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The Tax Reform Act of 1986 and the Cost of Capital

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The broad outlines of the recently passed Tax Reform Act of 1986 suggest a shift in the tax burden toward business. Over the five-year period 1987–1991, corporate tax revenues are projected to increase by $120.3 billion with individual tax revenues declining by $121.9 billion. It is natural to conclude that business investment in plant and equipment will be discouraged by this shift. Yet the relationship between tax revenues and investment incentives is a complicated one, particularly when the change in business tax revenues is accompanied by a major change in the tax structure producing these revenues.

This paper's primary aim is to discuss the channels through which this major change in the tax structure will affect the incentives for business investment. Among the related questions discussed are the law's impact on the efficiency of capital allocation; corporate debt-equity ratios; corporate mergers and takeovers; tax shelter activity and the nonpayment of taxes by individuals and corporations; the strength of foreign investment in the United States; and the market value of the equity shares of U.S. corporations.

Incentives for Corporate Investment

The tax reform will affect corporate fixed investment through several of its provisions, the most important being the reduction in the corporate tax rate from 46 percent to 34 percent and the removal of the 10 percent investment tax credit which was available for purchases of machinery and equipment. In addition, the lifetimes

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over which assets may be written off for tax purposes have been increased for business structures, which means a smaller tax write-off in each year. These provisions work in opposite directions, with the corporate tax cut encouraging investment and the other provisions discouraging it.

The traditional approach to determining how taxes affect investment is to ask how tax provisions affect the rate of return a business requires in order to invest. For example, if a capital asset costs q dollars and has an annual depreciation rate of δ, and if the real required rate of return is r, then a firm purchasing the capital would have to generate annual cash flows of $q(r + \delta)$ after all corporate taxes just to cover the costs of owning the asset. At a real required rate of return of 4 percent and a rate of asset depreciation of 10 percent per year, for example, an asset costing a million dollars would have to produce $140,000 after tax to allow the firm to break even: $40,000 (for its investors) and $100,000 to replace the worn-out capital. The lower the rate of return needed to break even, the more capital the firm will buy.

If all cash flows were taxed, say at rate u, this firm would have to earn $q(r + \delta)/(1 - u)$ before tax to be left with $q(r + \delta)$ after tax. A tax rate of 50 percent, for example, would double the cash flow required to justify an investment. But if depreciation was deductible before the tax was applied, then the before-tax required return would be only $q(r/(1 - u) + \delta)$.

A "textbook" income tax is usually defined in this way as a tax on *net* income, i.e., income net of true economic depreciation (the reduced value of the capital goods as a result of time and usage). Traditionally, the U.S. tax system has differed in three respects from a straightforward corporate income tax. First, an investment tax credit lowered the effective price of capital goods. Second, depreciation allowances typically exceed, in present value, the deductions that would match actual economic depreciation. Whenever the present discounted value of true depreciation allowances exceeds the present discounted value of depreciation, we say that there is accelerated depreciation. To measure the extent of these tax reductions, one may ask what reduction in the tax rate u (without the investment tax credit or accelerated depreciation) would have presented the investor with the same return as is provided with those features added. This lower tax rate is often called the "effective tax rate" on the investment, because it indicates the rate at which income is actually being taxed. If the effective tax rate is only 80 percent of the statutory tax rate, the investment tax credit and accelerated depreciation provisions have in effect reduced the tax base by 20 percent.

The third way the tax system diverges from a straightforward income tax is that firms can deduct the interest payments on funds borrowed to purchase an asset. Analysis of this provision is complicated by the controversy over how corporations determine their debt-equity ratios and the extent to which the ability to deduct interest payments is offset by other factors, including personal taxes. A later section is devoted to these questions. The initial calculations that follow are not adjusted for the interest deduction, and may therefore be viewed as applying to investments financed by equity funds, ignoring individual taxes.

Representative effective tax rates for selected assets under new and old tax laws are presented in Table 1. These rates may be compared with the statutory tax rates of

46 percent and 34 percent to infer how much accelerated depreciation and (under old law) the investment tax credit narrow the tax base. Under old law, the combination of accelerated depreciation and the investment tax credit caused the effective corporate tax rate for equipment to be approximately zero at the margin, while structures faced nearly the statutory rate.

The effect of the new law is that all assets now face effective rates in the neighborhood of the statutory rate of 34 percent. Structures benefit somewhat, as the reduction in the statutory rate more than offsets the reduced depreciation allowances. However, equipment investment experiences a large increase in its effective tax rate, largely as a result of the removal of the investment tax credit. This shift in the effective tax burden from structures to equipment has been justified as an attempt to level the playing field and reduce distortions in the allocation of capital among depreciable assets. Estimates presented in Auerbach (1983a) suggest that while these distortions have increased in the 1980s, they are still not large relative to other tax-induced distortions, such as the bias against savings associated with taxing capital income at all. In fact, the efficiency gains from improved capital allocation within the corporate sector may possibly be more than offset by the increased distortion of the allocation of capital between business investment and owner-occupied housing, which retains its favorable tax treatment under the new law. This outcome illustrates the difficulty and practical relevance of second-best applied welfare economics: we never eliminate all distortions, and there may be little or no welfare gains from reducing some distortions while retaining others.

Corporate Financial Policy and the Incentive to Invest

The previous discussion assumed that all cash flows are taxed at a single rate. In fact, as already noted, interest payments are tax deductible. Moreover, what investors should be concerned with is what they receive after paying both corporate and individual income taxes. Thus, while interest payments and dividends are fully taxable when received, capital gains were, until the new tax law, taxed at favorable rates. Even under the new law, capital gains retain an advantage because they are not taxed until the appreciated asset is sold.

The firm's financial structure—its decisions concerning borrowing, retaining earnings, buying back shares, issuing new shares—affects these tax liabilities. It is clear that taxes (and changes in taxes) affect the relative attractiveness of, say, financing investments out of new debt or retained earnings, and thus may have a significant effect on the financial structure of firms as well as the incentives for investment. Unfortunately, many aspects of firm financial policy remain paradoxical. For example, under most circumstances, firms could have reduced (total) tax liabilities by buying back shares rather than issuing dividends. Though in recent years a significant fraction of corporate income was distributed to the household sector in forms which were subjected to the more favorable capital gains tax rates (through

mergers and takeovers, as well as buying back shares) a significant amount of money was distributed as dividends. Until economists have an adequate theory of what determines firms' financial structure, we cannot be sure either of the effect of the new tax law on financial structure, or more importantly, on investment.

Given the unsettled state of the theory, the best way to understand the impact of the new tax law on investment and financial policy is to consider some alternative polar cases. Starting from the analysis of the previous section, we may ask what additional taxes would be due if the firm passed its returns to individuals in various different ways.

Suppose first that the corporation's investment is entirely financed by debt. When a corporation pays interest, the interest is fully deductible at the corporate level and fully taxed when received by individuals. If the firm pays a nominal interest rate of i to the bondholder facing a marginal tax rate t, the bondholder receives $i(1 - t)$ and the change in taxes for the corporation and individual combined is $i(t - u)$. Thus, for a debt-financed corporation whose debt is held by individuals in the same tax bracket, there will be no additional taxes; the total tax burden on investment will be the one already calculated above. More generally, however, corporations are not owned by individuals in the same tax bracket. Various studies (Hausman and Poterba, elsewhere in this symposium, for example) have suggested that the average marginal tax rate on corporate bond income is substantially below the corporate tax rate, which suggests that the total tax burden on investment is actually lower than previously calculated. For example, if the nominal interest rate is 8 percent and the corporate tax rate is 50 percent, the corporation needs to earn a nominal return of only 4 percent after tax on its fixed investment to be able to meet the interest payments, since it reduces its taxes by an amount equal to the other half of the 8 percent interest paid. A bondholder in the 25 percent tax bracket receiving the 8 percent interest would receive a nominal return of 6 percent after-tax—more than the firm must earn on its investment.

The effects of the new tax law on debt-financed investment may be estimated by combining the effects illustrated in Table 1 with the change in additional taxes associated with the gap between the corporate and individual tax rates. Unfortunately, this additional effect is not ambiguous. The corporate rate has been reduced by 12 percentage points, from 46 percent to 34 percent. High income individuals have experienced a larger drop in their marginal tax rates, from 50 percent to 28 percent. However, many middle income individuals have not had their marginal tax rates lowered significantly. The appropriate "marginal tax rate" may then not have been reduced by as much as the corporate rate. Hausman and Poterba estimate that, weighted by interest payments received, the marginal tax rate on interest income has fallen by just over 4 percentage points, far less than the decline in the corporate rate. This result suggests that, on average, debt-financed investment may very well have been discouraged by several percentage points more than the numbers in Table 1 would indicate.

In the opposing case, imagine that new investment is financed completely by new equity. The effect of the new tax law on the returns to equity-financed investment are

Table 1
Effective tax rates after tax reform[a]

Asset	*Effective tax rate (in percent)* *Old law*	*New law*
Trucks, buses and trailers	0.2	29.9
General industrial machinery	−3.3	38.0
Industrial buildings	45.6	37.0

[a]Calculations assume a 4 percent real interest rate and a 3 percent inflation rate. Economic depreciation rates were estimated empirically following the standard method described in detail in Auerbach (1983a). It is necessary to posit an inflation rate because depreciation allowances are fixed in nominal terms and therefore decline in value as inflation increases.

Trucks, buses and trailers are in the 3-year depreciation category under both old and new laws. General industrial equipment, having an asset depreciation range midpoint life between 10 and 16 years, switches from the 5-year to the 7-year class. Industrial buildings are written off over 31.5 years, instead of the previous 19.

All calculations assume assets are purchased midway through the year and that tax payments are made once a year.

more complicated to analyze because tax rates on dividends and capital gains have moved in opposite directions. For most investors, capital gains are taxed at a considerably higher rate (up to 33 percent, as compared to the previous maximum of 20 percent), since the 60 percent capital gains exclusion has been repealed. These figures overstate the actual increase in taxes, however, because the effective capital gains rate is less than the legislated one since taxes on capital gains are deferred until the gain is realized. If the effective capital gains rate is half the legislated rate, the total tax on income earned by the corporation and received as capital gains could still rise by several percentage points more than the calculations in Table 1 would indicate. In contrast, income that is distributed as dividends is treated much more favorably than either interest payments or capital gains under the new law. Hausman and Poterba estimate that the overall marginal tax rate on dividends (weighted by dividend receipts) has fallen by just over 8 percent, larger than the drop in interest income taxation because of the higher concentration of dividends in the highest income brackets now taxed at only 28 percent.

Thus, the tax change will raise individual taxes on some returns to equity and lower them on others. Whether the net effect of these changes is to discourage or encourage investment (beyond the effects outlined in Table 1) depends on how important capital gains taxes and dividend taxes are in determining the overall shareholder tax rate on equity income. The standard approach involves computing a weighted average of the two tax rates, but the determination of such weights is the subject of substantial theoretical and empirical disagreement. This controversy is of crucial importance because tax rates on dividends and capital gains have moved in opposite directions.

The Dividend Puzzle

The most common approach to determining the overall tax rate on equity income at the shareholder level has been based on the ratio between dividend payout and retained earnings. For any particular ratio of dividends to retained earnings, one can calculate the overall tax rate on equity income as a weighted average of these tax rates. In contrast to this approach, a "new" view of equity taxation (summarized in Auerbach, 1983b) suggests that the relevant equity tax rate is the effective capital gains tax rate, regardless of the ratio between dividends and retained earnings. The issue is not whether taxes on dividends are paid—they obviously are—but whether they impose a tax burden on the returns to new investment as opposed to being already capitalized into the value of the equity. If a firm obtains funds for new investment by issuing new shares, then the subsequent payment of dividend taxes on the earnings generated by that investment will lower the rate of return to shareholders. But if new funds for investment come instead from retained earnings, shareholders will still have to pay taxes on the dividends earned by the investment in the future, although they avoid paying taxes on dividends received in the present.

For example, an investment of $100 yielding 10 percent one year later enables the firm to reduce dividends by $100 today and then increase dividends by $110 next year. A shareholder of that firm has a before-tax opportunity cost of $100 the first year, which equals an after-tax cost of $60 for someone in the 40 percent bracket. The next year the shareholder receives $110, and keeps $66 after taxes. Notice that the taxpayer's yield is 10 percent, regardless of whether the calculation is made on a before-tax or after-tax basis, and postponing the dividend tax does not change its present value.

This example implies that tax liability over time is independent of a firm's decision on whether to reinvest earnings or distribute them. An investor's rate of return would be reduced only by the capital gains taxes on the increase in share values associated with the firm choosing to retain earnings. The present value of dividend taxes would not be affected by the choice to retain earnings or pay them out as dividends, but would be reflected in the firm's value, since it represents a liability associated with ownership of the firm. An increase in the rate of dividend taxation would increase this liability, and hence reduce share prices, but would not affect the after-tax returns to investment.

Direct evidence on this subject is quite mixed. The relatively infrequent use of new equity issues by existing corporations supports the new view that equity funds come primarily from forgoing dividends and retaining earnings. However, the massive recent use in the United States of share repurchases (which exceeded new share issues in 1984 and 1985) as a vehicle for delivering corporate earnings to shareholders renders less tenable another of the new view's crucial assumptions, that distributions to shareholders are primarily through dividends. Indirect evidence, based on tests of various implications of the new and traditional views, is also inconclusive.[1]

[1]For example, using British time series data, Poterba and Summers (1983) conclude that the new view of dividend taxation provides a poorer description of reality than the old view of the weighted average

Thus, whether the additional taxes on corporate source equity income at the individual level have increased or decreased depends on which model of equity taxation is correct. Under the traditional view, the tax reform has probably reduced the effective shareholder tax rate on equity income, since dividends have historically represented about half the total return to equity and effective capital gains tax rates are unlikely to have risen as much as dividend tax rates have fallen. Thus, the old view suggests that the figures in Table 1 overstate the increase in the taxation of new investment due to the new law. Under the new view, however, the only rate of individual equity taxation that matters is the capital gains rate and it has increased.

Accounting for personal taxes and interest deductibility therefore suggests that debt-financed investment has been discouraged more by the new law than the calculations in Table 1 indicate, while the outcome for equity-financed investment is less clear.

The Debt-Equity Ratio and the Cost of Capital

In light of the previous discussion, one may consider the impact of the current tax reform on the debt-equity decision and the corporate cost of capital. There is considerable uncertainty about the determinants of the optimal corporate debt-equity ratio and the impact of taxation on it. The corporate deductibility of interest favors the use of debt, while the favorable treatment of capital gains on equity at the individual level partially mitigates this advantage. Under the new tax law, corporate borrowing provides a net tax advantage for *all* prospective investors because the corporate tax rate (at which only interest can be deducted) exceeds the top individual tax rate and hence the maximum individual tax advantage to receiving equity income (dividends and capital gains) as opposed to interest income.

Most explanations of the existence (and, indeed, the prevalence) of equity have posited the existence of disadvantages to additional borrowing like increased risk of bankruptcy. Such risks would lead firms to limit borrowing even when the relevant individual marginal tax rates for debt and equity income indicate a tax advantage to debt. To determine the impact of the new tax law on the relative advantages of debt and equity finance, one must determine what these relevant marginal tax rates are. If they are the weighted averages of individual marginal tax rates reported above, then the tax change almost certainly discourages debt-financed investment relative to equity-financed investment. For those tax rates, the combined cuts in corporate and personal rates on interest payments reduce the gap between these rates by about 8 percentage points, which translates into a comparable increase in the corporate cost of capital if after-tax rates of return remain unchanged. For equity, however, the additional marginal burden on investment associated with individual taxes has either declined (under the traditional view of equity taxation where dividend taxes are relevant) or increased by an amount equal to the rise in the effective capital gains rate, probably much less than 8 percent.

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approach. Using the same data, King (1986) finds the opposite while testing a different implication of the new view.

The Level Playing Field

During the tax reform debate, much was made of the need to "level the playing field" by taxing different investments more equally than under previous law. However, most of the focus was on corporate investment, so that the gap in effective tax rates between corporate investment and owner-occupied housing was largely ignored. Within the corporate sector, calculations such as those in Table 1 suggest that a levelling of the corporate playing field has been achieved. But specific investments that have typically been financed relatively more with debt than the average corporate investment will suffer more from the increased tax cost of debt. As suggested above, the determinants of a firm's optimal capital structure are not fully understood. However, differences in asset characteristics could make some of the nontax costs associated with borrowing lower for some assets than others. For example, it might be easier to obtain secured financing for some assets. In this case, those assets would gain more than other assets from the tax advantage to debt that existed under previous law, and lose more in the transition to the new law and its reduction in the benefits from borrowing.

For example, if corporate structures were more heavily financed than equipment with debt, as has often been suggested, this could undo or even reverse the incentives of the previous law to invest in equipment. At the same time, the shift in the tax burden toward equipment would be overstated, for it would ignore the relatively large reduced benefit of leverage for structures. On balance, however, the new law would still be found to favor structures, since the tax benefits of debt finance have been reduced but not eliminated; the taxes imposed on a corporation in delivering returns to individuals are still lower for debt than for equity.

Calculations presented in Auerbach (1983a) show how sensitive effective tax rates are to assumptions about leverage and the tax benefits deriving from it. Unfortunately, there is little evidence on the leverage ratios of different corporate investments. Examining a sample of U.S. corporations, I failed to find any systematic relationship between the amount of new debt finance and the mix of investment between structures and equipment (Auerbach, 1985). Hence, even from the limited perspective of the corporate sector, the pitch of the playing field is indeterminate. To the extent that systematic differences exist in effective tax rates on different forms of capital, and to the extent that different industries either have different asset compositions or different access to debt and equity (for whatever reason), the tax law may not only result in a playing field which is not level among asset categories, but also not level among industries.

Tax Losses and Corporate Mergers

A final potentially important effect of tax reform on the corporate sector comes through changes in the treatment of tax losses and unused tax credits. Both old and

new laws restrict corporations with tax losses from gaining a tax refund for such losses, regardless of how much investment they may have to depreciate. Under previous law, use of the investment tax credit by firms with relatively low taxable income was also restricted. Starting in 1980, the number of corporations having tax losses or tax credits that could not be used began to increase markedly, to unprecedented levels (Altshuler and Auerbach, 1986).

The limitations on the deductibility of losses has raised both equity and efficiency concerns. The large number of firms that are unable to utilize fully their investment tax credits and accelerated depreciation reduced the incentives these measures provided for investment. In addition, the ability of a corporation with taxable income to take advantage of the unused tax benefits of another through a merger or acquisition offered a strong incentive for firms with tax benefits to become involved in such transactions for tax reasons, whether the deal made sense on other economic grounds or not. Further, the effective marginal tax rates imposed on different firms varied markedly, depending on whether they had unused losses today or expected to have them in the future. These differences in effective marginal tax rates raised some concerns about the fairness of the tax. But in the popular press, a quite different equity issue was raised by the perception that corporations making little or no tax payments were not bearing "their fair share" of the tax burden (for example, see McIntyre, 1984). The influence of this view is evident in the new tax law.

Even without special provisions in the new law, the proportion of firms with unused tax benefits should decline because of the removal of the investment tax credit. In addition, at the individual level the law has attempted to prevent the use of tax shelter losses (see the discussion below). At the corporate level, the minimum tax has been strengthened and the ability to use tax benefits of acquired companies has been sharply curtailed. (The repeal of the "General Utilities" doctrine, which allowed the transfer of assets through mergers and acquisitions without the payment of corporate capital gains taxes, should also discourage tax motivated mergers.[2]) Under the minimum tax, corporations paying little or no taxes will have to compute tax liabilities at a 20 percent tax rate under a broader, alternative tax base that includes various tax incentives deductible from the primary corporate tax. Corporations that would otherwise avoid taxes through the use of such incentives will now be taxed under the alternative minimum tax.

The importance of the minimum tax as a cosmetic device is clear from the (temporary) special additional tax on book income reported to shareholders. This provision makes it literally impossible for a corporation reporting income to its shareholders to pay no taxes, by levying a tax on the number reported regardless of its economic relevance.

However, empirical evidence offers little support for the view that the reduction in corporate tax payments and increase in unused tax benefits of the 1980s was

[2]The "General Utilities" doctrine allowed a firm that acquired another to write up the acquired firm's depreciable assets to their market value from a potentially lower book value and thus obtain higher depreciation allowances without incurring the capital gains tax liability that would result from the direct sales of such assets (which would also result in a step-up in the basis of the assets).

pernicious. The main reason for the drop in revenue from the corporate tax seems to be the sharp decline in profits in the 1980s and especially the 1981–82 recession (Auerbach and Poterba, 1987b), not the special provisions of the 1981 tax bill. Firms carrying forward unused credits and losses were mainly those in industries with poor economic performance, not those in industries with strong investment and an abundance of investment incentives; the tax losses came from low profitability, not high deductions. Hence, it is not clear how tax losses and constraints will be affected by the new tax law. Also, the importance of tax losses in encouraging mergers is uncertain (Auerbach and Reishus, 1987), and many of those mergers in which tax benefits are present (those in which the larger, acquiring company has the tax benefits) are not affected by the provisions of the new law.

Being able to take immediate advantage of the unused tax benefits would clearly increase the corporation's cash flow and value, but not necessarily its investment. A business with unused tax benefits faces two opposing marginal incentives not faced by the firm with taxable income. It cannot fully use the tax benefits generated by new investment (investment tax credits, depreciation deductions and interest payments), but it can use its extra existing tax benefits to shelter the new investment's future taxable income. Calculations in Auerbach (1983a), Auerbach and Poterba (1987a) and Altshuler and Auerbach (1986) all suggest that investments in structures and other assets without large immediate tax benefits are, on balance, encouraged by the absence of taxable income. Under the new tax law, with fewer assets having such immediate benefits, this outcome may extend to equipment as well.

Noncorporate Investment

Much of the analysis of corporate investment applies to noncorporate investments as well. Investments made by partnerships and individuals will be taxed at a lower rate and receive fewer investment incentives. The lower tax rate means that interest payment deductions will be worth less. But noncorporate investors face some important tax differences, too. First, since noncorporate investment is not doubly taxed at both the corporate and individual level, it cannot benefit as the corporate sector can from reduced dividend taxation. Second, the noncorporate sector must comply with rules specifically targeted at real estate other than owner-occupied housing. Two important elements of noncorporate real estate investments have caused such investments to be termed "tax shelters:" the use of high leverage and accelerated depreciation to generate tax losses, and the resale of the assets at favorable capital gains rates to permit other investors to obtain additional benefits from depreciation and interest deductions.

The benefits of leverage derive from the fact that investors in such assets are typically in high tax brackets. For such an investor, borrowing and deducting the interest yields a lower cost of funds than reducing holdings of alternative investments, which are also likely to be tax-favored, like tax-exempt municipal bonds. Just as high tax bracket investors would wish to borrow to invest in municipal bonds (and are

prohibited by law from deducting the interest if they do so), they will borrow to invest in real estate rather than use their own funds. Such borrowing makes it almost inevitable that the investment will produce tax losses, because the effective tax rate on the real estate is so reduced by accelerated depreciation and because of the ability of the investors to deduct the entire nominal interest cost. For example, if real estate were effectively taxed at 20 percent and interest of 50 percent, a real estate investment yielding a 10 percent return before taxes would yield 8 percent after taxes. The investor could then break even by borrowing at an interest rate of 16 percent, and paying 8 percent after taxes. But in doing so the investor would incur a before-tax loss of 6 percent.

The tax benefits from reselling assets depend on the favorable treatment of capital gains. According to the tax law, an asset may have its basis stepped up to the sale price when it is sold, to determine subsequent depreciation allowances. However, the seller must pay some combination of capital gains taxes and ordinary income taxes on the gain from current basis to the sale price. Real estate is the primary beneficiary of the lower capital gains tax rate on such sales. Without the preferential capital gains tax rate, the tax advantage of transferring an asset to take advantage of higher depreciation would be nonexistent except in a few cases where the assets being sold were being depreciated under a less generous depreciation system than would apply if the assets were sold.

Under the new law, both tax shelter aspects of real estate investments will be curtailed. In addition to the reduced incentive to borrow already discussed, real estate investors may use at most $25,000 (less for higher income taxpayers) in losses and credits to offset other income. The resale of assets will be discouraged by the equalization of tax rates on capital gains and ordinary income.

Overall, then, noncorporate business fixed investment which is primarily in residential and nonresidential structures will suffer not only through the reductions in investment incentives experienced by corporations, but also because the full taxation of capital gains eliminates the tax arbitrage opportunities that were previously available. While the capital gains tax advantage for corporations will also disappear, there is little (if any) evidence that planned asset turnover is an important corporate activity.

Investment Incentives and Market Value

The findings above suggest that tax reform will increase the tax burden on new depreciable investment. It does not follow that this tax increase will be bad for the owners of existing capital. The difference lies in the distinction between new and existing assets. While tax reform may discourage new investment and diminish its after-tax profitability in the short run, it will also deliver a windfall to existing assets through a decline in tax rates. Cash flows generated by assets purchased before 1986 will be taxed at lower rates under new law than they would have been under old law. The size of this windfall is large. Using a "q" model of investment, which takes

account of both the decline in profitability of new investment and the increase in the value of old assets relative to new ones, Auerbach and Hines (1987) estimated that the Tax Reform Act of 1986 as originally passed by the House would have increased the stock market value of depreciable corporate assets by between 7 and 16 percent, depending on the behavior of interest rates. Less detailed calculations by Auerbach (1986) suggest a quite similar windfall from the bill as actually passed. Clearly, shifting the tax burden from existing to new investment is not the most efficient one-time policy for encouraging investment.

Another way of seeing that this transfer has occurred is to compare changes in corporate tax collections coming from reduced corporate tax rates and lesser incentives for investment. The combined effect of these provisions for the period 1987–1991 is to raise tax collections by only $9.7 billion. Since marginal corporate tax rates on new investment have increased substantially (see Table 1), the difference must be accounted for by a reduction in the taxation of existing assets.

While such transfers are hard to reconcile with the desire to minimize economic distortions and increase investment, several complications should be considered. First, "one-time" policies do not really exist, since current government behavior affects the expectations of investors about future government behavior. While a one-time tax windfall is inefficient if the effects of such expectations are ignored, a policy of cutting tax rates and reducing the investment tax credit may also suggest to investors that the government is less likely to use investment incentives in the future. Since anticipating future incentives would discourage current investment by leading investors to wait for the incentives, lowering the expectation of future incentives would have a salutary effect on current investment. It is perhaps more likely, however, that removing investment incentives leads investors to anticipate that the incentives will be reinstated in the future, thereby exacerbating the effects on investment of the shift in the tax burden from old to new capital investments.

Second, the model of investment used here assumes perfect capital markets, since corporate investment depends on the cost of capital as determined by financial markets and the tax system. Cash flow per se has not entered as a relevant consideration. But if capital markets are imperfect (perhaps because of information asymmetries between firms and suppliers of funds as discussed by Stiglitz and Weiss, 1981), an increase in internal funds through tax windfalls may stimulate investment by making it less necessary for firms to go to the external capital market for funding. This argument, however, seems most relevant for the small firms with little market exposure, which also have few existing capital assets on which to receive windfalls.

A final issue concerns how foreign investors will react to these changes in the tax structure. Although foreign investment will be discouraged by the increase in effective tax rates that face American investors, this conclusion does not encompass all types of capital flows. Just as old capital is being favored relative to new capital, foreign investors are being encouraged to transfer existing assets to the United States instead of undertaking new investment here. For example, a firm with a profitable technology developed elsewhere will benefit from the lower corporate tax rate by moving its production to the United States, since the profits attributable to the firm's previous

research and development will be taxable at a lower rate than before. Put baldly, in cases where investment incentives can be taken in one country and the cash flows generated by such investments legally taken in another, firms will be encouraged by the new law to "invest" elsewhere and "earn income" in the United States. This incentive for international shifting of investment and income applies to U.S. businesses as well.

Other Effects of Tax Reform

Though this paper has focused on the most important effects of the Tax Reform Act of 1986 on business, and particularly corporate, investment, much has not been covered. Consider the revenue estimates for the bill. Corporate revenues are projected to increase by $120.3 billion over the next five years, even though the combined effects of the provisions mentioned thus far (rate cut, changes in depreciation allowance changes, investment tax credit removal and corporate minimum tax) net to only an increase of $31.8 billion dollars, with $22.1 billion of that total coming from the minimum tax. The rest of the increase comes from a variety of provisions affecting specific industries, including $9.3 billion from changes in the treatment of foreign source income, $11.5 billion dollars from provisions affecting insurance companies and $8.3 billion from less liberal treatment of bad debt reserves and tax arbitrage by financial institutions. The largest chunk, $60.1 billion, comes from reforms of accounting practices by nonfinancial corporations regarding cash accounting and the matching of expenses and receipts.

One of these accounting changes is the reform of the "completed contract" method of accounting, which will increase the cost of capital for a certain class of firms, particularly defense contractors. Other revenue-raising provisions, such as the reduced deductions for bad debts by banks, may work more generally through the economy via an increase in the cost of capital due to higher costs of financial intermediation. However, as with the tax changes on which this paper has focused, changes in tax payments do not translate directly into changes in the cost of capital. Many of these changes have complex effects that are very difficult to predict.

To summarize this paper's discussion, tax reform is not likely to encourage business fixed investment. Several commercial forecasting models have predicted a decline in depreciable investment over the next few years. The incentive to borrow is reduced as well. The aggregate increases in corporate tax collections projected for the next several years mask the shift in the tax burden from existing to new investment. The typical corporate investor in depreciable assets may not experience a decrease in the present value of after-tax cash flows. The increase in revenue will come instead from firms in particular industries affected by special provisions, such as those affecting accounting rules and the taxation of foreign source income.

While the desire to provide a level playing field for investment was a stated goal of the tax reform, many distortions remain that differentiate among investments according to whether they are undertaken by corporations or individuals, how they

are financed, and whether the investor is taxable under the regular income tax, the alternative minimum tax, or is not subject to either tax. Much uncertainty remains about how this change in tax policy will affect both the level and composition of investment, and about what further tax changes await investors in the years to come.

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