rate π that is expected to last forever. Under existing U.S. tax law, inflation raises taxable profits (for any fixed level of real profits) in two ways. First, the value of depreciation allowances is based on the original or "historic" cost of the asset rather than on its current value. When prices rise, this historic cost method of depreciation causes the real value of depreciation to fall and the real value of taxable profits to rise. Second, the cost of maintaining inventory levels is understated for firms that use the first-in/first-out (FIFO) method of inventory accounting. A linear approximation that each percentage point of inflation increases taxable profits per unit of capital by x implies that the existing treatment of depreciation and inventories reduces net profits by tx per unit of capital.

When there is a positive rate of inflation, the firms' net interest payments ($(1 - t)br$) overstates the true cost to the equity owners of the corporations' debt finance. Against this apparent interest cost it is necessary to offset the reduction in the real value of the corporations' net monetary liabilities. These net monetary liabilities per unit of capital are the difference between the interest-bearing debt (b) and the non-interest-bearing monetary assets (a).

Combining the basic net profits per unit of capital, the extra tax caused by the existing depreciation and inventory rules, and the real gain on net monetary liabilities yields the real net return per unit of capital,

$$z = (1 - t_1)f' - (1 - t)br - tx\pi + (b - a)\pi \tag{1}$$

The effect of inflation on the real net equity earnings per unit of capital (z) depends on the response of the interest rate (r) to the inflation rate (π). In general, the change in equity earnings per unit change in the inflation rate ($dz/d\pi$) depends on the tax and finance parameters and on the effect of inflation on the interest rate ($dr/d\pi$) according to:

$$\frac{dz}{d\pi} = -(1 - t)b\frac{dr}{d\pi} - tx + (b - a) \tag{2}$$

Econometric studies indicate that the nominal interest rate has risen approximately point-for-point with the rate of inflation. Assuming that $dr/d\pi = 1$ implies

$$\begin{aligned} \frac{dz}{d\pi} &= -(1 - t)b - tx + (b - a) \\ &= t(b - x) - a \end{aligned} \tag{3}$$

Thus, equity owners (1) gain tb (per unit of capital) from a rise in inflation because nominal interest expenses are deducted in calculating taxable income, (2) lose tx because of the understatement of cost due to the use of historic cost depreciation and FIFO inventory accounting, and (3) lose a because they hold non-interest–bearing monetary assets.

Recent values of these parameters imply that $dz/d\pi$ is negative and therefore that inflation would reduce the equity earnings per share. In 1977, nonfinancial corporations had a total capital stock of \$1,684 billion and owed net interest-bearing liabilities of \$509.7 billion,[2] implying that $b = 0.302$. The monetary assets of the NFCs had a value of \$54.8 billion, implying that $a = 0.033$. Since the corporate tax rate in 1977 was $t = 0.48$, these figures imply that $dz/d\pi = 0.113 - tx$.

2. The capital stock, valued at replacement cost in 1977 dollars, is estimated by the Department of Commerce. The net liabilities are based on information in the Flow of Funds tables. The study by Feldstein and Summers presented in chap. 8 reports the net interest-bearing liabilities of NFCs as \$595 billion. For the appropriate debt measure in this work, the value of the net trade credit (\$72.7 billion) and government securities (\$12.9 billion) must be subtracted from this \$595 billion. The subtraction of net trade credit reflects the assumption that the profits of NFCs include an implicit interest return on the trade credit that they extend. The new information is from the *Federal Reserve Balance Sheets of the U.S. Economy*.

While it is difficult to calculate x as precisely as t, b, and z, it is clear that tx exceeds 0.113 and therefore that $dz/d\pi$ is negative. Recall that $x\pi$ is the overstatement of taxable profits per dollar of capital caused by inflation at rate π. The Feldstein and Summers study presented in chapter 8 estimates that in 1977 inflation caused an overstatement of taxable profits of \$54.3 billion of which \$39.7 billion was due to low depreciation and \$14.6 was due to artificial inventory profits. Thus in 1977 $x\pi = 54.3/1684 = 0.032$. The implied value of x depends on the rate of inflation that was responsible for these additional taxable profits. For the inventory component of the overstated profits, the relevant inflation rate is the one for the concurrent year; for the depreciation component, the relevant inflation rate is a weighted average of the inflation rates since the oldest remaining capital was acquired but with greater weight given to inflation in more recent years. The consumer price index rose 6.8 percent in 1977, an average of 7.2 percent in the preceding five years, and 4.5 percent and 1.9 percent in the two previous five-year periods.[3] An inflation rate of 7.0 percent is therefore a reasonable upper bond for the relevant rate and 5.0 percent is a reasonable lower bound. A value of $\pi = 0.06$ implies that $x = 0.53$ and therefore that $tx = 0.256$, even at the upper bound of $\pi = 0.07$, $x = 0.46$, and $tx = 0.22$. Both of these values are clearly above the critical value of 0.113 required for $dz/d\pi$ to the negative.

By itself, the fact that the inflation-tax interaction lowers the net of tax equity earnings tends to depress the price-earnings ratio. This is reinforced by the fact that the nominal increase in the value of the corporation's capital stock induces a capital gains tax liability for shareholders. But the net effect on the share price level depends on the effect of inflation on the investors' opportunity cost of investing in stocks. Because households pay tax on nominal interest income, inflation lowers the real net yield on bonds as an alternative to share ownership. At the same time, the favorable tax rules for investment in land, gold, owner-occupied housing, and so forth, imply that the real net opportunity cost of shareholding does not fall as much as the real net yield on bonds and may actually rise.[4] In considering these interactions of inflation and tax rules, it is important to distinguish households and nontaxable institutions and to recognize that share prices represent an equilibrium for these two groups.

In chapter 11, I evaluate the effect of inflation on the equilibrium share price, using a very simple model with two classes of investors. That analysis shows that if the opportunity cost that households perceive remains unchanged (at a real net-of-tax 4 percent), a rise in the inflation

3. The index of producer prices for finished goods rose 6.6 percent in 1977 and an average of 5.9 percent for the previous decade, essentially the same as the CPI.

4. This point is developed further in chaps. 6, 12, and 13 and in Hendershott (1979), Hendershott and Hu (1979), and Poterba (1980).

rate from zero to 6 percent would reduce the share value by 24 percent.[5] A one-fourth fall in the households' opportunity cost of share ownership (from 0.04 to 0.03) would limit the fall in the equilibrium share value to only 7 percent.

The real net cost of equity funds rose from about 7 percent in the mid-1960s to about 10 percent in the mid-1970s. On balance, I believe that the interaction of inflation and the tax rules is responsible for part, but only part, of this very substantial rise in the real cost of equity capital. Inflation may also depress share prices because of a perceived increase in risk (as Malkiel has stressed) or because investors confuse nominal and real returns (as Modigliani has emphasized). These additional explanations are not incompatible with the tax effect.

Although the tax rules cause inflation to depress share prices, they have the opposite effect on the prices of land, gold, and other "stores of value." Because the real opportunity cost of holding these assets is depressed by inflation while the return on these assets bears only a small extra tax because of inflation (i.e., the capital gains tax on realized nominal gains), an asset equilibrium requires a rise in their price. This notion is developed explicitly in chapters 12 and 13. The rise in the price of land, gold, and other stores of value not only redistributes wealth but also, by raising individual wealth, causes increased consumption and thus less saving.

1.3 Inflation, Tax Rules, and Investment

An important reason for the decline in nonresidential investment that I referred to in the beginning of this chapter has been the interaction of the high rate of inflation and the existing tax rules. As the discussion in the previous two sections has made clear, the nature of this interaction is complex and operates through several different channels. I have investigated this effect in the study presented in chapter 14 by estimating three quite different models of investment behavior. The strength of the empirical evidence rests on the fact that all three specifications support the same conclusion.

The simplest and most direct way relates investment to the real net return that the providers of capital can earn on business capital. As I noted in the first section of this chapter, the combined effects of original cost depreciation, the taxation of nominal capital gains, and other tax rules raise the effective tax rate paid on the capital income of the corporate sector and thus lowers the real net rate of return that the

5. This makes an allowance for the effect of the induced reduction of the capital stock on the subsequent pretax return. Summers (1980*a*) shows explicitly how that would reduce the fall in the equilibrium share value.

ultimate suppliers of capital can obtain on nonresidential fixed investment. This in turn reduces the incentive to save and distorts the flow of saving away from fixed nonresidential investment. Even without specifying the mechanism by which the financial markets and managerial decisions achieve this reallocation, the variations in investment during the past decades can be related to changes in the real net rate of return.

The real net rate of return varied around an average of 3.3 percent in the 1950s, rose by the mid-1960s to 6.5 percent while averaging 5.0 percent for the 1960s as a whole, and then dropped in the 1970s to an average of only 2.8 percent. A simple econometric model (relating net fixed business investment as a fraction of GNP to the real net rate of return and to capacity utilization) indicates that each percentage point rise in the real net return raised the ratio of investment to GNP by about one-half a percentage point. This estimated effect is quite robust with respect to changes in the specification, sample period, and method of estimation. It implies that the fall in the real net rate of return between the 1960s and the 1970s was large enough to account for a drop of more than one percentage point in the ratio of investment to GNP, a reduction that corresponds to more than one-third of the net investment ratio in the 1970s.

This general conclusion is supported by two quite different alternative models of investment. The first of these relates investment to the difference between the maximum potential rate of return that the firm can afford to pay on a "standard" project and the actual cost of funds. The second is an extension of the Hall-Jorgenson (1967) investment equation that incorporates all of the effects of inflation in the user cost of capital. Although none of the three models is a "true" picture of reality, the fact that they all point to the same conclusion is reassuring because it indicates that the finding is really "in the data" and is not merely an artifact of the model specification.

1.4 Fiscal Structure and Effects of Monetary Policy

The intellectual traditions of monetary analysis have caused the effects of the economy's fiscal structure to be ignored. Whatever the appropriateness of this division of labor between monetary specialists and tax specialists in earlier decades, it has clearly been inappropriate in more recent years. As I explain in chapters 3 through 6, the fiscal structure of our economy is a key determinant of the macroeconomic equilibrium and therefore of the effect of monetary policy. The failure to take fiscal effects into account has caused a misinterpretation of the expansionary and distortive character of monetary policy in the 1960s and 1970s.

During the dozen years after the 1951 accord between the Treasury and the Fed, the interest rate on Baa bonds varied only in the narrow range between 3.5 percent and 5 percent. In contrast, the next fifteen years saw the Baa rate rise from less than 5 percent in 1964 to more than 12 percent at the end of 1979. It is perhaps not surprising therefore that the monetary authorities, other government officials, and many private economists worried throughout this period that interest rates might be getting "too high." Critics of what was perceived as "tight money" argued that such high interest rates would reduce investment and therefore depress aggregate demand.

Against all this it could be argued, and was argued, that the *real* interest rate had obviously gone up much less. The correct measure of the real interest rate is of course the difference between the nominal interest rate and the rate of inflation that is *expected* over the life of the bond. A common rule of thumb approximates the expected future inflation by the average inflation rate experienced during the preceding three years. In 1964, when the Baa rate was 4.8 percent, this three-year rise in the GNP deflator averaged 1.6 percent; the implied real interest rate was thus 3.2 percent. By the end of 1979, when the Baa rate was 12.0 percent, the rise in the GNP deflator for the previous three years had increased to 7.8 percent, implying a real interest rate of 4.2 percent. Judged in his way, the cost of credit has also increased significantly over the fifteen-year period.

All of this ignores the role of taxes. Since interest expenses can be deducted by individuals and businesses in calculating taxable income, the net-of-tax interest cost is very much less than the interest rate itself. Indeed, since the *nominal* interest expense can be deducted, the *real net-of-tax* interest cost has actually varied inversely with the *nominal* rate of interest. *What appears to have been a rising interest rate over the past twenty-five years was actually a sharply falling real after-tax cost of funds.* The failure to recognize the role of taxes prevented the monetary authorities from seeing how expansionary monetary policy had become.

The implication of tax deductibility is seen most easily in the case of owner-occupied housing. A married couple with a $30,000 taxable income now has a marginal federal income tax rate of 37 percent. The 11.4 percent mortgage rate in effect in the last quarter of 1979 implied a net-of-tax cost of funds of 7.2 percent. Subtracting a 7.8 percent estimate of the rate of inflation (based on a three-year average increase in the GNP deflator) leaves a real net-of-tax cost of funds of *minus* 0.6 percent. By comparison, the 4.8 percent interest rate for 1964 translates into a 3.0 percent net-of-tax rate and a 1.4 percent real net-of-tax cost of funds. Thus, although the nominal interest rate had more than doubled and the real interest rate had also increased substantially, the relevant net-of-tax real cost of funds had actually fallen from 1.4 percent to a *negative* 0.6 percent.

As this example shows, taking the effects of taxation into account is particularly important because the tax rules are so nonneutral when there is inflation. If the tax rules were completely indexed, the effect of the tax system on the conduct of monetary policy would be much less significant. But with existing tax rules, the movements of the pretax real interest rate and of the after-tax real interest rates are completely different. I think that monetary policy in the last decade was more expansionary than it otherwise would have been because the monetary authorities and others believed that the cost of funds was rising or steady when in fact it was falling significantly.

The fall in the real after-tax interest rate has caused a rapid increase in the price of houses relative to the general price level and has sustained a high rate of new residential construction; this effect is analyzed in chapter 6. There were, of course, times when the ceilings on the interest rates that financial institutions could pay caused disintermediation and limited the funds available for housing. To that extent, the high level of nominal interest rates restricted the supply of funds at the same time that the corresponding low real after-tax interest cost increased the demand for funds. More recently, the raising of certain interest rate ceilings and the development of mortgage-backed bonds that can short-circuit the disintermediation process have made the supply restrictions much less important and have therefore made any interest level more expansionary than it otherwise would have been.

The low real after-tax rate of interest has also encouraged the growth of consumer credit and the purchase of consumer durables. It is not surprising that, with a negative real net rate of interest, house mortgage borrowing has soared to over $90 billion a year, more than double the rate in the early 1970s. More generally, even households that do not itemize their tax deductions are affected by the low real after-tax return that is available on savings. Because individuals pay tax on nominal interest income, the real after-tax rate of return on saving has become negative. It seems likely that this substantial fall in the real return on savings has contributed to the fall in the personal saving rate and the rise in consumer demand.

The evidence presented in chapter 8 shows that the analysis is more complex for corporate borrowers and investors because inflation changes the effective tax rate on investments as well as the real net-of-tax interest rate. More specifically, because historic cost depreciation and inventory accounting rules reduce substantially the real after-tax return on corporate investments, an easy-money policy raises the demand for corporate capital only if the real net cost of funds falls by more than the return that firms can afford to pay. This balance between the lower real net interest cost and the lower real net return on investment depends on the corporation's debt-equity ratio and on the relation between the real yields that must be paid on debt and on equity funds. It is difficult to say just what has happened on balance. In a preliminary study presented in chapter 9, Lawrence Summers and I concluded that the rise in the nominal interest rate caused by inflation was probably slightly less than the rise in the maximum nominal interest rate that firms could afford to pay.

However, that study made no allowance for the effect of inventory taxation or for the more complex effects of inflation on equity yields that I discuss in chapters 8, 10, and 11. My current view, based on the evidence developed in chapter 14, is that, on balance, expansionary monetary policy reduced the demand for business investment at the same time that it increased the demand for residential investment and for consumption goods.

It is useful to contrast the conclusion of this section with the conventional Keynesian analysis. According to the traditional view, monetary expansion lowers interest rates which reduces the cost of funds to investors and therefore encourages the accumulation of plant and equipment. In the context of the U.S. economy in recent years, this statement is wrong in three ways. First, a sustained monetary expansion raises nominal interest rates. Second, although the interest rate is higher, the real net-of-tax cost of funds is lower. And, third, the lower cost of funds produced in this way encourages investment in housing and consumer durables (as well as greater consumption in general) rather than more investment in plant and equipment. Indeed, because of the interaction of tax rules and inflation, a monetary expansion tends to discourage saving and reduce investment in plant and equipment. The low real net-of-tax rate of interest on mortgages and consumer credit is an indication of this misallocation of capital.

Perhaps the problems of misinterpretation and mismanagement might have been avoided completely if the monetary authorities and others in the financial community, as well as Congress and the economics profession, had ignored interest rates completely and focused their attention on the money supply and the credit aggregates. Presumably, under current Federal Reserve procedures, there will be more of a tendency to do just that. But since the temptation to look at rates as well is very powerful, it is important to interpret the rates correctly. What matters for the household borrower or saver is the real net-of-tax interest rate. A very low or negative real net-of-tax rate is a clear signal of an incentive to overspend on housing and on other forms of consumption. What matters for the business firm is the difference between the real net-of-tax cost of funds (including both debt and equity) and the maximum return that, with existing tax laws, it can afford to pay. The difficulty of measuring this difference should be a warning against relying on any observed rates to judge the ease or tightness of credit for business investment.

1.5 The Mix of Monetary and Fiscal Policies

There is widespread agreement on two central goals for macroeconomic policy: (1) achieving a level of aggregate demand that avoids both unemployment and inflation, and (2) increasing the share of national income that is devoted to business investment. Monetary and fiscal policy provide two instruments with which to achieve these two goals. The conventional Keynesian view of the economy has led to the prescription of easy money (to encourage investment) and a tight fiscal policy (to limit demand and prevent inflation). Our low rate of investment and high rate of inflation indicate that this approach has not worked. It is useful to review both the way such a policy is supposed to work and the reason why it fails.

Keynesian analysis, based on a theory developed during and for the depression, is designed for an economy with substantial slack and essentially fixed prices. This Keynesian perspective implies that real output can be expanded by increasing demand and that the policy mix determines how this increased output is divided between investment, consumption or government spending. An increase in the money supply favors investment while a fiscal expansion favors consumption or government spending. Whatever the validity of this analysis in an economy with vast excess capacity and fixed prices, it has not been appropriate for the U.S. economy in recent years.

There is a way in which a policy mix of easy money and fiscal tightness could in principal work in our relatively fully employed economy. The key requirement would be a persistent government surplus. Such a surplus would permit the government to reduce the supply of outstanding government debt. This in turn would induce households and institutions to substitute additional private bonds and stocks for the government debt that was removed from their portfolios. The result would be an increased rate of private capital accumulation. Under likely conditions, this substitution of private capital for government debt would require a lower rate of interest and a relative increase in the stock of money.[6]

Unfortunately, the traditional prescription of easy money and a tight fiscal position has failed in practice because of the political difficulty of achieving and maintaining a government surplus.[7] As a result, the pursuit of an easy money policy has produced inflation. Although the inflationary

6. See chap. 5 for a theoretical analysis in which this possibility is considered.

7. It might be argued that the inflationary erosion of the real government debt means that the government has in fact had real surpluses even though nominal deficits. But such an inflation adjustment also implies an equal reduction in private saving, indicating that private saving has in fact been negative. The conventional government deficit should also be augmented by the off-budget borrowing and the growth of government unfunded obligations in the social security and civil service and military service pension programs.

increase in the money supply did reduce the real after-tax cost of funds, this only diverted the flow of capital away from investment in plant and equipment and into owner-occupied housing and consumer durables. By reducing the real net return to savers, the easy money policy has probably also reduced the total amount of new savings.

The traditional policy mix reflects not only its optimistic view about the feasibility of government surpluses but also its overly narrow conception of the role of fiscal policy. In the current macroeconomic tradition, fiscal policy has been almost synonymous with variations in the net government surplus or deficit and has generally ignored the potentially powerful incentive effects of taxes that influence marginal prices.

An alternative policy mix for achieving the dual goals of balanced demand and increased business investment would combine a tight-money policy and fiscal incentives for investment and saving. A tight-money policy would prevent inflation and would raise the real net-of-tax rate of interest. Although the higher real rate of interest would tend to deter all forms of residential and nonresidential investment, specific incentives for investment in plant and equipment could more than offset the higher cost of funds. The combination of the higher real net interest rate and the targeted investment incentives would restrict housing construction and the purchase of consumer durables while increasing the flow of capital into new plant and equipment. Since housing and consumer durables now account for substantially more than half of the private capital stock, such a restructuring of the investment mix could have a substantial favorable effect on the stock of plant and equipment.

A rise in the overall saving rate would permit a greater increase in business investment. The higher real net rate of interest would in itself tend to induce such a higher rate of saving. This could be supplemented by explicit fiscal policies that reduced the tax rate on interest income and other income from saving.

In short, restructuring macroeconomic policy to recognize the importance of fiscal incentives and of the current interaction between tax rules and inflation provides a way of both reducing the rate of inflation and increasing the growth of the capital stock.

I Inflation and Tax Rules in Macroeconomic Equilibrium