REPORT TO CONGRESS
on the

CAPITAL GAINS TAX REDUCTIONS OF 1978

Office of the Secretary of the Treasury
Office of Tax Analysis

September, 1985

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THE SECRETARY OF THE TREASURY

WASHINGTON

September 12, 1985

Dear Mr. Chairman:

Section 555 of Public Law 95-600, the Revenue Act of 1978, provides that "the Secretary of the Treasury shall submit to the Committee on Ways and Means of the House of Representatives and to the Committee on Finance of the Senate a report on the effectiveness of the changes made...in the tax treatment of capital gains of individuals and corporations in stimulating investment and increasing the rate of economic growth. The report shall also include an analysis of the effects these changes had on employment growth and on income tax revenue."

Pursuant to that section, I hereby submit the "Report to Congress on the Capital Gains Tax Reductions of 1978."

I am sending a similar letter to Senator Bob Packwood, Chairman of the Committee on Finance.

Sincerely,

James A. Baker, III

The Honorable Dan Rostenkowski
Chairman
Committee on Ways and Means
House of Representatives
Washington, D.C. 20515

Enclosure

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United States Senate
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EXECUTIVE SUMMARY

Overview

The 1978 Revenue Act (the 1978 Act) reduced the taxation of capital gains. The specific changes enacted by Congress included: 1) the reduction of the fraction of net long-term capital gains included in taxable income from 50 percent to 40 percent; 2) the elimination of the untaxed portion of capital gains from the list of tax preferences subject to an add-on minimum tax; 3) the elimination of the "poisoning" of the maximum tax on personal service income by the untaxed portion of capital gains; and 4) the reduction in the tax rate on corporate capital gains from 30 percent to 28 percent. The combined effect of the first three changes reduced the maximum individual marginal tax rate applied to net capital gains from 49 percent to 28 percent.

In addition, Congress eliminated the taxpayer's option to be taxed at a 25 percent rate on the first $50,000 of long-term capital gains and enacted a new alternative minimum tax under which the excluded portion of capital gains and other designated tax preferences were included in the tax base. The maximum marginal tax rate on net capital gains under this new alternative minimum tax was 25 percent. In the Economic Recovery Act of 1981 (the 1981 Act), Congress further reduced the maximum marginal tax rate on net capital gains to 20 percent and also reduced to 20 percent the maximum tax rate under the alternative minimum tax.

In this report, the Treasury Department presents an in-depth analysis of the effects of the 1978 changes in capital gains taxation on investment, economic growth, economic efficiency, income distribution, and Federal tax revenue. The report concludes that the reduction in capital gains taxes enacted in 1978 will over time cause the rate of investment, the capital stock, national income, labor productivity, and the overall standard of living to be higher than if the tax treatment of capital gains had remained unchanged. For example, the eventual increase in national income is estimated to be approximately 0.24 percent. The highest income group receives the largest proportional gain from the tax cut, while almost all other income groups, including the lowest groups, also benefit due to increases in the capital stock and in labor productivity.

The 1978 Act resulted in substantial "unlocking" or increased realizations of previously accrued but unrealized capital gains. Two different statistical approaches were utilized to determine whether realizations increased sufficiently to prevent a decline in Federal revenue. A "cross-section" approach, which analyzes how realizations vary across individual taxpayers with different marginal tax rates, predicts an increase in realizations

sufficiently large to result in a substantial long run increase in Federal revenue. An alternative "time-series" approach, which analyzes how aggregate realizations respond over time to changes in tax rates, indicates a large increase in revenue in the first year following the tax cut but significantly smaller increases or small reductions in subsequent years. The further reductions in capital gains tax rates resulting from the general reductions in marginal tax rates in the 1981 Act were also analyzed. The cross-section approach again predicts an increase in realizations sufficiently large to result in a large long run increase in Federal revenue, while the time-series approach indicates a relatively small reduction in revenue in the two years following the tax cut.

Background

Capital gains taxes have accounted for slightly under 5 percent of individual income tax receipts in the past decade. In 1982, the last year for which final data from individual tax returns were available at the time of this study, households who reported net capital gains paid about $12.9 billion more in individual income taxes than they would have paid had their taxable capital gain income been zero. This tax on capital gain income amounted to 4.6 percent of individual income tax liability in 1982.

Taxes paid on capital gains have increased in most years in the past decade, but have remained virtually constant as a share of individual income taxes. Following the 1978 capital gains tax cut, capital gains tax revenues increased from $9.3 billion in 1978 to $11.7 billion in 1979, $12.5 billion in 1980, $12.7 billion in 1981, and $12.9 billion in 1982. Capital gains tax revenues as a percentage of individual income tax revenues increased from 4.9 percent in 1978 to 5.5 percent in 1979, declined to 5.0 percent in 1980 and 4.3 percent in 1981, and then increased to 4.6 percent in 1982.

Income from capital gains and capital gains taxes are highly concentrated among upper income groups. For example, taxpayers with Adjusted Gross Income (AGI) over $100,000 in 1982 reported 8 percent of total AGI but accounted for 53 percent of the capital gains included in AGI and 67 percent of capital gains taxes. Although most taxpayers report no capital gains, most returns in the very top income groups report some income from gains every year. In addition, capital gains (and dividends) are much more concentrated among upper income groups than is taxable interest income.

Individuals realize capital gains and losses from the sale of a wide variety of different types of capital assets. Corporate stock is the capital asset with the largest number of

transactions and the largest amount of gross sales value, gross gains, and gross losses. Individuals also realize large amounts of gains from sales of real estate, business property, and other types of assets.

The rules for taxing capital gains have been controversial and have been subject to frequent changes throughout the history of the Federal income tax. Major features of the tax treatment of capital gains which have been revised include the percentage of long-term gains included in taxable income, the holding period for classifying gains as short-term or long-term, the treatment of capital losses, and special provisions designed either to limit the maximum tax rate on long-term capital gains or to impose an additional or alternative "minimum tax" on otherwise untaxed capital gains. The frequent changes in the tax treatment of capital gains have reflected changes in emphasis and philosophy, as well as adjustments to other changes in the tax law such as changes in marginal tax rates. The 1978 capital gains tax changes reflected a growing concern with encouraging saving and economic growth, and with removing impediments to the sale of capital assets.

Effects of Reduced Capital Gains Tax Rates on Economic Incentives

Taxes reduce economic efficiency by distorting incentives for individuals and firms. In particular, any tax on the return to saving encourages current consumption relative to saving for future consumption by lowering after-tax returns to saving. The effect of U.S. income tax provisions, including the capital gains tax, on real after-tax returns is particularly severe during a period of inflation because the current method of computing taxable income overstates real income by failing to account for the decline in the purchasing power of money over the period the asset is held. In addition, the taxation of returns to investment under the U.S. income tax creates significant distortions among alternative uses of capital because effective tax rates vary greatly among different types of capital and different methods of financing investment.

Many of the economic effects of reduced capital gains tax rates are positive, but there may also be negative consequences compared to a more general reduction in capital income taxation. Reducing capital gains taxes decreases the tax bias against saving and also decreases the incentive to hold, rather than to sell, assets with accrued gains. This "lock-in effect" occurs because income represented by changes in asset values is usually taxed only when realized by sale or exchange instead of as accrued, and because gains transferred at death permanently escape taxation. A potentially negative economic efficiency effect of reducing capital gains taxes, without simultaneously reducing other capital income taxes, is that such a change could increase the tax bias toward assets with returns in the form of

appreciation (growth assets) rather than assets providing immediate cash returns (yield assets). Any such differential in tax rates among assets can reduce economic efficiency by causing capital to be reallocated to assets with lower before-tax returns.

Finally, if capital gains tax cuts reduce revenue, economic efficiency losses result indirectly because either present or future tax rates must be increased to finance Federal spending programs. However, if cutting capital gains taxes induces enough unlocking of accrued gains that revenues increase, there is an efficiency gain since other taxes can be reduced.

Prior to the 1978 tax changes, real effective tax rates on capital assets, defined as the percentage reduction due to taxes in the expected annual real before-tax rate of return over the life of an asset, were substantially above the tax rate on ordinary income for all taxpayers. This occurred even for growth assets because the capital gains exclusion and the benefit from deferring tax on accrued gains until realization did not offset the extra tax burden resulting from the taxation of inflationary gains. Since then, three changes -- the 1978 capital gains tax reduction, the decline in inflation, and the general reduction in marginal tax rates in the 1981 Act -- have reduced effective tax rates on capital assets.

The reduction in effective tax rates has been more pronounced for growth assets. For example, suppose that inflation continues at a 4 percent rate in the 1980s, compared to an average rate of 8 percent in the late 1970s. Consider a representative growth asset with an expected real before-tax rate of return of 4 percent and an expected holding period of 6.5 years. For an investor with an "average" marginal tax rate (about 38 percent in 1978 and 34 percent under 1984 law), the three changes mentioned above reduced the real effective tax rate from 44 percent on an asset purchased in 1978 to 21 percent on assets purchased in 1982 or later years. Thus, on average, the real effective tax rate on growth assets is currently less than the statutory marginal tax rate, even after accounting for continued taxation of inflationary gains. However, the current 4 percent inflation rate is sufficiently high to make the real effective tax rate higher than the nominal rate on realized gains.

Consider next a representative yield asset which increases in nominal value at the rate of inflation and has an annual real cash flow return of 4 percent and an expected holding period of 6.5 years. For the average investor described above, the real effective tax rate declined from 59 percent for assets purchased in 1978 to 40 percent for assets purchased in 1982 or in later years. The real effective tax rate on yield assets remains above the statutory marginal tax rate because there remains a capital gains tax on purely inflationary gains.

The capital gains tax changes in 1978 also reduced the lock-in effect. Based on data on sales of capital assets by individuals in 1973 and 1977, the average tax price of realizations (the value of assets one would have to sell, gross of capital gains taxes, to finance the purchase of one dollar of an alternative asset) in both 1973 and 1977 was only slightly greater than 1.00. The tax price of realizations depends not only on the marginal tax rate on realized gains, but also on the ratio of gains to the total sales price of assets. The average tax price of realizations would have decreased by only 2 percentage points, from 1.05 to 1.03, if the lower tax rates under the 1978 Act had been applied to capital assets sold in 1977. Thus, on average, the disincentive to selling assets caused by capital gains taxes, as measured by the tax price of realizations, apparently was not large prior to 1978 and was not changed significantly by the 1978 Act.

However, this disincentive to selling assets was reduced substantially in the highest income groups. For taxpayers with incomes over $200,000, the tax price of realizations would have declined by 14 percentage points -- from 1.32 to 1.18 -- if post-1978 law instead of 1977 law had been applied to 1977 realized gains. These taxpayers not only confront high marginal tax rates, but also typically realize gains on assets with a high ratio of gains to sales price.

Effects of Reduced Capital Gains Tax Rates on Saving, Economic Growth, and the Allocation of Resources Among Industries

As mentioned above, the 1978 capital gains tax reduction increased after-tax returns to savers, but had differential effects on the cost of capital among industries. The overall effects on saving and capital formation were necessarily modest because the tax reduction was small as a fraction of the total taxation of capital income in the United States. Assets from which one might anticipate a significant amount of taxable capital gains represent less than one-third of the net worth of U.S. households. Moreover, even for these assets, a significant portion of the return to saving is in the form of dividends and rental income, rather than capital gains.

A reduction in the capital gains tax has four primary consequences for the allocation of capital among industries. First, capital is allocated from household to business uses. This occurs because capital gains on owner-occupied housing are treated especially favorably under current law compared to gains on other assets. Because housing capital gains taxes were already so low under pre-1978 law, the housing sector received only slight benefits from further reductions in capital gains tax rates. Second, capital is allocated toward business activities in which the returns to investment tend to take the form of appreciation in value rather than immediate net cash flow. One

example is investment in "natural deferral" activities which are likely to encounter a gestation period during which there is little or no current revenue and a subsequent pay-out period of greater than average cash-flow; these activities include mining, energy resource development, other activities with long construction periods, and investments in development of new products and services. Third, capital may be allocated toward those industries and firms with low debt-equity ratios and low dividend payout ratios. This reallocation will occur to the extent that increases in demand for equities in general, and growth stocks in particular, result in reduced costs of capital for these industries and firms relative to those that rely more heavily on debt finance. Finally, capital in general is reallocated toward capital-intensive industries, since such industries expand the most when any capital income taxes are cut.

In the report, a detailed sectoral model of the U.S. economy and tax system is used to simulate the long run effects of the 1978 capital gains tax reductions on economic growth, capital formation, the allocation of capital among 19 major economic sectors, and the standard of living of households in 12 different income groups. The tax reduction is shown to generate an increase in the dollar amount of annual saving and investment of slightly over 1 percent. This higher level of investment increases the capital stock over time, leading gradually to modest (under 1 percent) long-run increases in annual national income, productivity, and the overall standard of living (defined to include the value of leisure time and the expected present value of future consumption). Consumption at first declines because a higher proportion of income is saved, but eventually increases because the rise in national income makes it possible to have both higher consumption and saving. Moreover, the temporary decline in consumption is associated with net economic gains to households in every time period and merely reflects voluntary decisions to save more. After 50 years, simulated annual consumption is 0.3 percent greater than levels projected under prior law.

The capital gains tax reduction is shown to provide the largest benefit to taxpayers in the highest income group. Most other groups also benefit, particularly the lowest income groups, because the induced increase in the capital stock raises productivity and real before-tax wages. These benefits are largest when, due to a permanent increase in realizations, no offsetting increases in marginal tax rates are required to prevent Federal revenue from capital gains taxes from declining.

The reduction in the capital gains tax is also shown to alter the pattern of output in the economy and the allocation of capital among industries. The largest increases in output occur in capital-intensive industries and their suppliers -- motor vehicles, mining (including petroleum and natural gas), metals

and machinery, petroleum and refining, and construction. At the other extreme, the capital gains tax reduction causes output to decline in certain previously tax-favored industries, notably real estate (including owner-occupied housing) and agriculture. These latter industries do not receive a significant cost reduction from the lowering of capital gains taxes. As a result, capital is bid away from these industries, their relative production costs rise, and output is lower than it would have been without the capital gains tax reduction. The movement of capital from previously tax-favored industries to other private sector activities increases the average productivity of the capital stock, raising national income and economic welfare.

The resulting simulated changes in total saving, output, and the allocation of capital among industries are quite small compared to the changes that might result in the short run from shifts in overall monetary and fiscal policies or changes that might result in the long run from other factors, including other revisions of Federal tax policy. Therefore, these changes probably could not be detected in any statistical comparison of the actual path of the economy before and after 1978. The economic effects described in this report represent estimates of the effects attributable solely to the reduction in the taxation of capital gains, and not comparisons of the overall performance of the economy before and after 1978.

Effects of Reduced Capital Gains Tax Rates on Emerging Industries and Venture Capital

The capital gains tax reduction of 1978 also affected the performance of smaller, but important, sectors of the economy that are not separately identified in the model used to simulate the effects of lowering the capital gains tax. In this regard, there has been particular interest in the effect of reducing the capital gains tax on investment in new and emerging enterprises.

The main reason that lower capital gains taxes might cause movement of capital from other sectors of the economy to new enterprises is that the return to investment in such enterprises is likely to be in a form that receives capital gains treatment.

One area that has received particular attention is the group of enterprises financed through professional venture capital firms. Reduced taxation of capital gains is likely to increase the supply of funds available to venture capital firms from high income individuals. Moreover, reduced taxation of capital gains is likely to encourage entrepreneurs to establish new enterprises and thus expands the investment opportunities available to venture capitalists. In the 5 years following the 1978 capital gains tax cut, the total capitalization of private venture capital firms quadrupled, increasing from $3.5 billion in 1978 to $12.1 billion in 1983.

Still, venture capital firms account for only a very small fraction of the U.S. capital stock -- about 0.1 percent of total net worth and less than 1 percent of the market value of all U.S. non-financial corporations at the end of 1983 -- and thus receive only a small share of the tax benefits from reducing the capital gains tax. Moreover, a substantial share of the funding of private venture capital firms is supplied by investors not directly affected by changes in the tax treatment of capital gains. Over 60 percent of the increase in new supplies of funds to private venture capital firms between 1978 and 1981 was attributable to sources not affected by the 1978 capital gains reductions -- pension funds, insurance companies, endowments and foundations, and foreign investors. In fact, while new capital supplied by individuals and families -- the groups most affected by the reduction in capital gains taxes -- increased from $70 million in 1978 to $201 million in 1981 and $412 million in 1983, the percentage of new venture capital funds supplied by this group actually declined from 32 percent in 1978 to 23 percent in 1981 and 21 percent in 1983.

Effect of Reduced Capital Gains Tax Rates on Federal Revenue

Because capital gains taxes are imposed upon gains when realized rather than as accrued, there is an incentive to avoid the tax by postponing realizations. For taxpayers who wish to leave appreciated property to their heirs, this incentive to delay realization is strengthened by the "step-up of basis" for gains transferred at death -- the basis of an inherited asset is its market value when acquired by the beneficiary rather than the cost basis of the decedent. Thus, gains transferred at death escape the Federal income tax entirely. Taxpayers may also transfer capital gains by gift, in which case the gain is not realized at the time of the gift, but the asset is subject to "carryover" of basis -- the basis of an asset transferred by gift is the cost basis of the donor. As a result of these opportunities to avoid or defer realizations, the existence of capital gains taxes deters some portfolio rearrangements that would have been advantageous if there were no tax consequences from realizing gains.

Lowering capital gains tax rates has two effects on realizations. First, realizations that would have otherwise occurred at a later time are accelerated. Second, some gains that would otherwise be held until death and then transferred tax-free are realized during the taxpayer's lifetime. As a result of these two changes, there is both a one-time unlocking of past gains, and a smaller but permanent increase in annual realizations when capital gains tax rates are lowered. However, whether the increase in realizations is sufficiently large to offset the reduction in tax rates and cause revenues to increase cannot be determined on theoretical grounds.

The quantitative impacts of lower capital gains taxes on realizations of capital gains and on revenue from capital gains taxes were examined using two separate approaches. The first was a "cross-section" analysis of how realizations of capital gains in any given year vary among a cross-section of taxpayers that face different marginal tax rates. From existing and new Treasury-sponsored econometric studies, estimates were derived of how much capital gains realizations would increase in the long run if the capital gains tax were lowered. The estimated response of realizations to lower tax rates was then used to simulate the long run effects on Federal revenue of the changes in capital gains taxes enacted in 1978 and 1981.

The second approach was a "time series" analysis of how aggregate realizations and capital gains tax revenue respond over time to changes in tax rates. Estimates were derived of the effects of the reductions in capital gains tax rates in the 1978 and 1981 Acts on realizations and tax revenue over the years 1979-1982. This analysis accounted for the fact that capital gains realizations would have increased over time even if tax policy had been unchanged; that is, a simple comparison of realized gains across years would be misleading since realized gains tend to grow over time.

The estimates from these two statistical approaches provides somewhat conflicting evidence regarding the effect of the reductions in capital gains tax rates in the 1978 Act on Federal revenue from capital gains taxes. The cross-section analysis predicts a substantial long-run revenue increase of $2.1 billion at 1979 levels. The time-series estimates indicate a revenue increase of between $0.9-$1.1 billion in the first year after the tax cut, but significantly smaller increases or small reductions in Federal revenue in subsequent years.

The analysis indicates that capital gain realizations also increased in response to the further reduction in capital gains taxes associated with the marginal tax rate cuts in the 1981 Act. The evidence is again mixed on how Federal revenue from capital gains taxes was affected by these further rate reductions. The best estimate from the cross-section studies implies that long run annual revenue from capital gains taxes, at 1979 levels, should have increased by about $1.6 billion when the 1981 tax law changes were fully phased in. However, time-series analysis of the data indicates that the reductions in capital gains tax rates in the 1981 Act resulted in relatively small revenue reductions in 1981 and 1982 on the order of $100-300 million.

The findings suggest that long run annual revenue from capital gains taxes either increased or declined only slightly as a result of the capital gains tax reductions in the 1978 and 1981 Acts. Nevertheless, even if revenue declined somewhat, it is

clear that the decline was much smaller than would be predicted by a static estimate that ignored induced increases in gains realizations. Moreover, the findings imply that any effort to raise substantial revenue by increasing capital gains tax rates, given the current parameters of the tax law, is likely to be ineffective.

Conclusions

The analysis in this report supports a favorable evaluation of the 1978 capital gains tax reductions. The evidence presented indicates that these tax reductions resulted in a permanent increase in annual capital gains realizations, and that Federal revenue from capital gain taxes increased substantially in the first year after the tax cut and in the long run either increased or declined only slightly. Moreover, the 1978 capital gains tax reductions resulted in modest increases in economic growth, capital formation, productivity, and long run consumption levels. The greatest benefits of the tax changes accrue to the highest income group where capital gains are concentrated, but other income groups also receive net benefits in the long run due to the increase in productivity associated with a larger capital stock.

Prior to 1978, the combination of high tax rates and inflation resulted in extremely high real effective tax rates on the return to saving, including saving that gives rise to capital gains, despite the exclusion of 50 percent of long-term capital gains. Under these circumstances, the 1978 capital gains tax reduction not only increased the incentive for private saving, it was also one way of reducing the disparity between the tax treatment of capital gains and other types of income such as wages. However, since 1978, the rate of inflation has fallen significantly. Thus, under current circumstances, capital gains receive preferential treatment relative to ordinary income. Also, recent reductions in marginal tax rates, in combination with reduced inflation and the 1978 capital gains tax cuts, have substantially reduced real effective tax rates on appreciating assets.

The results of this report suggest that, in considering further reductions in capital gains taxes, one must weigh the benefits from increased incentives for private saving against the consequences of increasing the disparity in tax rates applied to different forms of income. Also, reductions in capital gains tax rates at some point cause revenue from capital gains taxes to fall. Nevertheless, the results imply that increasing the tax rate on real capital gains above current levels in the context of the current tax system -- an unindexed, realizations-based system with step-up of basis for transfers at death and carryover basis for transfers by gift -- is unlikely to result in significant increases in revenue from capital gains taxes.

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Chapter 1

BACKGROUND INFORMATION

This chapter provides background information on the tax treatment of capital gains. The first section provides an overview of capital gains taxation in the United States. It includes: (a) a summary of the major provisions under current law pertaining to the taxation of capital gains received by individuals; (b) data on the distribution of capital gains by income class; (c) data on the distribution of capital gains by asset type; and (d) estimates of capital gains tax revenues in recent years. Section II discusses in more detail the legal definition of a capital gain, the problems created by the fact that economically similar transactions are taxed differently under current law, and the distinctions made in the tax law to address these problems. The third section reviews the history of capital gains taxation in the United States, and the final section briefly compares capital gains taxation among the OECD countries.

I. An Overview of Capital Gains Taxation in the United States

This section provides an overview of the taxation of capital gains in the United States. It contains a brief summary of major features of the tax law and how they were changed in 1978, 1981, 1982, and 1984, and presents tables showing the distribution of both nominal and real capital gains by income class as compared to the distribution of both all income and other forms of capital income. It also examines the distribution by asset type of capital asset transactions, sales value, gross gains, and net gains. It then describes the growth over time of both capital gains in adjusted gross income and revenue from capital gains taxation, relative to total revenue from the individual income tax.

A. Current Tax Provisions

The discussion below of current law provisions briefly outlines general tax rules that apply to broad classes of transactions. It takes no account of the many exceptions to the general rules. Only the rules applicable to individuals are discussed. A more detailed, but also far from complete, discussion of tax law provisions relating to capital gains is provided in the second section of this chapter.

A capital gain or loss is the increase or decrease in value realized upon the sale, exchange or other taxable disposition of a "capital asset".1/ Gain or loss is computed by subtracting the asset's basis (usually, but not always, its cost less any

depreciation) from the net amount realized. "Capital assets" are essentially investment property (including property for personal use) or property used in a trade or business.2/ Gain or loss from the sale or exchange of property that is not a "capital asset" is taxed as ordinary income or loss.

In general, capital gains and losses from the ownership of "capital assets" are only taken into account for tax purposes when realized by sale, exchange, or other taxable disposition. Transfers of asset ownership by gift or bequest are not considered realization events, but gifts and bequests each have different consequences for the recipient. The recipient of a gift takes the basis of the donor for the computation of any capital gains from future realizations, and the lesser of fair market value or the basis of the donor for the computation of any capital losses from future realizations. In contrast, for property transferred at death by bequest or inheritance, the heir generally takes as his basis the asset's value on the decedent's date of death. Therefore, any unrealized gain or loss that had accrued during the decedent's lifetime is never subject to tax.

Under current law, 40 percent of the net capital gain for a year is included in a taxpayer's adjusted gross income. "Net capital gain" is basically the long-term capital gains realized during the year reduced by the sum of (a) long-term capital losses for the year and (b) the amount by which short-term capital losses for the year exceed short-term capital gains for the year. The amount by which short-term capital gains exceed the sum of (a) short-term capital losses for the year and (b) the excess of long-term capital losses over long-term capital gains is taxed as ordinary income.

Since the maximum marginal tax rate was lowered from 70 percent to 50 percent in the Economic Recovery Tax Act of 1981 (the 1981 Act), the maximum tax rate on net capital gains for individuals is now 20 percent. Prior to the 1978 Revenue Act (the 1978 Act), 50 percent of net capital gains was included in adjusted gross income, and the excluded portion of long-term capital gains in excess of the greater of $10,000 of preferences or one half of regular tax liability was subject to the minimum tax of 15 percent applied to preference income. In addition, excluded capital gains offset income entitled to the benefits of the 50 percent maximum tax on personal service income. These provisions, combined with the 70 percent top rate under the personal income tax, theoretically confronted taxpayers with a tax rate as high as 49 percent on net recognized capital gains.

Capital losses may be fully offset against capital gains. In addition, short-term losses (in excess of both short-term gains and long-term gains in excess of long-term losses) and 50 percent of long-term losses (in excess of both long-term gains and short-term gains in excess of short-term losses) may be deducted from ordinary income, up to a maximum deduction of $3,000.

Losses in excess of the $3,000 limit may be carried forward for an unlimited number of years.

There are special rules for the taxation of trade or business assets. In general, if there is a net gain on all such assets for the year, the gain or loss on each asset is treated as long-term capital gain, subject to the rules outlined above. If there is not a net gain on all such assets for the year, the gain or loss on each asset is ordinary income or loss.

A sale of a capital asset is defined as a long-term transaction if the asset has been held for more than 6 months. The holding period required for a gain or loss to be defined as long term had been over 6 months prior to 1977, but was increased in the 1976 Tax Reform Act to over 9 months in 1977 and over 1 year in 1978 and subsequent years. In the Deficit Reduction Act of 1984 (the 1984 Act), Congress reduced the holding period back to over 6 months for assets purchased between June 22, 1984 and January 1, 1988.

Special treatment is accorded to a capital gain on the sale of a taxpayer's principal residence. Generally, recognition and taxation of the gain are deferred if another principal residence of equal or greater value is bought and occupied within 2 years before or after the sale. In addition, a person who is 55 years of age or older may exclude from adjusted gross income $125,000 of capital gain resulting from the sale of his personal residence once in his lifetime.

Finally, since the 1978 Act, capital gain has been subject to an alternative minimum tax. The base for the alternative minimum tax is computed by adding the excluded portion of capital gains (60 percent of net long-term gains) and certain other tax preferences to gross income less specified personal deductions. As modified in the Tax Equity and Fiscal Responsibility Act of 1982 (the 1982 Act), the alternative minimum tax is imposed at a rate of 20 percent of alternative minimum taxable income in excess of $30,000 for unmarried individuals, $40,000 for married persons filing a joint return, and $20,000 for a married person filing a separate return. (Prior to the 1982 Act, the base was taxable income plus excluded capital gains plus excess itemized deductions.) If the alternative minimum tax so computed exceeds the taxpayer's regular tax, his tax liability is equal to the alternative minimum tax; otherwise, his tax liability is equal to the regular tax. Thus, unlike the add-on minimum tax under pre-1978 law, the present alternative minimum tax does not increase the maximum tax rate on net long-term capital gains.

B. Distribution of Capital Gains by Income Group

Income from the sale of capital assets is concentrated at the upper end of the income distribution. Taxpayers with the highest incomes receive a much larger share of total capital gains than

of total adjusted gross income (AGI). Furthermore, capital gains comprise a large proportion of taxpayers' AGI only among those at the highest income levels.

Table 1.1 shows that reported long-term capital gains in AGI (among those taxpayers with net gains) accounted for slightly more than 2 percent of AGI on all tax returns filed for 1982.3/ However, capital gains accounted for 6.2 percent of AGI for returns with AGI between $100,000 and $200,000, 12.9 percent of AGI for returns with AGI between $200,000 and $500,000, and 32.2 percent of AGI for returns with AGI in excess of $500,000.

The last two columns of Table 1.1 compare the cumulative distributions of AGI and capital gains. While taxpayers with AGI under $50,000 accounted for almost 80 percent of AGI, they received just over 30 percent of capital gains in AGI. The concentration of gains at the very top of the distribution is even more striking. For example, taxpayers with AGI over $100,000 received 8 percent of AGI, but almost 53 percent of capital gains in AGI.

The data in Table 1.1 exaggerate to some extent the concentration of capital gains among taxpayers with persistently high incomes because an individual taxpayer's income in any one year can sometimes be significantly affected by the amount of gain realized. As gains realizations can vary greatly from year to year for any individual, at least part of the tendency for capital gains reported in a single year to be concentrated among taxpayers with high incomes in that year results from the fact that individuals with temporarily higher realized capital gains also have temporarily higher AGI. Therefore, the question of the extent to which capital gains are concentrated among those with a persistently high AGI -- rather than an AGI temporarily increased by large gains -- cannot be determined without examining gains realizations and AGI for individual taxpayers over a more extended time period.

Tables 1.2-1.4 present data on the distribution of gains by AGI class using a 5 year panel study of taxpayers for the years 1971-1975. These data show that capital gains are also very concentrated among taxpayers with the highest permanent, as well as current, AGI. Average capital gains over a 5 year period are also very concentrated among those with the highest permanent AGI. Thus, although using a single year's distribution of gains by AGI exaggerates to some extent the degree to which gains are concentrated among those with persistently, as opposed to temporarily, high levels of AGI, the data from the 5 year panel study generally confirm the distributional results shown in Table 1.1.

Table 1.2 presents the same data as Table 1.1 for 1973. Because of the rise in nominal incomes (mostly due to inflation) between 1973 and 1982, taxpayers below any given level of AGI

Table 1.1

Capital Gains in Adjusted Gross Income (AGI)
as a Percentage of AGI by AGI Class, 1982

AGI ($thou)	Capital gains in AGI ($bil)	Total AGI ($mil)	Capital gains as % of AGI	Cumulative percentage of:	
				AGI	Capital gains
5 or less	2,918	20,723	14.1	1.1	7.6
5-10	834	127,637	0.7	8.0	9.7
10-15	1,227	177,486	0.7	17.6	12.9
15-20	944	182,642	0.5	27.5	15.4
20-25	945	197,908	0.5	38.1	17.8
25-30	1,253	209,572	0.6	49.5	21.1
30-40	2,098	340,036	0.6	67.8	26.5
40-50	2,160	208,952	1.0	79.1	32.1
50-75	3,523	179,566	2.0	88.8	41.3
75-100	2,282	59,748	3.8	92.0	47.2
100-200	4,671	75,291	6.2	96.1	59.3
200-500	5,156	39,974	12.9	98.2	72.7
500+	10,505	32,600	32.2	100.0	100.0
Total	38,514	1,852,135	2.1		

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Source: U.S. Internal Revenue Service, Statistics of Income-1982 Individual Income Tax Returns (Washington, D.C., 1984), pp. 44 and 48.

Table 1.2

Capital Gains in Adjusted Gross Income (AGI)
as a Percentage of AGI by AGI Class, 1973

AGI ($thou)	Capital gains in AGI ($mil)	Total AGI ($mil)	Capital gains as % of AGI	Cumulative percentage of: AGI	Cumulative percentage of: Capital gains
5 or less	315	30,284	1.0	4.5	2.7
5-10	1,365	110,370	1.2	21.1	14.5
10-15	1,201	172,159	0.7	46.8	24.8
15-20	978	136,043	0.7	67.2	33.3
20-30	1,482	118,916	1.2	85.0	46.0
30-50	1,589	52,588	3.0	92.9	59.7
50-100	1,638	30,699	5.3	97.5	73.9
100-200	1,338	10,513	12.7	99.1	85.4
200-500	821	3,999	20.5	99.7	92.5
500-1,000	455	1,102	41.3	99.8	96.4
1,000+	416	995	41.9	100.0	100.0
Total	11,598	667,668	1.7		

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Source: 1973 Sales of Capital Assets Study, Five-Year Panel.

accounted for a larger share of both AGI and capital gains in AGI in 1973 than in 1982. A comparison of the cumulative distributions of AGI and capital gains in AGI in 1973 and 1982 shows a higher concentration of gains among those with relatively high current AGI in 1982 than in 1973. For example, in 1973 taxpayers with AGI of $30,000 or more accounted for 54.0 percent of gains and 15.0 percent of AGI. By comparison, in 1982, taxpayers with AGI of $100,000 or more accounted for 52.8 percent of gains but only 8.0 percent of AGI.

Table 1.3 shows the distributions of capital gains and AGI in 1973 by permanent AGI class, where permanent AGI is defined as the taxpayer's average AGI for the years 1971-1975. In 1973, capital gains accounted for 1.7 percent of AGI for all returns in the sample. Capital gains accounted for 11.6 percent of AGI for taxpayers with permanent AGI between $100,000 and $200,000; 19.8 percent of AGI for taxpayers with permanent AGI between $200,000 and $500,000; 29.9 percent of AGI for taxpayers with permanent AGI between $500,000 and $1,000,000; and 19.6 percent of AGI for taxpayers with permanent AGI greater than $1,000,000. In comparison, the single year data reported in Table 1.2 show a greater tendency for capital gains to increase as a share of AGI, especially for taxpayers with AGI over $500,000. Table 1.2 shows that capital gains accounted for 12.7 percent of current (1973) AGI for taxpayers with AGI between $100,000 and $200,000; 20.5 percent of AGI for taxpayers with AGI between $200,000 and $500,000; 41.3 percent of AGI for taxpayers with AGI between $500,000 and $1,000,000; and 41.9 percent of AGI for taxpayers with AGI greater than $1 million.

Table 1.3 also shows that taxpayers with permanent AGI of $100,000 or more accounted for 2.1 percent of AGI and 18.5 percent of capital gains in AGI in 1973. In comparison, Table 1.2 shows that taxpayers with 1973 AGI of $100,000 or more accounted for 2.5 percent of AGI and 26.1 percent of gains in AGI in 1973. Thus, the data in Tables 1.2 and 1.3 illustrate that data on capital gains for a single year will tend to overstate the concentration of gains among taxpayers in the highest AGI categories. This is because high income groups, classified by single year income, will tend to include disproportionately more taxpayers with temporarily high incomes caused in part by large capital gains. The differences are especially pronounced for taxpayers with AGI of $500,000 or more. It remains the case, however, that taxpayers with the highest permanent AGI receive a much larger share of capital gains than of AGI, and that capital gains comprise a large share of AGI only for taxpayers at the highest permanent income levels.

Table 1.4 shows the 1973 distribution of permanent capital gains by permanent AGI class, where both permanent gains and permanent AGI are defined as averages for the years 1971-1975 for each taxpayer filing returns in all 5 years. The distributional results shown in Table 1.4 are similar to those reported in Table

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Table 1.3

Capital Gains in Adjusted Gross Income (AGI)
as a Percentage of AGI
by Permanent AGI Class, 1973 1/

Permanent AGI ($thou)	Capital gains in AGI ($mil)	Total AGI ($mil)	Capital gains as % of AGI	Cumulative percentage of:	
				AGI	Capital gains
5 or less	534	31,386	1.7	4.7	4.6
5-10	1,740	120,579	1.4	22.8	19.6
10-15	912	172,514	0.5	48.6	27.5
15-20	1,195	140,104	0.8	69.6	37.8
20-30	2,241	111,994	2.0	86.4	57.1
30-50	1,281	48,426	2.6	93.6	68.1
50-100	1,545	28,413	5.4	97.9	81.5
100-200	1,070	9,220	11.6	99.2	90.7
200-500	701	3,545	19.8	99.8	96.7
500-1,000	253	846	29.9	99.9	98.9
1,000+	125	640	19.6	100.0	100.0
Total	11,598	667,668	1.7		

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1/ Permanent AGI is defined as the taxpayer's average AGI for the years 1971-75.

Source: 1973 Sales of Capital Assets Study, Five-Year Panel

Table 1.4

Permanent Capital Gains in Permanent Adjusted Gross Income (AGI) as a Percentage of Permanent AGI by Permanent AGI Class, 1971-1975 1/

Permanent AGI ($thou)	Permanent capital gains in AGI ($mil)	Total permanent AGI ($mil)	Permanent capital gains as % of permanent AGI	Cumulative percentage of:	
				Permanent AGI	Permanent capital gains
5 or less	520	32,494	1.6	4.9	4.8
5-10	1,848	120,397	1.5	23.0	21.7
10-15	1,297	171,054	0.8	48.7	33.5
15-20	1,263	139,557	0.9	69.6	45.1
20-30	1,454	112,627	1.3	86.6	58.4
30-50	973	46,970	2.1	93.6	67.3
50-100	1,445	28,084	5.1	97.9	80.5
100-200	905	8,992	10.1	99.2	88.8
200-500	752	3,692	20.4	99.8	95.7
500-1,000	279	890	31.4	99.9	98.2
1,000+	195	676	28.8	100.0	100.0
Total	10,931	665,431	1.6		

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1/ Permanent capital gains are defined as the taxpayer's average realized capital gains in AGI for the years 1971-75, and permanent AGI is defined as the taxpayer's average AGI for the years 1971-75.

Source: 1973 Sales of Capital Assets Study, Five-Year Panel.

1.3. Permanent capital gains are 1.6 percent of permanent AGI for all taxpayers, but are 10.1 percent of permanent AGI for taxpayers with permanent AGI between $100,000 and $200,000; 20.4 percent of permanent AGI for taxpayers with permanent AGI between $200,000 and $500,000; 31.4 percent of permanent AGI for taxpayers with permanent AGI between $500,000 and $1,000,000; and 28.8 percent of permanent AGI for taxpayers with permanent AGI greater than $1,000,000. Taxpayers with the top 13.4 percent of permanent AGI (those with permanent AGI greater than $30,000) received 41.6 percent of permanent capital gains; taxpayers with the top 2.1 percent of permanent AGI (those with permanent AGI greater than $100,000) received 19.5 percent of permanent capital gains.

Tables 1.1-1.4 report data on the distribution of nominal capital gains included in AGI. During a period of inflation, taxpayers reporting nominal capital gains on assets sold have not necessarily received a real increase in purchasing power during the period the asset was held. For example, if a taxpayer had purchased $1,000 of corporate shares in 1972 and then sold the shares for $1,100 in 1979, he would have received a nominal long-term gain of $100, of which 40 percent, or $40, would be included in AGI. If the nominal value of the shares had grown at the same rate as the GNP deflator over that time period, thus maintaining their real value, the shares would have been worth $1,628 in 1979 prices. Thus, the taxpayer in this example has suffered a real loss equal to $528 in 1979 prices, not a gain of $100, over the period the asset was held. The only taxpayers who realize real capital gains in any year are those for whom the rate of asset appreciation over the period the asset was held exceeded the inflation rate over the same time period.

Table 1.5 compares real and nominal gains from sales of corporate shares and non-business real estate for a subset of returns included in the IRS data file compiled for the IRS study of sales of capital assets in 1977. Real gains are computed by increasing the basis of assets in proportion to the increase in the GNP deflator between the date the asset was purchased and the date it was sold. The returns used only included those with internally consistent reporting of holding periods, since accurate holding period data are necessary to compute real capital gains.

Table 1.5 shows that nominal capital gains reported on both corporate shares and non-business real estate sold in 1977 considerably overstate real increases in purchasing power during the period the assets were held. The $5.7 billion in nominal capital gains reported on sales of corporate shares represented an aggregate loss of $3.5 billion after adjustment for inflation. For non-business real estate, real capital gains were about one-fourth of the reported nominal gains of $3.6 billion. The table also shows that real gains are even more concentrated among high income taxpayers than are nominal gains. In 1977, for

Table 1.5

Comparison of Nominal and Real Capital Gains
on Sales of Selected Capital Assets
by AGI Class, 1977 1/

AGI class ($thou)	Corporate shares		Non-business real estate	
	Nominal gains ($ mil)	Real gains ($ mil)	Nominal gains ($ mil)	Real gains ($ mil)
5 or less	239	-177	204	40
5-10	132	-460	579	87
10-15	-79	-729	179	-15
15-20	-50	-585	294	36
20-30	-29	-1,373	659	127
30-50	860	-1,169	691	276
50-100	978	-843	525	183
100-200	983	85	224	106
200+	2,646	1,763	215	101
Total	5,684	-3,488	3,570	939

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1/ Data are from the 1977 IRS study of Sales of Capital Assets. In compiling the table, only records with internally consistent reporting of holding periods were used.

example, total real gains on sales of corporate shares were negative for taxpayers in all groups with AGI less than $100,000, but were $85 million for taxpayers with AGI between $100,000 and $200,000 and $1,763 million for taxpayers with AGI greater than $200,000. Taxpayers with AGI in excess of $100,000 received almost 64 percent of the nominal gains on corporate shares, but were the only groups to realize any real gains on shares -- about $1.8 billion compared to $5.3 billion of real losses for all groups with AGI less than $100,000. For non-business real estate, taxpayers with AGI in excess of $100,000 realized 12 percent of nominal gains and 22 percent of real gains.4/

The data reported in Table 1.5 illustrate that low and middle income taxpayers paid a much higher effective tax rate on real realized gains than did upper income taxpayers, even though upper income taxpayers face higher statutory tax rates on nominal gains. This occurred because lower and middle income taxpayers had much larger nominal gains than real gains (indeed, real gains on corporate shares were negative for these groups), while for taxpayers with AGI over $200,000 real gains were two-thirds of nominal gains.

Tables 1.1-1.5 generally compare the distribution of real and nominal capital gains with the distribution of AGI. Table 1.6 compares the distribution of capital gains in AGI in 1982 with the distribution of other sources of income from capital reported on tax returns. The table shows that the distribution of capital gains is much more concentrated among high AGI groups than the distribution of either taxable interest income or dividends in AGI. For example, taxpayers with AGI greater than $100,000 received 52.8 percent of capital gains in AGI, compared to 33.8 percent of dividends and only 10.9 percent of taxable interest income; those with AGI over $500,000 received 27.3 percent of capital gains, 11.6 percent of dividends, and 2.4 percent of taxable interest income.

Most taxpayers never realize any capital gains, but a large percentage of high income taxpayers realize capital gains every year. Table 1.7 presents data on the frequency of realizations by permanent AGI class for a sample of taxpayers who filed tax returns every year between 1971 and 1975. The table shows that 76 percent of all returns had no realized gains during the years 1971-1975, 20 percent of all returns had realized gains in some but not all years in that period, and only 4 percent of returns had realized gains every year.

In contrast, the highest income taxpayers report capital gain income in most years. The percentage of taxpayers reporting gains in all five years rises as permanent AGI increases, while the percentage of taxpayers never reporting gains declines as permanent AGI increases. For example, the table shows that only 1 percent of returns with permanent AGI greater than $500,000

Table 1.6

Percentage Distribution of Different Forms of Income from Capital by AGI Class, 1982

AGI ($thou)	Taxable interest as percentage of AGI	Dividends as percentage of AGI	Capital gains as percentage of AGI
5 or less	4.6	3.0	7.6
5-10	10.0	4.2	2.2
10-15	11.5	4.8	3.2
15-20	9.8	5.1	2.5
20-25	9.3	4.8	2.5
25-30	8.1	5.3	3.3
30-40	12.2	9.3	5.4
40-50	8.3	8.5	5.6
50-75	10.4	13.6	9.1
75-100	4.7	7.6	5.9
100-200	5.5	12.0	12.1
200-500	3.0	10.2	13.4
500+	2.4	11.6	27.3
Total	100.0	100.0	100.0

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Source: Derived from data reported in U.S. Internal Revenue Service, Statistics of Income-1982, Individual Income Tax Returns (Washington, D.C., 1984), pp. 44,45 and 47.

Table 1.7

Percentage of Returns Realizing Gains
by Permanent AGI Class, 1971-1975 1/

Permanent AGI ($thou)	Gains never realized (%)	Gains realized in some, but not all years (%)	Gains realized every year (%)
Less than 0	50	49	1
0 - 5	90	9	1
5 - 10	83	14	3
10 - 15	79	18	3
15 - 20	69	27	4
20 - 30	49	42	9
30 - 50	28	51	21
50 - 100	11	43	46
100 - 200	4	42	54
200 - 500	2	34	64
500+	1	26	73
Total	76	20	4

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1/ Results refer only to taxpayers who filed returns in all five years (1971-1975). Permanent AGI is defined as average AGI for the years 1971-75.

(the highest income group shown in the table) had no realized gains during the years 1971-75, 26 percent of these returns had realized gains in some but not all years, and 73 percent of these high permanent AGI returns had realized gains in every year between 1971 and 1975.

In summary, capital gains reported on individual tax returns are highly concentrated among upper income taxpayers. Capital gains are much more concentrated at the top of the income distribution than is total income. Also, capital gains are more concentrated at high income levels than is other income from capital. The failure to adjust conventional measures of capital gain income for price level changes results in the overstatement of income reported from the sale of capital assets, but the understatement of the extent to which real capital gains income is concentrated among the highest income groups. Finally, in contrast to upper income taxpayers, most lower and middle income taxpayers do not report any capital gain income in most years.

C. Distribution of Capital Gains By Asset Type

Individuals realize capital gains and losses from the sale of a wide variety of different types of capital assets. Although corporate stock is the capital asset with the largest volume of transactions, gross sales value, gross gains, and gross losses, individuals also realize large amounts of gain from sales of real estate, business property, and other types of assets.

Tables 1.8 and 1.9 show the percentage distribution by asset type of capital asset transactions, gross sales proceeds, gross gains, gross losses, and net gains (gross gains minus gross losses) from sales of capital assets in 1973 and 1977. In both years, sales of corporate stock accounted for the largest volume of transactions, gross sales value, gross gains, and gross losses, and the second largest volume of net gains (after personal residences) among single asset categories. For example, in 1977, corporate stock accounted for roughly 42 percent of capital asset transactions, 25 percent of gross sales value, 23 percent of gross gains, 51 percent of gross losses, and 15 percent of net gains. These figures understate the importance of corporate stock transactions relative to all capital asset transactions because some of the other major asset categories also include transactions in, or gains realized from, ownership of corporate stock. For example, capital gains distributions, prior year installment sales proceeds, share of capital gain or loss from partnerships and fiduciaries, and other assets, which include transactions not classified in the data, probably also include a large amount of sales of and/or gains from corporate stock. If these four categories of "asset" are excluded from the total, corporate stock accounted for 62 percent of transactions, 39 percent of gross sales value, 35 percent of gross gains, 72 percent of gross losses, and 23 percent of net gains on individual income tax returns in 1977.

Table 1.8

Percentage Distribution of Gains and Losses
on Sales of Capital Assets
by Asset Type, 1973 1/

Type of asset	No. of transactions 2/	Gross sales value	Gross gains	Gross losses	Net gains
Corporate stock	53.8	28.7	26.1	51.9	14.8
Securities other than corporate stock	2.7	4.3	0.4	2.9	-0.8
Commodities, including futures contracts	1.4	4.7	2.5	8.2	*
Capital gain distribution	-	-	2.4	0.8	3.1
Share of capital gain or loss from partnerships and fiduciaries	-	-	7.7	7.2	7.9
Capital gain distributions from small business corporations	-	-	0.8	*	1.1
Liquidation distributions	-	-	2.6	0.4	3.6
Lump-sum and other retirement plan distributions	-	-	1.8	*	2.6
Sale or involuntary conversion of certain depreciable property	7.5 3/	4.0	6.7	3.0	8.3
Qualified gains on nonfarm depreciable business and personal property	5.7	2.3	3.0	-	4.3
Qualified gains on other depreciable real property	1.0	3.7	3.8	-	5.5
Qualified gains on farmland with unharvested crop and livestock, except poultry, used in trade or business	0.3 3/	0.1	0.3	-	0.4

(continued on following page)

Table 1.8 (Continued)

Type of asset	No. of transactions 2/	Gross sales value	Gross gains	Gross losses	Net gains
Standing timber	0.3	0.3	0.4	*	0.6
All other farmland	0.1	0.2	0.3	-	0.5
Personal residence 4/	4.8	15.1	10.8	-	15.5
Nonbusiness real estate	4.2	8.3	8.1	1.3	11.1
Prior year installment sales proceeds	7.0	17.8	9.7	*	14.0
Other types of assets 5/	11.2	10.4	12.7	24.3	7.6

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1/ Dashes denote the category is not applicable or data is not available; asterisks indicate the amount is less than $0.05 billion.

2/ Connotes sales, exchanges, involuntary conversions, and distributions of gain or loss from partnerships, fiduciaries, small business corporations, retirement plans, and enterprise liquidations.

3/ Data are overstated to the extent a taxpayer reported more than one type of property included in this combined category.

4/ The gain shown for sales of residences is the gross amount realized. Only a small part is taxable gain because of the deferral and exclusion provisions of the tax law relating to sales of residences.

5/ Other types of assets not elsewhere classified or transactions which were unclassified.

Source: Data reported in Internal Revenue Service, Statistics of Income--1973, Sales of Capital Assets Reported on Individual Income Tax Returns, (Washington, D.C., 1980).

Table 1.9

Percentage Distribution of Gains and Losses on Sales of Capital Assets by Asset Type, 1977

Type of asset	No. of transactions2/	Gross sales value	Gross gains	Gross losses	Net gains
Corporate stock	42.1	24.8	22.8	50.7	14.7
Securities other than corporate stock	2.9	5.0	0.9	2.6	0.4
Commodities, including futures contracts	1.3	7.6	2.8	12.3	0.1
Capital gain distributions	6.7	-	1.8	0.3	2.3
Share of capital gain or loss from partnerships and fiduciaries	3.6	-	8.1	4.2	9.2
Capital gain distributions from small business corporations	0.2	-	0.4	*	0.6
Liquidation distributions	0.2	-	1.6	0.1	2.0
Lump-sum and other retirement plan distributions	0.4	-	0.6	-	0.7
Sale or involuntary conversion of certain depreciable property	6.0 3/	2.7	5.0	3.3	5.5
Qualified gains on non-farm depreciable business and personal property	2.8	2.0	3.8	-	4.9
Qualified gains on other depreciable real property	1.3	4.2	5.7	-	7.3
Qualified gains on farmland with unharvested crop and livestock, except poultry, used in trade or business	0.9 3/	0.3	0.7	-	0.5

(continued on following page)

Table 1.9 (Continued)

Type of asset	No. of transactions2/	Gross sales value	Gross gains	Gross losses	Net gains
Standing timber	0.4	0.3	1.0	*	1.3
All other farmland	*	*	*	-	0.1
Oil and gas property	*	*	0.1	-	0.2
Personal residence 4/	6.5	10.4	11.6	0.2	14.9
Nonbusiness real estate	3.2	6.6	7.7	1.3	9.5
Prior-year installment sales proceeds 5/	3.3	23.0	6.6	0.1	8.5
Other types of assets 6/	18.0	13.1	18.8	25.0	17.1

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1/ Dashes denote the category is not applicable or data is not available; asterisks indicate the amount is less than $0.05 billion.

2/ Connotes sales, exchanges, involuntary conversions, and distributions of gain or loss from partnerships, fiduciaries, small business corporations, retirement plans, and enterprise liquidations.

3/ Data are overstated to the extent a taxpayer reported more than one type of property included in this combined category.

4/ The gain shown for sales of residences is the gross amount realized. Only a small part is taxable gain because of the deferral and exclusion provisions of the tax law relating to sales of residences.

5/ Because of taxpayer reporting problems and data processing errors, prior-year installment sales are somewhat understated.

6/ Other types of assets not elsewhere classified or transactions which were unidentified.

Source: Data reported in Bertie Brame and Keith Gilmour, "Sales of Capital Assets, 1973-1980," in U.S. Internal Revenue Service, SOI Bulletin, Summer 1982, pp. 29-38.

Other single asset categories that accounted for a significant volume of capital asset transactions and capital gains in 1977 were personal residences (10 percent of sales value, 12 percent of gross gains), non-business real estate (7 percent of sales value, 8 percent of gross gains), commodities and futures contracts (8 percent of sales value, 3 percent of gross gains), and securities other than corporate stock (5 percent of sales value, but less than 1 percent of gross gains). Because of the rollover provisions and the exclusion of some gains on personal residences for taxpayers age 55 or older, personal residences account for a much smaller fraction of the capital gains tax base than their share of net gains from capital asset sales.

The data shown in Tables 1.8 and 1.9 reflect to some degree the particular economic conditions of the 1970s. During that decade, the stock market performed relatively poorly, bond prices generally declined, and real estate values increased at a greater rate than in other time periods. If these market trends are reversed in the 1980s, it is likely that the share of net gains accounted for by corporate stocks and other securities will be larger than the shares reported in Tables 1.8 and 1.9, while the share of net gains accounted for by real property, including business real property, non-business real estate, and personal residences, will be smaller.

D. Trends in Capital Gains Receipts

Capital gains taxes have accounted for slightly under 5 percent of individual income tax receipts in the past decade. Table 1.10 shows that households who reported net capital gains in 1982 paid about $12.9 billion more in individual income taxes than they would have paid if their taxable capital gain had been zero and all other income had remained the same. Taxes on capital gain income amounted to 4.6 percent of individual income tax liability in 1982.

Table 1.10 also shows that capital gains taxes, though varying from year to year, have remained at roughly the same share of individual income tax liability between 1970 and 1982. Capital gains tax liability increased from $3.1 billion in 1970 to $5.7 billion in 1972, declined to about $4.5 billion during the 1974-75 recession, and then increased every year thereafter.

The 1978 capital gains tax reduction lowered the fraction of individual net long-term capital gains included in AGI from 50 percent to 40 percent. Despite this reduction in the inclusion percentage, total realized capital gains increased by a sufficient amount to result in an increase in net capital gains in AGI from $26.2 billion in 1978 to $31.1 billion in 1979. Capital gains in AGI increased further to $32.7 billion in 1980, $34.7 billion in 1981, and $38.5 billion in 1982. Taxes paid on

Table 1.10

Capital Gains Taxes Compared to Individual Income Tax Liability, 1970-1982

Year	Net capital gain in AGI 1/ ($bil)	Taxes paid on capital gains ($bil)	Total individual income taxes ($bil)	Capital gains taxes as percentage of total
1970	10.7	3.1	83.9	3.7
1971	14.6	4.4	85.4	5.2
1972	18.4	5.7	93.6	6.1
1973	18.2	5.4	108.1	5.0
1974	15.4	4.4	123.6	3.6
1975	15.8	4.5	124.5	3.6
1976	20.2	6.6	141.8	4.7
1977	23.4	8.1	159.8	5.1
1978	26.2	9.3	188.2	4.9
1979	31.1	11.7	214.5	5.5
1980	32.7	12.5	250.3	5.0
1981	34.7	12.7	292.7	4.3
1982	38.5	12.9	277.6	4.6

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1/ These figures include only returns with net gains and thus slightly overstate the contribution of the capital gains tax to total revenues by excluding returns with net losses that are deducted in computing taxable income.

capital gains also increased following the 1978 tax reduction, rising from $9.3 billion in 1978 to $12.5 billion in 1980, $12.7 billion in 1981, and $12.9 billion in 1982. Capital gains taxes as a percentage of individual income tax liability increased in the year after the 1978 capital gains tax cut, rising from 4.9 percent in 1978 to 5.5 percent in 1979, but then fell back to 5.0 percent in 1980, declined again to 4.3 percent in 1981 when the top rate on capital gains was reduced from 28 percent to 20 percent (for gains realized after June 9, 1981), and subsequently increased to 4.6 percent in 1982.

The data in Table 1.10 slightly overstate the contribution of capital gains on individual returns to total Federal revenues because they only include returns with net gains. However, Table 1.11 shows that net gains for returns with net gains far exceed net losses for returns with net losses. For example, in 1982, taxpayers reported $38.5 billion of net gains and $4.1 billion of net losses, for a total net capital gain in AGI, in excess of net losses in AGI, equal to $34.4 billion. Net gains were reported on approximately 7.1 million returns, while net losses were reported on 2.5 million returns.

The effect of changes in Federal taxation of capital gains on capital gains realizations and on revenues from capital gains taxes will be discussed in detail in Chapter 4.

II. The Legal Distinction Between Ordinary Income and Capital Gain

This section discusses in more detail the problems in determining when income attributable to an increase in an asset's value is to be regarded as a capital gain rather than ordinary income. The discussion reviews a variety of complex legal issues in a very general, summary fashion and does not purport to be a comprehensive discussion of all of the details of the substantial body of law dealing with capital gains. Rather, the intent of the discussion is to provide an overview of the types of legal issues that arise in defining a capital gain.

A. Introduction

The Federal income tax treats as taxable income most "gain" recognized on the disposition of property. Gain is measured by subtracting the property's adjusted tax basis from the amount realized upon disposition (the sale price, in a sale). The adjusted tax basis is, essentially, the cost of the property to the owner. For example, if stock is purchased for 100, the owner has a basis in the stock of 100, so that if the stock were sold for 110, the gain would be 10 (110-100). In some instances,

Table 1.11

Net Gains and Losses in Adjusted Gross Income, 1973-1982

Year	Returns with net gains		Returns with net losses		Net gain minus net loss ($bil)
	Number of returns (mil)	Net gain ($bil)	Number of returns (mil)	Net losses ($bil)	
1973	6.4	18.2	2.3	1.5	16.7
1974	5.3	15.4	2.7	1.9	13.5
1975	5.1	15.8	2.5	1.7	14.1
1976	6.1	20.2	2.4	1.6	18.6
1977	6.3	23.4	2.4	2.6	20.8
1978	6.6	26.2	2.1	3.0	23.2
1979	6.6	31.3	2.0	2.9	28.4
1980	7.0	32.7	2.0	3.1	29.7
1981	7.0	34.7	2.5	3.9	30.8
1982	7.1	38.5	2.5	4.1	34.4

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Sources: Bertie Brame and Keith Gilmore, "Sales of Capital Assets, 1973-1980," in U.S. Internal Revenue Service, SOI Bulletin, (Summer, 1982), pp. 29-38. U.S. Internal Revenue Service, Statistics of Income - 1981 Individual Tax Returns; and U.S. Internal Revenue Service, Statistics of Income - 1982 Individual Income Tax Returns.

however, the original cost must be adjusted to take into account post-acquisition events pertaining to the property. For example, if a building is renovated, the cost of renovation is an additional cost of the building and increases the owner's basis. Similarly, if a property is depreciable, the depreciation deductions represent cost recovery to the owner and result in a decrease in the owner's basis.

Gains and losses represent the increase or decrease in the value of property. Property can change in value every day. The tax law, however, generally does not tax gains or losses as they accrue daily or annually. Instead, taxation is deferred until the gain or loss is "realized" when the owner's interest in the asset terminates. The two most common realization events are sales and exchanges. The gift of an asset is generally not a realization event.

Some realizations are not recognized for tax purposes. The tax law contains a large number of nonrecognition rules. For example, under certain circumstances, a taxpayer that sells a personal residence may defer recognition of gain if the sales proceeds are reinvested in another personal residence. Similarly, gains and losses on certain "like-kind" exchanges of property and on certain exchanges of property pursuant to a corporate or partnership reorganization are not recognized.

Because gain, generally, is the increase in the value of property over its adjusted cost, gain is a measure of an increase in wealth. By the standard economic definition, all increases in wealth are income.5/ Current law, however, generally taxes long-term capital gain at a lower rate than ordinary income. The Code and the case law contain a remarkably complex collection of rules for determining whether an item of income is subject to the more favorable treatment provided for long-term capital gain.

Under current law, a long-term capital gain is the gain realized on the sale or exchange of a capital asset held for more than six months.6/ Complexity arises in defining the terms "gain", "sale", "exchange", and "capital asset" in the preceding sentence and from a collection of exceptions to, additions to, and limitations on, these definitions. The following discussion reviews these key definitions, and considers the most significant of the exceptions, additions, and limitations.

B. Holding Period

In general, long-term capital gain treatment is restricted to gain on property that has been "held" for more than six months at the time of the taxable transaction. The law contains exceptions to the six-month rule. For example, cattle and horses held for certain purposes must be held for two years to qualify for long-term capital gain treatment.

A holding period commences when the taxpayer first has the "benefits and burdens" of ownership. Because of the variety of interests which may be created in property, it can be difficult to determine when such benefits and burdens are first acquired. For example, a tenant in a building may gradually buy out his landlord in such a fashion as to make it difficult to determine when the benefits and burdens of ownership were transferred to the tenant.

In some cases, the law suspends a taxpayer's holding period. For example, if a taxpayer makes a short sale with respect to stock already owned and uses such stock to cover the short sale, the taxpayer's holding period in the stock is suspended as of the time of the short sale. In other cases, the law includes in a taxpayer's holding period for a property a period during which such property was held by another person. For example, when property is transferred by gift, the donee's holding period includes the donor's holding period. In addition, the law on occasion includes in a taxpayer's holding period for one property a period during which the taxpayer held other property. For example, a taxpayer's holding period in stock received tax free in exchange for other stock as part of a corporate merger includes the holding period of the stock given up.

C. **Definition of a Capital Asset**

1. **General Principles.** The distinction between capital assets and other forms of property is the most important concept in the law relating to the taxation of capital gain. Under the Code, any property is a "capital asset" unless it is covered by one of the numerous exceptions. The theme running through the exceptions is that capital gain treatment is appropriate only for income resulting from the appreciation in value of investment property or property used in a trade or business. Thus, there are exceptions that deny capital gain treatment for income from personal efforts, income from property not attributable to appreciation (such as interest, dividends, royalties, and rent), and the ordinary profits of business operations.

2. **Capital Gain vs. Income From Personal Effort.** In many common situations, either personal efforts become incorporated into a property, or a contract or other form of property represents the right to compensation for future services. The Code generally does not treat income resulting from personal efforts as capital gain. Consequently, certain forms of property which are produced by the taxpayer's personal efforts, such as copyrights, employment contracts and insurance agency agreements, are not capital assets in the taxpayer's hands.7/

3. **Capital Gain vs. Non-Appreciation Income From Property.** Not only can income associated with services become property, but frequently the right to income from property also becomes a

separate item of property. One can sell the right to interest, dividends, royalties, or rent while retaining the underlying principal, stock, licensed property, or rental property. Capital gain treatment generally is considered appropriate only for profit on the appreciation of property and not for payments associated with property such as interest, dividends, royalties, and rent. Consequently, property interests that represent only the right to income from other property owned by the taxpayer are not capital assets. For example, under this rule, income from a sale of the right to receive a share of future rents is not capital gain if the seller retains the right to sell the underlying property.

In contrast, income from a sale of future rents as part of the sale of the underlying property would be defined as capital gain since the taxpayer has sold the future rents with the property. Similarly, a taxpayer that sells a bond with coupons attached recognizes ordinary income as to accrued but unpaid interest on the coupons, as such interest represents income from property accrued while the property was owned by the taxpayer.8/ Because of the complexity and variety of business transactions, complicated legal rules are required to determine whether a given property interest represents solely a right to income, rather than to the property itself. The law relating to the taxation of sales of mineral rights, for example, contains many rules for determining what sorts of interests in minerals are capital assets.

4. Capital Gain vs. Business Income. Such assets as business inventory and property "held by the taxpayer primarily for sale to customers in the ordinary course of his trade or business" (property "held for sale") are excluded from capital asset status because their sale generates the ordinary profits of the taxpayer's business. The distinction is that property used in a trade or business (such as an office building or a machine used in manufacturing) generally is treated as a capital asset, but property sold to generate profits in the ordinary course of the business (such as inventory) is not.

This distinction requires rules to distinguish investment property (a capital asset) from property sold in the ordinary course of business. One rationale underlying the holding period requirement is a view that appreciation in the value of an investment occurs over time (over more than six months under the current holding period requirement), while short-term profit is more indicative of business profits. The "held for sale" rule also distinguishes between investment property and property regularly sold.9/

However, the law does not contain a clear or precise test of whether a property is held for sale, probably because of the

elusiveness of the investment-business distinction in many common financial contexts. The key factor in determining whether a property is "held for sale" is the purpose of the taxpayer's holding. Frequently, a taxpayer has a mixed purpose for holding a property, yet the capital gain/ordinary income distinction requires that all or none of the gain be capital gain.

For example, land may be purchased with a view either to subdivide (a business purpose) or to hold in anticipation of appreciation (an investment purpose). If the land purchaser were to take a few steps towards subdividing, and then sell the entire property to realize an increase in value, there would be uncertainty as to whether the gain on the sale is capital gain or ordinary income.

There is an additional type of property that is not permitted capital asset status because of its close relationship to ordinary business profits. On occasion, a business will acquire property to secure from risk a source of supplies or some other form of beneficial business relationship. This can be done, for example, by buying futures contracts (to protect against price fluctuations in supplies) or by investing in a supplier or a customer. In some cases property acquired to protect a source of supplies or a market for a business is viewed as being sufficiently related to the day-to-day profits of the business that, like inventory, it is denied capital asset status.

D. Sale or Exchange

Another important requirement for treating income as capital gain is that it must result from a "sale or exchange." The Congress and the courts have never articulated a policy basis for the restriction of capital gain treatment to sales or exchanges.

Although there is no statutory definition of a "sale or exchange," the courts have held that a number of common transactions are not sales or exchanges. For example, the satisfaction of a legal claim is not a sale or exchange, so that any gain thereon is ordinary income. Under this rule, if a note from an individual is acquired at a discount and then the noteholder is paid in full by the individual, the noteholder has ordinary income.10/

E. Illustration of Problems Caused by Capital Gain/Ordinary Income Distinction

The rules relating to capital gains create a class of favorably treated income -- capital gain -- and a class of disfavored losses -- losses on non-business capital assets. This creates a tension between transactions on either side of the capital gain/ordinary income line that has resulted in a number

of problems for the tax law. Particular problems have arisen from attempts to convert ordinary income to capital gain, and from the inconsistent treatment of related items. A good example of a conversion problem is the "collapsible corporation," which is discussed in the next paragraph. Examples of inconsistent treatment of related items are discussed after collapsible corporations.

1. **Converting Ordinary Income to Capital Gain -- The Collapsible Corporation.** Often there is little practical difference between ownership of stock in a closely-held company and the underlying property used in the company's business. As a result, certain business property that is otherwise not a capital asset may be converted into the stock of a corporation, which generally is a capital asset, by merely incorporating the non-capital property. For example, suppose that a real estate developer forms a company to construct a building and then sells the stock after the building is completed. Most of the increase in the value of the stock would be attributable to the building, which would not be a capital asset in the developer's hands. The law contains intricate rules to prevent the use of corporations (known as "collapsible corporations") to convert ordinary income to capital gain in such cases. The real estate developer in the example likely would have ordinary income on the sale of stock under these rules.

2. **Inconsistent Treatment of Related Items -- The T-Bill Straddle.** The "T-bill straddle" illustrates the problems that can arise from inconsistent treatment of related items as a result of the capital gain/ordinary income distinction. Under the Code prior to the 1981 Act, a Treasury bill was not a capital asset, but a futures contract for Treasury bills was a capital asset. In a T-bill straddle, a taxpayer would construct a series of risk-free purchases and sales of Treasury bill futures contracts and Treasury bills which resulted in a net gain on the future contracts (a long-term capital gain) and an economically offsetting net loss on the Treasury bills (an ordinary loss). Although the T-bill straddle was subject to challenge by the IRS on several grounds, it appeared to offer the opportunity for substantial tax benefit even if the gain and loss were equal in amount, because of the inconsistent treatment of long-term capital gains and ordinary income.11/ The 1981 Act removed the special exclusion of T-bills from capital asset status, thereby eliminating the source of the inconsistent treatment.12/

3. **Inconsistent Treatment of Related Items -- Depreciation Recapture.** Current law allows a deduction against ordinary income for depreciation on certain assets used in earning income. Depreciation deductions result in a reduction in basis. Consequently, any depreciation deductions which reduce the basis of a depreciable asset below its fair market value present the

possibility of offsetting a deduction against ordinary income with a long-term capital gain. This occurs because the property could be sold for a gain equal to the amount by which depreciation has reduced the basis below fair market value, and most gain recognized on depreciable assets is long-term capital gain. In most cases, this possibility of inconsistent treatment is prevented by "recapturing" such "excess" depreciation when the asset is sold or exchanged. In general, the tax law requires that the amount of gain otherwise realized on the disposition of a depreciable asset (up to the amount of depreciation which has been claimed on that asset) be taxed as ordinary income. The principal exception to this rule is for real property which has been depreciated using straight-line rather than accelerated methods.13/

4. Other Inconsistency Problems. The T-bill straddle and depreciation recapture illustrate the problems which arise from inconsistent treatment of related tax items as a result of the capital gain/ordinary income distinction. The rules relating to depreciation recapture convert capital gain into ordinary income in order to compensate for deductions previously claimed. In other instances, the law taxes ordinary income in advance of the associated deductions. For example, if a corporation sells depreciable property to a wholly-owned subsidiary, all gain is ordinary income. This special rule prevents a related seller and purchaser from setting an artificially high sale price, thereby giving the purchaser a high cost basis in the sale property from which it can claim large depreciation deductions. If the related seller were treated as having capital gain on the sale, the tax thereon often would be less than the present value of the tax saving to the purchaser from the depreciation deductions.

The problem of inconsistent treatment of related items caused by the capital gain/ordinary income distinction in some instances results in the disallowance of deductions. For example, there are special rules that limit the deduction against ordinary income of "investment interest" incurred to carry capital assets. Similarly, the law limits the amount of long-term capital losses that individuals may use to offset ordinary income.

III. A History of the Capital Gains Taxation of Individuals

The method of taxing capital gains and allowing deductions for capital losses has been altered many times since the Federal individual income tax was imposed in 1913. In addition to the changes in the taxation of capital gains resulting from changes in the income taxation of so-called "ordinary income," numerous changes have been made that affect only capital gains income. The main items that have been altered are:

(a) the extent to which capital losses may be deducted, either against capital gains or against other income;

(b) the length of time an asset must be held for gain to qualify as a long-term capital gain;

(c) the proportion of the gain or loss (or net gain or loss for the year) includable in income for tax purposes; and

(d) the maximum marginal tax rate on any portion of capital gains or the maximum average tax rate on all capital gains of the individual.

However, throughout the many tax changes, two features of the tax law have remained unchanged:

(a) capital gains have never been completely excluded from income tax; and

(b) with the exception of the special treatment of commodities futures contracts enacted in the 1981 Act and extended to commodity options and certain exchange-traded stock options in the 1984 Act, capital gains have only been taxed at the time the holder's interest in the asset terminates rather than as they accrue.

Capital gains were separately defined in the tax law for the first time in 1922, and the basic definition of a capital gain, as described in the previous section, has remained essentially unchanged since that time. However, numerous exceptions to the general rules for defining a capital asset have been made. For example, sales of timber are treated as capital gains even though the sale may occur in the ordinary course of business. Similarly, royalty income for certain mineral properties is treated as long-term capital gain for tax purposes.

Because certain capital gains receive preferential tax treatment, taxpayers have expended considerable political and legal effort to expand the definitions of eligible transactions and to convert ordinary income into capital gains. As a result, there have been innumerable changes in the scope of transactions eligible for capital gains. In addition, the definition of eligible capital gains and the details of special treatment to be received by such gains have been accorded considerable attention by tax professionals both inside and outside the government.

This section is divided into four parts. The first part contains a brief outline of the taxation of capital gains from 1913 to the enactment of the current tax statute, the Internal Revenue Code of 1954. The second part gives a more detailed presentation of the taxation of capital gains from the enactment of the Internal Revenue Code of 1954 until the Revenue Act of 1978. The final part describes changes in the taxation of capital gains from 1978 through the present. A concluding section summarizes the discussion.

A. The Tax Treatment of Capital Gains from 1913 to 1953

1. 1913-1921. From the inception of the individual income tax in 1913 through 1921, capital assets were not explicitly defined, and realized gains on all assets were taxable in full as ordinary income. During this period, however, losses from the disposition of assets were subject to differing treatment. From 1913 through 1915, losses were not deductible at all. In 1916 and 1917, losses were only deductible to the extent of gains. From 1918 through 1921, losses were deductible in full against gains and other income.

2. 1922-1933. Special treatment for certain capital gains was first introduced in 1922. Generally, if the holding period of the asset was two years or less, any gain was fully includable in income without any special tax treatment, and any loss was fully deductible from ordinary income. If the holding period exceeded two years, some long-term capital gains received special treatment. The entire amount of gains was includable in income subject to tax but, at the election of the taxpayer, long-term gains could be taxed under an alternative tax at a rate of 12.5 percent. There was no netting rule for determining gains eligible for long-term treatment, as each item of gain or loss was taxed separately as long-term or short-term. During this period the top marginal tax rates ranged from 24 percent to 73 percent while the rate on the first $4,000 of taxable income ranged from 0.5 percent to 4 percent. Consequently, the alternative rate was of value only to taxpayers with very substantial incomes.14/

This treatment of long-term capital gains continued essentially unchanged from 1922 through 1933, but the treatment of losses differed. During 1922 and 1923, long-term capital losses were fully deductible against ordinary income. From 1924 through 1933 long-term losses were not deductible but were eligible for a 12.5 percent credit against taxes, subject to the limit that the tax saving from the credit could not exceed the tax reduction which would have resulted if the loss had been fully deductible.

3. 1934-1937. Between 1934 and 1937, the proportion of a capital gain that was includable in income, i.e., the inclusion ratio, was a decreasing function of the holding period. Five different holding periods were specified. For holding periods of 1 year or less, 100 percent of gains was includable in income; for holding periods of 1 to 2 years, 80 percent; for holding periods of 2 to 5 years, 60 percent; for holding periods of 5 to 10 years, 40 percent; and, finally, if the holding period was over 10 years, 30 percent of gains was includable in income. In 1934 and 1935, the maximum marginal tax rate was 63 percent, and in 1936 and 1937, the maximum rate was 79 percent. Given these rates, the highest marginal tax rates for a capital gain from an

asset held over 10 years was 18.9 percent in 1934 and 1935 and 23.7 percent in 1936 and 1937.

During this period, the inclusion ratio for a loss was the same as the inclusion ratio for a gain with a similar holding period. The taxpayer would compute each included gain and loss separately. Included losses were deductible to the extent of included capital gains plus $2,000.

4. 1938-1941. Beginning in 1938, the number of different inclusion ratios was reduced from five to three. For assets held 18 months or less, gains were taxed as ordinary income. For holding periods over one and one-half but not over two years, two-thirds (66-2/3 percent) of the gain was includable in income. For holding periods over two years, one-half (50 percent) of the gain was includable in income. In both of the longer holding period situations, the taxpayer could elect an alternative tax of 30 percent of the included gain, thus providing a maximum tax rate of 20 percent for gains with holding periods from one and one-half to two years, and a 15 percent rate for gains with longer holding periods. During this period, the maximum tax rate on ordinary income was between 79 percent and 81.1 percent.

In 1938 and 1939, the inclusion rate for losses remained the same as the inclusion rate for gains with the same holding period. Included losses were deductible against gains and against $2,000 of ordinary income. In 1940 and 1941, short-term losses -- losses on assets held 18 months or less -- were deductible only against short-term gains, and any excess could be carried over only to the immediately succeeding year. Net long-term losses, determined on the basis of the applicable exclusion percentage, were deductible against other income or were creditable at a rate of 30 percent of the recognized loss; taxpayers were required to take whichever treatment was less beneficial.

5. 1942-1953. In 1942, the differentiation of capital gains and losses by holding period was further simplified so that only two different categories of gains or losses were recognized -- those where the holding period was six months or less and those with a holding period of more than six months. The entire amount of so-called short-term gains was includable in income while only one-half (50 percent) of the amount of long-term capital gains was includable in income. Furthermore, long-term capital gains were, at the election of the taxpayer, subject to an alternative tax at a flat rate of 25 percent from 1942 to 1951 and 26 percent in 1952 and 1953. During this period the maximum marginal tax rate on ordinary income varied from 86 percent to 94 percent.

Beginning in 1942, the law contained a unified calculation of the effect of all capital transactions on taxable income that took into account gains and losses with different categories of holding periods. Long-term capital gains tax treatment was

available only for net capital gains, which were defined as the excess of net long-term capital gains over net short-term capital losses. During this period, capital losses were generally deductible against gains and were deductible against ordinary income up to a maximum of $1,000. Excess losses could be carried forward for five years, and all losses which were carried forward were treated as short-term capital losses.

Table 1.12 summarizes the tax treatment of capital gains between 1913 and 1953. It compares the top marginal tax rates on capital gains with the top marginal tax rate on other income. It also shows the asset holding periods required for taxation as a long-term gain, as well as the proportions of capital gains that were excludable from income for income tax purposes.

B. The Internal Revenue Code of 1954 and the Tax Treatment of Capital Gains from 1954 to 1978

The time span between the enactment of the Internal Revenue Code of 1954 and the Revenue Act of 1978 encompassed two distinct periods in capital gains taxation. Between 1954 and 1969, the prior tax treatment of capital gains continued essentially unchanged. Short-term gains were taxed as ordinary income. One-half of net capital gains was excluded from adjusted gross income, with the remainder nominally subject to tax at ordinary rates. An alternative tax of 25 percent on long-term gains remained available throughout the period.

Beginning in 1969, Congress in various ways limited preferences available for net capital gains. Significant changes were made in both 1969 and 1976 that raised tax rates, especially the maximum possible tax rates on capital gains.

1. Holding Period. The Internal Revenue Code of 1954 retained the definition of long-term capital gains and losses as those where the holding period of the asset was over six months. That division between short-term and long-term transactions continued through 1976. The Tax Reform Act of 1976 increased the holding period required for long-term treatment to nine months in 1977 and to one year beginning in 1978.

2. Capital Losses. For purposes of receiving special long-term capital gains treatment, the Internal Revenue Code of 1954 combined long-term and short-term gains and losses. Only net capital gains, that is, net long-term gains in excess of net short-term losses, were eligible for the lower tax rates applicable to long-term capital gains.

Capital losses were first offset against capital gains. Any excess losses were deductible against ordinary income to a limited extent. The maximum capital loss deduction against ordinary income was $1,000 between 1955 and 1976 and was then increased to $2,000 in 1977 and $3,000 in 1978 and thereafter.

Table 1.12

Summary of Tax Treatment of Capital Gains, 1913-1953

Years	Maximum marginal tax rate 1/ on capital gains (%)	Maximum marginal tax rate on ordinary income (%)	Exclusion ratio for capital gains (%)	Holding period required for exclusion ratio (years)
1913-1921	7-77	7-77	0	n/a
1922-1933	12.5	24-73	0	0-2
			50	2+
1934-1937	18.9-23.7	63-79	0	0-1
			20	1-2
			40	2-5
			60	5-10
			70	10+
1938-1941	15	79-81.1	0	0-1.5
			33	1.5-2
			50	2+
1942-1953	25-26	86-94	0	0-0.5
			50	0.5+

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1/ Tax rate which applies to a capital gain eligible for the maximum exclusion ratio.

Until 1969, each dollar of excess long-term loss produced a dollar deduction against ordinary income. After 1969, each dollar of excess long-term loss produced only a 50 cent deduction against ordinary income, while each dollar of excess short-term loss produced a dollar of deduction against ordinary income. Between 1954 and 1963 excess losses above the $1,000 limit could only be carried forward for five years. After 1963, unused losses could be carried forward indefinitely.

3. **Alternative Tax.** Before 1970, the alternative tax on capital gains effectively truncated the tax rate schedule by providing that, at the option of the taxpayer, all net capital gains could be taxed at 25 percent. This provision benefited only those high-income taxpayers with tax rates higher than 50 percent. Beginning in 1972, only the first $50,000 of net capital gains was eligible for the alternative tax; the remainder was taxed at one-half of ordinary rates.15/

4. **Minimum Tax on Tax Preference Income.** Beginning in 1970, items of tax preference -- including the excluded portion of net capital gains -- were subject to the minimum tax. Between 1970 and 1975, the minimum tax was 10 percent of total tax preferences less a $30,000 exclusion and less the amount of regular income tax liability. Regular taxes not used to offset minimum taxes could be carried forward for seven years.

Allowing for the fact that each dollar of gain generated a 50 cent tax preference which was reduced by the tax on the included gain, the extra tax from the minimum tax for a taxpayer in the highest bracket (70 percent) was 1.97625 percent in 1970, 1.75 percent in 1971, and 1.5 percent between 1972 and 1975.16/

In 1976, the minimum tax rate was raised to 15 percent; the exclusion was lowered to the larger of $10,000 or one-half of regular tax liability, and the carryforward of ordinary tax offsets was eliminated. As a result of these changes, the extra tax on net capital gains due to the minimum tax for a top-bracket taxpayer was raised to 4.875 percent.

5. **Maximum Tax on Personal Service Income.** Beginning in 1970, the maximum tax rate on earned income was lower than the maximum rate on other income. While the highest marginal tax rate on other income remained at 70 percent, the highest tax rate on earned income was 60 percent in 1971 and 50 percent in 1972 and thereafter.

Capital gains were not eligible for the maximum tax, but tax preferences, including the excluded portion of net capital gains, reduced the amount of earned income subject to the maximum tax by an equal amount. Each dollar of net capital gain produced 50 cents of tax preference and reduced the amount of income eligible for maximum tax treatment by 50 cents. This interaction, called

"poisoning the maximum tax," effectively raised the marginal rate of tax on affected long-term capital gains. In 1971, this poisoning could have raised the tax rate on an affected long-term capital gain by 5 percentage points. Between 1972 and 1978, the maximum effect was 10 percentage points.

Because of several interactions in the calculation of the maximum tax, the effect on capital gains varied widely depending on the sources of a particular taxpayer's income. The interactions tended to reduce the effects of the poisoning of the maximum tax and, under typical conditions, the net effect of poisoning was only about one-half to two-thirds of the maximum possible effect.

From 1971 to 1975, only preferences in excess of $30,000 poisoned the maximum tax. Under the changes enacted in 1976, preferences from the very first dollar poisoned the maximum tax. However, between 1971 and 1975, preferences considered for poisoning were the larger of the current year's preferences or the average of preferences in the five years ending with the current year. Thus, a very large gain poisoned the maximum tax for a total of five years -- the year in which the gain was realized and in each of the next four years.

6. **Maximum Rates on Long-Term Capital Gains**. Table 1.13 summarizes the maximum possible marginal tax rates on long-term capital gains from 1954 through 1978. The table shows the rates under each combination of provisions which might have affected the taxation of long-term capital gains. It should be noted that extremely complicated cases involving several combinations of tax provisions did not affect large numbers of taxpayers, nor did they affect large amounts of capital gains income.

In any given year, the highest possible marginal tax rate on an additional dollar of long-term capital gain occurred in situations where the long-term capital gain -- considered as the marginal income -- offset an existing short-term loss. In such situations, shown in the last row of Table 1.13, the applicable marginal rate is the statutory rate on ordinary income.

C. The Taxation of Capital Gains Since the 1978 Revenue Act

The 1978 Act included some fundamental changes in the taxation of capital gains realized after October 31, 1978.17/ The major change was that the inclusion ratio for net capital gains fell below 50 percent for the first time since 1942, as it was lowered from 50 percent to 40 percent. In addition, the 1978 Act repealed the alternative tax under which, at the option of the taxpayer, the first $50,000 of net gains was taxed at a 25 percent rate. The excluded portion of net capital gains was removed from the list of items of tax preference under the add-on minimum tax, and the poisoning effect of the capital gains exclusion under the maximum tax on personal service income was

Table 1.13

Maximum Marginal Tax Rates on Long-Term Capital Gains, 1954-1978 (%) 1/

Taxes Imposed	1954-63	1964	1965-67	1968	1969	1970	1971	1972	1973-75	1976-78
Alternative or Ordinary Tax	25.0	25.0	25.0	26.9	27.5	30.2	32.5	35.0	35.0	35.0
Alternative or ordinary tax, plus minimum tax	25.0	25.0	25.0	26.9	27.5	32.2	34.4	36.5	36.5	39.9
Alternative or ordinary tax, plus minumum tax, plus maximum tax	25.0	25.0	25.0	26.9	27.5	22.2	30.8	45.5	45.5	49.1
Alternative or ordinary tax, plus minimum tax, plus maximum tax, plus future maximum tax	25.0	25.0	25.0	26.9	27.5	41.5	47.6	53.2	52.7	49.1
Alternative or ordinary tax, plus minimum tax, plus maximum tax, plus future maximum tax, if there are sufficient foreign tax credits to eliminate the value of tax offsets under the minimum tax	25.0	35.0	25.0	26.9	27.5	45.6	52.3	58.5	58.0	52.5
Ordinary tax, if extra long-term gain offsets short-term loss	91.0	77.0	70.0	75.3	77.0	71.8	70.0	70.0	70.0	70.0

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1/ Due to interactions, the combined maximum rates from the various tax provisions are often lower than the sum of rates for the individual provisions. The tax rates include the effects of the temporary surtaxes in 1968 through 1980: 1968, 7.5%; 1969, 10%; and 1970, 2.5%. In 1970, the surtax had the effect of reducing the minimum tax. Tax rates listed for 1978 were effective through October 31, 1978.

eliminated. In combination, these four changes reduced the maximum possible rate of tax on a taxpayer's net long-term capital gain from as much as 52.5 percent to 28 percent (the product of the 40 percent inclusion rate and the 70 percent maximum ordinary income tax rate). Net long-term capital losses were still subject to a 50 percent exclusion rate.

In order to prevent certain high-income tax filers from paying little or no income tax, a new alternative minimum tax was enacted. For purposes of the alternative minimum tax, the excluded portion of net capital gains and certain itemized deductions in excess of 60 percent of adjusted gross income were considered to be items of tax preference and added to gross income less deductions to compute alternative minimum taxable income. This alternative base was subject to tax at rates ranging from zero percent on the first $20,000 to 25 percent on amounts in excess of $100,000. The alternative minimum tax so calculated was payable only if it exceeded the sum of ordinary tax plus any add-on minimum tax. Under the alternative minimum tax, the maximum marginal rate on any capital gain was 25 percent. Thus, while certain capital gains might be subject to tax under the alternative minimum tax, the alternative minimum tax did not increase the maximum possible marginal rate at which long-term capital gains could be taxed under the ordinary individual income tax.

The 1981 Act reduced the maximum marginal tax rate on ordinary income to 50 percent for 1982 and subsequent years. As a result, the maximum tax rate on long-term capital gains declined to 20 percent (the product of the 40 percent inclusion rate and the 50 percent maximum ordinary income tax rate). Under a special provision in the 1981 Act, the lower maximum tax rate for capital gains was effective for capital gains realized after June 9, 1981. The 1981 Act also lowered the highest alternative minimum tax rate from 25 percent to 20 percent (at $60,000 of alternative minimum taxable income).

In addition, special tax rules for regulated futures contracts were imposed in the 1981 Act. Regulated futures contracts provide that the holder may withdraw any profit on the contract on a daily basis without closing the contract and must deposit cash for any loss on the contract on a daily basis. Under the new tax rules, a holder of a regulated futures contract generally is taxed at year end on the accrued gain or loss on the contract as of the end of the year. The gain or loss on such contracts is treated as 60 percent long-term and 40 percent short-term, resulting in a 32 percent maximum tax rate. These "mark-to-market" rules are a unique case of a tax on gain as it accrues prior to the time the holder's interest in the asset is terminated. The Technical Corrections Act of 1982 expanded mark-to-market accounting to certain forward contracts in foreign currency that do not provide for the withdrawal of accrued

profit. The 1984 Act further expanded mark-to-market accounting and the 32 percent maximum tax rate to certain exchange-traded stock options held by investors, to all listed options held by options market makers, and to commodity options.

The 1982 Act made substantial changes in the alternative minimum tax. The base was expanded to be adjusted gross income plus all tax preferences (still including excluded capital gains) less certain itemized deductions. The tax is imposed at a rate of 20 percent on alternative minimum taxable income in excess of $30,000 for unmarried individuals, $40,000 for married persons filing a joint return, and $20,000 for a married person filing a separate return. Changes were also made in the ability to use tax credits against the alternative minimum tax. The changes in the 1982 Act do not affect the maximum rate on net capital gains, which remains at 20 percent.

Finally, the 1984 Act reduced the holding period for determining a long-term gain to over six months for assets acquired after June 22, 1984 and before January 1, 1988.

D. Summary

This section has reviewed the history of capital gains tax provisions applicable to individuals since the imposition of the Federal income tax in 1913. During that period, major aspects of the capital gains tax -- the percentage of long-term gains included in taxable income, the holding period (or, in some years, periods) for determining what gains are subject to the preferential rate (or rates), the loss offset provisions, and special provisions either to limit the maximum tax rate on long-term capital gains or to impose extra taxes on otherwise untaxed capital gain income -- have been changed frequently. In addition, there have been numerous changes, not reviewed here, including special provisions relating to what property can be classified as a capital asset, recapture rules for depreciable assets, rollover of realized gains, and the definition of a realization event.

The frequent changes in the tax treatment of capital gains have reflected changes in emphasis and philosophy, as well as changes that represented adjustments to other changes in the tax law, such as changes in marginal tax rates. At times, Congress has sought to encourage investment and reduce impediments to asset sales, to encourage the holding of assets for longer periods, to simplify the tax law, to increase the tax burden on high income individuals, and to minimize the effectiveness of tax avoidance strategies. The conflict among these objectives has contributed to the frequent changes in the tax law.

IV. An International Comparison of Capital Gains Taxation

This section presents a comparison of the levels of capital gains taxation in 10 OECD countries. The tax rate on capital gains depends both on the treatment of capital gains relative to

"ordinary" income, and on the level of income taxation generally. This summary will focus primarily on the former question.

Table 1.14 summarizes the principal features of the taxation of personal, non-business capital gains in 10 OECD countries. While there are substantial individual differences, the 10 countries tend to fall into 3 groups. One group includes the United States, Canada, and Sweden. While generally giving preferred treatment to capital gains compared to ordinary income, the countries in this group impose significant and roughly comparable taxes on realized capital gains. For example, Canada has a 50 percent exclusion compared to a 60 percent exclusion in the U.S. but, unlike the U.S., has no holding period limitation. Swedish taxation of long-term gains from stock has an inclusion rate similar to the United States, but with a longer holding period requirement. Movable property other than stock is treated more leniently in Sweden than in the United States as gains on such property are tax exempt after 5 years. In periods of low inflation, Swedish taxation of real estate gains is higher than in the United States, but the indexation of basis in Sweden probably has reversed that relationship in most of the recent past.

The second group of countries, which includes West Germany, Japan, the Netherlands, Italy, and Australia, tax personal non-business capital gains, particularly from the sale of securities, very lightly. In some of these countries, such as West Germany and the Netherlands, the concept of capital gains is not used in the tax system. This means that if gains are not business related they tend to be exempt from tax.18/

Because of recent legislation, taxation of capital gains in the United Kingdom and France now appears to fall between the first two groups. In France, where capital gains taxation used to be low, the legislative changes effective in 1978 mean that a significant amount of the gains from shares will be subject to a tax of 15 percent, although there is a substantial threshold. The top marginal personal tax rate on ordinary investment income is 60 percent. In the case of the United Kingdom, the maximum tax rate on gains is 30 percent, compared to a top tax rate of 75 percent on ordinary investment income. There is no holding period limitation. The United Kingdom introduced indexation of basis in 1982, with the result that taxation of capital gains accrued in future years will be significantly lower than in the United States.

Several of the countries that virtually exempt long-term portfolio gains do not extend this exemption to sales by holders of a "significant" percentage of a company's stock. For example, in West Germany half of the capital gains realized by a holder of more than a 25 percent share of a firm's capital are included in

Table 1.14

International Comparison of Taxation
of Individual Non-Business Capital Gains 1/

Country	Rules for taxation of individual non-business capital gains
United States	Net long term capital gains (held longer than 6 months) receive a 60 percent exclusion, with net short term gains fully taxed. Net short term losses plus 50 percent of long term losses are deductible against other income up to an annual limit of $3,000, with indefinite carry forward; special treatment provided for losses in stock of "small business corporations". Gains on a principal residence are deferred if reinvested within 2 years; a one-time exemption of the first $125,000 of gain is provided for taxpayers of age 55 or older.
Canada	All net gains receive a 50 percent exclusion, and an exemption for the first $1,000 of investment income can be applied to taxable capital gains. 50 percent of net losses are deductible from taxable income up to $2,000, with one year carry back and indefinite carry forward; 50 percent of losses on the sale of shares in non-public Canadian corporations are deductible without limit. Gains on a principal residence are tax exempt.
Sweden	Long term gains from equities (held longer than 2 years) receive a 60 percent exclusion, while short term gains are taxed. Gains on movable property other than equities are exempt after a 5 year holding period, with varying rates between 2 and 5 years. Losses are deductible only against gains, with a 6 year carry forward. Gains on a principal residence are taxable, with a variety of relief provisions. Long term gains on other real property receive a 25 percent exclusion and indexing of basis for inflation.

(continued on following page)

Table 1.14 (continued)

Country	Rules for taxation of individual non-business capital gains
West Germany	Gains are generally tax-exempt. Speculative gains (on real property held less than 2 years and other property held less than 6 months) are fully taxed after a DM1000 exemption. Significant holdings (ownership of more than 25 percent of share capital in the 5 years before a sale) generally receive a 50 percent exclusion, but sales of less than 1 percent of the total capital stock per year are tax exempt. Losses are deductible against taxable gains only in the year incurred.
Japan	Gains from securities sales are generally tax exempt. Speculative gains (from more than 50 transactions per year involving more than 200,000 shares) are taxable. Sales of controlling interests (holdings of 50 percent or more in the 3 years before a sale) are taxable if 10 percent or more is sold in one year or 25 percent or more is sold over 3 years. Gains which are taxable and long-term (held more than 5 years) receive a 50 percent exclusion, while short term gains are fully taxed, subject to a 500,000 yen exemption which is stacked first against short-term gains. Losses from taxable categories of gain are deductible from ordinary income and may be carried forward for 3 years. Gains on a principal residence are exempt up to 30,000 yen. Gains on other real property are subject to a penalty tax equal to to the greater of 40 percent of the gain or 110 percent of the tax assessed if the gain were included in income.

(continued on following page)

Table 1.14 (continued)

Country	Rules for taxation of individual non-business capital gains
Netherlands	Gains are generally tax exempt. Speculative gains are fully taxed, but provisions appear to be of limited application. Gains from sales of significant interests (family holdings of at least one third of share capital during the five years before a sale, with the taxpayer having at least 7 percent) are includable in income, with the option of a flat 20 percent tax rate. Gains on a principal residence are tax exempt.
Italy	Gains are generally tax exempt. Speculative gains are taxed at ordinary rates but provisions appear to have limited application, other than requiring a two year holding period for collectibles and a five year holding period for real property holding companies. Gains on a principal residence are tax exempt. A separate real property appreciation tax is assessed, with the rate depending on the amount of appreciation and varying from 3 percent to 30 percent for gains in excess of 200 percent of basis; some indexing for inflation is allowed.
Australia	All long-term gains (held more than 12 months) are tax exempt, while short-term gains are fully taxed. Gains on a principal residence are tax exempt.
United Kingdom	All gains above a L5000 exemption are taxed at a flat 30 percent rate, with indexing of basis beginning in 1982. Losses are deductible against gains but not against other income, and can be carried forward indefinitely. Gains on a principal residence are tax exempt.

(continued on following page)

Table 1.14 (continued)

Country	Rules for taxation of individual non-business capital gains
France	Habitual stock operations (annual sales which exceed 160 percent of holdings on the previous December 31) are fully taxed if such gains exceed other income, and otherwise can be taxed at a 30 percent rate at the taxpayer's election. Gains on substantial transactions (annual sales of more than FF150,000) are taxed at a 15 percent rate. Sales of significant interests (holdings of 25 percent or more in the 5 years before a sale) are taxed at a 15 percent rate. Losses are deductible from gains only in the year incurred. Gains on a principal residence are tax exempt. Gains from other real property held less than 2 years are fully taxed but are exempt if held 20 years, with some indexing for inflation between 2 and 20 years; various exclusions apply, including the first FF6,000 of taxable gains, and all gains if total property holdings are less than FF400,000.

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1/ No special treatment is provided for gains on principal residences or gains from real property other than principal residences unless otherwise noted.

income, with a threshold of sales of 1 percent in a year. Similarly, France imposes a 15 percent tax on gains from sales by holders of more than 25 percent of a firm's outstanding stock.

Some countries, including Japan, France, Sweden, and Italy single out capital gains realized from real estate for special, generally less favorable, treatment. In fact, Japan imposes tax rates on capital gains from real estate which exceed those on ordinary income.

Although the second group of countries has clearly lower taxation of personal capital gains than the U.S., there are other features of their tax systems that may moderate somewhat the apparent disparity in treatment. For example, some countries seem to have more expansive definitions of business income than does the United States.19/ In addition, countries that exempt capital gains from securities seem to provide fewer opportunities for tax free liquidations and distributions than does the United States. The corporate liquidation provisions of the U.S. Internal Revenue Code provide that if a corporation adopts a plan of liquidation and sells its assets within 12 months, then capital gains from the sales are not taxable at the corporate level and the liquidating distribution to the shareholder is regarded as a purchase of his stock and not as a dividend. In West Germany, for example, gain on the sale of assets in a liquidation is, at the corporate level, taxed at the rate on distributed income, and the liquidating distribution to shareholders is treated as a dividend (with integration credits). This treatment of liquidations may, however, simply mean that other types of corporate reorganizations are used instead, e.g., purchase by acquiring firms of the corporation's shares instead of direct purchase of its property.

It might be supposed that countries with low taxes on capital gains have correspondingly higher taxes on wealth because policymakers may regard capital gains and wealth taxes as close substitutes. However, this is not the case. The United States and Canada have relatively high taxes on wealth as a percentage of GDP in the form of taxes on real property. Revenues from property and wealth taxes are relatively modest in Japan, France, Italy, the Netherlands, and even in West Germany, despite the fact that West Germany has a relatively broad-based tax on personal wealth.

Very few countries provide separate data on tax revenues derived from the taxation of capital gains. The only comparison available for OECD members is that collections from personal capital gains in 1978 amounted to 0.5 percent of GDP in the United States and 0.2 percent of GDP in the United Kingdom.

Total collections are, of course, inadequate measures of the real costs imposed by capital gains taxes since they depend on the level of accrued gains compared to other forms of capital income in each country. Still, they do provide some indication

that capital gains taxes are a small share of gross product even in countries that tax capital gains relatively heavily. Moreover, capital gains taxes also account for a relatively small share of total capital income taxes -- about 8 percent in the United States and less than 3 percent in the United Kingdom. Thus, a comparison of capital gains taxation can only be a small part of a comprehensive comparison of the taxation of capital income.

The preceding discussion has concerned taxation of capital gains at the personal level. The pattern among countries of taxation of corporate level gains is less clear.20/ West Germany and Japan make no distinction between capital gains and other business income at the corporate level. However, West Germany offers significant opportunities for the deferral of tax when equipment is sold and the proceeds reinvested. Canada, which includes 50 percent of a corporate gain in income, and the United Kingdom, which taxes corporate gains at a flat 30 percent rate, have similar rollover provisions. In France, gains from assets held less than 2 years are taxed at normal rates and long-term gains are taxed at a 15 percent rate with a further 35 percent tax on distribution. The United States gives corporations the option of a 28 percent tax on long-term gains. As noted earlier, opportunities for tax-free liquidations seem more significant in the United States than in some other countries. Because of the difficulty in evaluating the significance of rollover provisions, firm judgments on the degree of corporate level taxation of capital gains in the United States compared to other countries are impossible; however, U.S. taxation seems clearly higher than in Canada and probably lower than in Japan.

FOOTNOTES TO CHAPTER 1

1/ The problems involved in defining a "capital asset" are discussed in the second section of this chapter.

2/ Unless indicated otherwise, the report (i) deals solely with a taxpayer with only net gains, (ii) uses the term "capital gain" in place of the term "net capital gain," as that term is used in the Internal Revenue Code (the "Code"), (iii) uses the term "ordinary income" to include a "net short-term capital gain," as that term is used in the Code, and (iv) uses the term "capital asset" to include "property used in the trade or business," as that term is used in section 1231(b) of the Code.

3/ Capital gains data used in this report are based solely on information reported by taxpayers on their Federal tax returns. However, taxpayers may understate capital gains income by failing to report gains, by understating the sales price or by overstating basis, or by misstating facts so as to reduce the amount of income includable in adjusted gross income. The Internal Revenue Service estimates that in 1981 individual taxpayers voluntarily reported only 59.4 percent of all capital gains (compared to over 75 percent in 1973). See U.S. Department of the Treasury, Internal Revenue Service, Income Tax Compliance Research: Estimates for 1973-1981, Washington, D.C., U.S. Government Printing Office, July, 1983.

4/ Feldstein and Slemrod, using 1973 data, present similar results which show that nominal gains greatly overstate real gains and that real gains on sales of corporate shares were positive only for groups with AGI over $100,000. See Martin S. Feldstein and Joel Slemrod, "Inflation and the Excess Taxation of Gains on Corporate Stock," National Tax Journal, June, 1978.

5/ An increase in the nominal value of an asset does not represent an increase in wealth if the asset's value increased less than the increase in the general price level during the period in which the wealth change is measured. Thus, the income resulting from a change in the value of an asset in any year is equal to the asset's value at the end of the year minus the purchase price in end of year dollars; that is, the purchase price multiplied by one plus the rate of inflation during the year. If the rate of inflation during the year exceeds the increase in the nominal value of the asset, the wealth change is negative.

6/ Current law requires a taxpayer to hold any asset more than 6 months to obtain long-term capital gain treatment on its sale or exchange. The history of changes in the holding period for determining when a gain or loss is "long-term" is reviewed in the next section of this chapter.

7/ There is a significant statutory exception to the general rule described in the text. Section 1235 grants capital gain treatment to sales of patents by individuals under a variety of circumstances in which such treatment might otherwise not be available, including sales by the individuals who created the patent.

8/ General tax rules suggest that the sale of a coupon with accrued but unpaid interest by a taxpayer with no other interest in the bond could be capital gain if otherwise qualified. Special rules enacted in the 1982 Act, however, convert a portion of the gain of such a "stripped" coupon to ordinary income.

9/ However, not all property regularly sold is considered "held for sale." For example, a trader on a public stock exchange does not hold stock "for sale to customers in the ordinary course of his trade or business" since he sells in the market and not "to customers."

10/ The Code, however, confers sale or exchange status on certain transactions. For example, amounts received by a holder of corporate indebtedness on retirement of the indebtedness are treated as received in exchange for the indebtedness. The Deficit Reduction Act of 1984 provided that for bonds issued after July 18, 1984, the appropriate portion of the gain on the disposition of bonds acquired at a market discount from the stated redemption price is to be treated as interest income. This provision was enacted to prevent certain tax shelter transactions in which taxpayers acquired market discount bonds using borrowed funds to take advantage of the ability to defer tax liability on ordinary income and convert ordinary income to capital gain.

11/ An individual taxpayer with offsetting gain and loss of 100 could have includable income of only 40 on the gain recognized on the Treasury bill futures (due to the 60 percent exclusion for long-term capital gain) and yet would have an ordinary deduction of 100 for the loss on the Treasury bills.

12/ The mark-to-market rules for regulated futures contracts, also adopted in the 1981 Act as discussed below, would have independently eliminated those T-bill straddles that used regulated futures contracts.

13/ It should be noted that even if "excess depreciation" is taxed as a capital gain on sale instead of being recaptured as ordinary income, the tax law still may discourage "churning" of assets. Churning will result in a net tax benefit only if the present value of tax benefits from additional future depreciation deductions resulting from the increase in basis exceeds the immediate capital gains tax paid when the asset is sold. For an elaboration of this point, see Gerard M. Brannon and Emil M.

Sunley, "The Recapture of Excess Tax Depreciation on the Sale of Real Estate," National Tax Journal, December, 1976.

14/ During this entire period, the individual income tax applied to a small fraction of the population, and only a small fraction of income was subject to tax. Between 1918 and 1920, taxable individual income tax returns only covered an average of 9.5 percent of the U.S. population. Between 1921 and 1929, the comparable figure was 5.2 percent of the population. Similarly, in 1918, taxable income was only 13 percent of personal income; in 1926, taxable income was only 14 percent of personal income. Furthermore, most taxpayers had -- by today's standards -- very low incomes. In 1920, 7.3 million tax returns were filed. Returns with less than $2,000 of income represented 37 percent of all returns and included 17 percent of income. Returns with incomes of less than $3,000 represented 72 percent of total returns and 43 percent of income. Finally, 91 percent of returns (with 64 percent of income) had incomes below $5,000. The top tax rate of 77 percent applied to taxable income over $1,000,000. There were only about 30 such returns.

15/ In 1970 and 1971, all gains were eligible for the alternative tax, but the alternative tax rate was 29.5 percent in 1970 and 32.5 percent in 1971.

16/ The computation for 1970 is affected by the 2.5 percent surtax which applied to ordinary or alternative taxes.

17/ The reduced inclusion rate for long-term capital gains enacted in the 1978 Revenue Act applied to sales, exchanges, and installment payments after October 31, 1978. However, the changes in the minimum tax provisions and the elimination of the alternative tax on capital gains did not take effect until 1979.

18/ See, for example, the country summaries in Cahiers De Droit Fiscal International, Volume LXI B, The Definition of Capital Gains in Various Countries, Proceedings of the 1976 Jerusalem Conference.

19/ See, for example, the "General Report" by Yaakov Neeman in the Conference volume referred to in footnote 18.

20/ In 1978, U.S. revenues from the taxation of corporate capital gains amounted to 27 percent of the tax revenues from gains at the personal level.

Chapter 2

ECONOMIC INCENTIVES AND CAPITAL GAINS TAXATION

In general, the cost of government spending programs is measured by the market value of resources purchased by the Federal government, and thereby diverted from private use. In addition to these direct costs, detailed in the Federal budget, the method of raising revenue to finance Federal activities can impose additional costs on the economy by distorting economic decisions within the private sector. The level of these additional costs -- sometimes referred to as the "excess burden" or "deadweight loss" of taxation -- can be influenced by altering the tax structure used to finance any level of government activity.1/

This chapter discusses the economic distortions that result from the taxation of capital gains in the context of the current U.S. income tax. These distortions relate to private sector decisions that affect productivity and economic growth -- decisions to save or to consume, decisions to sell or to hold assets with accumulated gains, and decisions on how to allocate wealth among alternative financial claims and productive assets. This chapter describes and measures these distortions, and shows how they have been altered by recent legislation.

The first section of the chapter briefly reviews the concept of economic efficiency and indicates generally how taxes that drive a wedge between prices paid by buyers and prices received by sellers reduce the efficiency of resource use. Three economic choices distorted by a tax on capital gains are described: (a) the choice between present and future consumption; (b) the choice among types of financial claims and among productive assets; and (c) the decision to sell assets with accrued gains or losses. The ways that changes in the capital gains tax alter these economic distortions are then discussed.

The second section focuses on the effects of the capital gains tax on the incentive to save and on the choice among different forms of saving. The magnitudes of these incentive effects depend on the holding period and on the future inflation rates expected by today's potential buyers of financial claims and physical assets. It is shown how the real effective tax rate on returns in the form of asset value appreciation varies with the rate of inflation, the gross-of-tax real rate of return, the holding period of the asset, and the nominal tax rate on realized capital gains. This effective tax rate is also compared to the tax rate imposed on returns to saving received in the form of cash flow income. Empirical evidence is presented which shows the average effective tax rate imposed on gains realized in 1973 and in 1977. These data are used to indicate how the average

effective rate would have been reduced if the 1978 and 1981 law changes had been in effect in 1977, and if the rate of inflation had been lower.

Section III discusses the inefficiency resulting from the fact that the capital gains tax is normally triggered by a decision to sell assets. A measure of the "price" of an asset purchased with the proceeds of the sale of another asset is calculated; this price depends on the number of years the asset sold has been held, the average real rate of appreciation of the asset, the rate of inflation, and the rate of tax on realized capital gains. Data are then presented showing how capital gains taxes affected the price of asset sales in 1973 and 1977 for different classes of taxpayers, and how this price would have been reduced if the 1978 and 1981 changes had been in effect in 1977.

The final section of the chapter briefly summarizes the findings and describes their implications for tax policy.

I. A General Discussion of Economic Efficiency Losses

Efficiency is generally defined as a condition in which it is impossible to improve the welfare of one individual without reducing or leaving unchanged the welfare of other individuals in the economy. It follows that economic efficiency is reduced by laws and institutions that prevent people from engaging in mutually beneficial exchanges, or that impose impediments to those exchanges which are unrelated to any real costs from the activity involved.

Economists have demonstrated that, under generally plausible assumptions, competitive markets give rise to an efficient allocation of resources in the absence of external economies or diseconomies. In other words, efficiency results if all the costs and benefits of any market transaction are "internalized" in prices facing market participants. Externalities generally result when property rights are difficult to define, so that someone can use a scarce resource without paying a price (for example, a firm that pollutes the environment) or a producer is prevented from claiming property rights in generalized benefits he produces (for example, the increase in knowledge from research activities, when the producer cannot claim full property rights to the new knowledge).

The discussion of economic efficiency conditions and of the weight that should be given to efficiency considerations in public policy choices has been a major activity of the economics profession in recent decades and need not be reviewed in detail here. The general thrust of this discussion, however, is worth noting. In an economic system placing a high value on free choice and consumer sovereignty, blocking or impeding voluntary

exchanges or limiting competition causes a loss of economic efficiency by preventing transactions from which both parties gain. In the absence of significant externalities, economic efficiency is reduced by disallowing such transactions or by imposing costs that make the price paid by buyers differ from the price received by sellers.

Most taxes impose efficiency losses on the private sector because they impose a wedge between the price paid by a buyer and the price received by a seller in a market transaction. The efficiency loss results because, in the absence of the tax, there exists a price lower than the price paid by the buyer and higher than the price received by the seller at which a sale would benefit both parties. Marginal buyers and sellers -- those with relatively small net gains from the transaction -- are inhibited from making the transaction by the presence of the tax. If the tax wedge is large, the efficiency losses from excluding these marginal buyers and sellers can be quite large.

All taxes imposed on the returns from market activity can give rise to efficiency losses. For example, an excise tax on one commodity can impose an efficiency cost by discouraging the production and consumption of the taxed good and reallocating resources to goods with a lower value when measured at prices reflecting real social benefits.

A general sales tax imposed at equal rates on all goods reduces efficiency by distorting the choice between market and non-market activities. In the long run, people can acquire scarce resources in two ways -- by selling their labor or capital services on the market and using the resulting money income to purchase goods that others sell, or by producing goods and services for themselves outside of markets. By taxing the former and not the latter, a general sales tax drives a wedge between the relative returns from non-market and market activities. In other words, a general sales tax distorts the choice between labor and leisure, if the latter is defined broadly to include all uses of time other than work for monetary compensation.

A broad-based income tax 2/ also distorts the choice between labor and leisure, and in addition distorts the choice between current and future consumption by driving a wedge between the price paid by users of capital services and the return to saving. The present value of tax liability can be reduced by advancing consumption from the future to the present, either by borrowing or by reducing saving.

In theory, a lump sum tax on all individuals would not create distortions because it would be impossible to avoid such a tax by altering economic behavior. However, it is impractical to design a completely distortion-free tax system based on any measure of an individual's welfare because overall well-being can in practice only be estimated from the subset of activities that

give rise to monetary transactions. In addition, a tax system that assesses relatively higher tax burdens on the more affluent members of society is consistent with generally accepted views of fairness. Some economic distortions might be regarded as the cost of an equitable tax system. Finally, focusing only on the distortions of taxes ignores the large benefits from financing certain public activities -- those that either cannot be handled efficiently by private markets or those that would be underfinanced in terms of broader social policy objectives.

Notwithstanding these qualifications, it is important to consider changes in the tax structure that might increase economic efficiency. In particular, changes in the capital gains tax affect the specific distortions resulting from the taxation of capital gains, as well as the distortions imposed by the U.S. income tax generally, to the extent that tax rates must change in the long run to offset the revenue consequences of changes in capital gains taxation. The discussion below reviews specific distortions caused by the capital gains tax and how these distortions were affected by provisions of the Revenue Act of 1978 (the 1978 Act) and the Economic Recovery Tax Act of 1981 (the 1981 Act).

The specific rules governing capital gains taxation are one part of a complex income tax system. The efficiency effects of changes in the capital gains tax must be evaluated in the context of the entire U.S. income tax system; they are not independent of the tax rules applied to other forms of market income. The analysis in this report views capital gains taxes as one portion of the U.S. personal income tax and regards the other parts of the tax structure as fixed. Any more general discussion of tax reform would have to consider changes in the entire system of taxing capital income. In particular, it is important to note that conceptually ideal rules for taxing realized capital gains as part of an ideal tax system 3/ might not be appropriate in the context of the existing tax structure.

The current U.S. income tax has the following five distinctive features that are especially relevant for an analysis of changes in the tax treatment of realized capital gains.

(a) The income tax has a graduated rate structure, with a maximum rate of 50 percent (70 percent prior to the 1981 Act).

(b) Most income from work effort is fully included in the tax base, but most fringe benefits are excluded.

(c) Income from saving is partially taxed. Some forms of returns to saving are taxed at the same rates as labor income (for example, most personal interest income and dividends in excess of the $100 exclusion), while other forms of returns to saving are completely untaxed (for

example, income accumulated within IRAs, Keogh Plans, and employer-contributed pension funds, interest on state and local bonds, and imputed rent from investment in owner-occupied housing and other consumer durables). Returns to saving in the form of asset appreciation are taxed only upon realization and then at a reduced rate.

(d) The effective tax rate imposed on the real return to saving rises during a period of inflation because the tax rules do not take into account the decline in the real value of the principal amount invested.

(e) Interest payments are deductible in computing income subject to tax. The deductibility of interest, combined with the graduated rate structure and the existence of tax preferred assets, allows some taxpayers in high tax brackets to earn arbitrage profits by incurring fully deductible debt to purchase partially taxed or untaxed assets.4/

Under this complex tax structure, the taxation of capital income varies with the characteristics of both taxpayers and assets. Changes in the tax treatment of realized capital gains alter existing distortions of three specific economic choices.

First, any tax on capital gains distorts the choice between present and future consumption by subjecting to tax an important component of the return to saving. Reducing the tax rate on realized capital gains would reduce the tax bias against saving by lowering the overall tax wedge imposed on income from capital.

Second, the taxation of capital gains at rates below those applied to most forms of cash flow capital income favors those economic activities where returns typically accrue in the form of an increase in the capitalized value of future cash receipts, rather than as an immediate cash flow yield to capital. These "natural deferral" activities include mining, energy resource development, other activities with long construction periods, and investments in the development of new products and services. Reducing the capital gains tax without lowering tax rates on other income would increase the tax bias that favors these activities, compared to other capital investments.5/ In addition, by favoring asset appreciation over cash flow earnings, the capital gains preference may encourage corporations to retain profits rather than to distribute them. However, the issue of how capital gains taxes and dividend taxes affect corporate financial policy has not yet been fully resolved.6/

Third, the taxation of capital gains upon realization rather than as accrued discourages the sale of appreciated assets, and encourages taxpayers to sell assets that have declined in (nominal) value. In particular, when assets increase in value more rapidly or more slowly than expected or when a taxpayer's

personal circumstances change unexpectedly, the taxpayer's perception of his optimal portfolio also changes. In that case, a capital gains tax triggered by an asset sale distorts the decision to retain or sell assets. If an asset has an accumulated gain, the tax discourages transactions that, in the absence of the tax, would have been mutually beneficial. If the asset has an accumulated loss, the tax encourages sales that otherwise might not be perceived as beneficial to the buyer and seller. Finally, in those cases where recognition of gain is linked either to change in management (for example, the sale of a small business) or to a specific production decision (for example, cutting down more trees), the taxation of gains upon realization could reduce productive efficiency. Lowering the capital gains tax reduces this tax bias against the realization of gain on appreciated assets.

Thus, under our current tax structure, reducing the capital gains tax would increase efficiency in two ways -- by reducing the distortion between present and future consumption and by removing an impediment to sales of appreciated assets (and removing a subsidy to sales of assets with accrued losses). At the same time, reducing the capital gains tax would decrease efficiency by increasing the distortion in choices among assets, encouraging savers to purchase assets that yield a return in the form of price appreciation and thereby increasing the tax bias that favors investment in "natural deferral" activities.

Finally, it is worth commenting briefly on the relationship between the capital gains tax and risk taking. One can view the total return to a particular investment or financial claim as a combination of a flow of payments (such as interest, dividends, or rent) and an increase in the market value of an asset. The latter results either from a change in the future expected net earnings from the asset, or from a change in the rate at which such earnings are discounted. Under current law, the favorable tax treatment of appreciation of capital assets, relative to cash flow returns, may encourage risk taking if capital gains are associated with risky assets.

In fact, discussions of capital gains taxation often presume a close relationship between asset value appreciation and the risk component of return to investment. It is certainly true that a large component of the return to suppliers of capital in particularly risky industries and new ventures accrues in the form of asset value appreciation because firms engaged in such investments are understandably unwilling to commit themselves to high fixed interest rates or high dividend payout ratios. At the same time, there are many ways to structure relatively low risk investments so that the returns to the suppliers of capital accrue in the form of asset value appreciation rather than periodic cash payments. The most common example is the retention of earnings by mature corporations. Annual earnings per share are only partially distributed to shareholders, with the

undistributed portion reinvested to increase share values. Thus, a certain component of capital gains from corporate stock may be viewed as anticipated on average as a result of corporate financial policy, rather than as an unexpected windfall. Similarly, in some "natural deferral" industries (for example, timber growing), a substantial share of the reward for "waiting" accrues in the form of predictable growth in asset values rather than as a flow of revenues.

In general, the proportion of return that accrues in the form of capital gains is correlated only in a very loose way with the riskiness of an asset. For this reason, special treatment of capital gains, relative to other forms of returns to saving, is a fairly poorly targeted method of offsetting any bias against risk taking that might result from taxing the returns to saving in a tax system with progressive rates and without complete loss offsets.7/

II. The Effects of Capital Gains Taxation and Inflation On Saving Incentives and Asset Choices

A. Introduction

This section discusses the effects of capital gains taxation on the incentive to save and on the incentive to purchase assets that provide returns in the form of appreciation rather than cash flow; the interaction between inflation and capital gains taxation is stressed. Potential investors are considered to be facing three choices -- current consumption, purchase of an asset that appreciates in value in anticipation of a future stream of cash returns, and purchase of an asset that immediately yields a periodic flow of cash returns in the form of dividends, rental payments or interest income. The latter two assets will be labeled "growth assets" and "yield assets", respectively, for the remainder of the discussion; assets which offer both annual cash returns and potential appreciation can be viewed as linear combinations of these two polar cases.

A tax on the return from holding assets distorts the choice between current and future consumption because the net return received by any saver is less than the social return from capital investment, i.e., the increased future consumption opportunities for the entire society. The tax creates an economic inefficiency because net social welfare could be improved by shifting resources from current to future consumption.

The bias in favor of current consumption which results from taxes on the returns to saving is exacerbated under the U.S. income tax because the net income from saving is measured improperly when the price level is changing. During a period of inflation, nominal capital gains and interest income reported for tax purposes overstate real income because they fail to account

for the decline in the real purchasing power of the investor's principal. Thus, during a period of inflation, the effective tax rate imposed on the real return to saving is considerably higher than the nominal tax rate.

While the capital gains tax, like all income taxes, encourages current consumption relative to saving, it also is not neutral among alternative forms of saving. Since the tax is imposed upon gains as realized rather than as accrued, growth assets are taxed preferentially relative to yield assets. Yield assets are taxed annually at the taxpayer's statutory marginal tax rate; in contrast, the return from growth assets is allowed to accumulate tax-free until the asset is sold and is then taxed at a preferential rate.

These two different distortions of individual behavior make it important to identify the particular efficiency effects associated with different methods of reducing capital income taxation. For example, increasing the fraction of capital gains excluded from taxable income reduces the tax bias that favors consumption over saving but increases the tax bias that favors growth assets over yield assets. A reduction in the tax rate on all forms of capital income by, for example, reducing the top marginal tax rate from 70 to 50 percent, reduces the tax bias against saving without increasing the tax bias in favor of growth assets over yield assets.

The remainder of this section provides measures of the effective tax rates on growth and yield assets. In the calculations presented below, growth assets are defined as assets for which the entire return is in the form of appreciation in value, while yield assets are defined as assets for which the entire real return is in the form of annual monetary payments and the nominal value of the asset increases in proportion to the general price level. First, it is shown how the effective tax rates on growth assets and yield assets vary with the holding period, the rate of inflation, the exclusion rate for capital gains, and the marginal tax rate. Then, illustrative calculations are presented showing the effects on the effective tax rates on the two different types of assets of the 1978 capital gains tax changes, the reduction in the top marginal rate in 1981, and the recent decline in the rate of inflation. Finally, empirical evidence from special IRS studies on sales of capital assets is used to show the effective tax rates paid on the gains from corporate shares and from non-business real estate sold in 1973 and 1977, and to show how 1977 effective tax rates would have fallen if the 1978 law changes had been in effect.

B. The Effective Tax Rate on Capital Gains

The effective tax rate on the return to holding an asset with a positive before-tax rate of return is defined as:

$$t = (g - n)/g \quad \ldots (1)$$

where t is the effective tax rate, g is the before-tax rate of return, and n is the after-tax rate of return.

Suppose an investor purchases an asset that earns no net cash returns, but appreciates in value at a rate of g per year. Assuming an initial purchase price of one dollar, the nominal value (V) of the asset after k years is:

$$V = (1 + g)^k \quad \ldots (2)$$

If the asset is sold after k years, the investor must pay a capital gains tax (per dollar of initial investment) of:

$$T = am((1 + g)^k - 1) \quad \ldots (3)$$

where a is the percentage of net capital gains included in taxable income (50 percent prior to 1978 and 40 percent under current law), and m is the taxpayer's marginal tax rate.

In the absence of inflation, the real after-tax rate of return, n, is the annual growth rate at which one dollar increases in value to the amount realized after k years, net of capital gains tax. Thus, the real after-tax rate of return, absent inflation, is obtained from the equation:

$$(1 + n)^k = (1 + g)^k - T \quad \ldots (4)$$

Substituting (3) into (4), and solving for n yields:

$$n = ((1 + g)^k(1 - am) + am)^{1/k} - 1 \quad \ldots (5)$$

Equation (5) shows that the after-tax real rate of return depends on the before-tax rate of return, the holding period, the marginal tax rate, and the inclusion rate of net capital gains in taxable income. For any before-tax return, the after-tax return increases, and the effective tax rate is thus lower, the longer the holding period and the lower the tax rate on realized gains. The effective tax rate is lower for longer holding periods because gains are allowed to accumulate tax free. The longer the asset is held, the greater the benefit from deferring the tax on accumulated gains.

For yield assets, the effective tax rate is m, the taxpayer's marginal rate, and the real after-tax return is simply:

$$n = g(1 - m) \quad \ldots (6)$$

If there were no capital gains exclusion (a=1) and the growth asset were sold within the first year (k=1), then the effective tax rate on growth assets would be the same as the effective tax

rate on yield assets. That is, Equation (5) reduces to Equation (6) when a=1 and k=1.

Inflation significantly increases the real effective tax rate on the returns from capital assets. Under current law, the computation of taxable income on the returns from a capital asset fails to take into account the change in the value of money between the time of purchase and the time of sale of the asset. If, for example, an asset is purchased for one dollar and later sold for two dollars, there is a capital gain of one dollar under current tax rules. However, if all prices had doubled over that time period, the real increase in purchasing power from holding the asset would be zero. In effect, the one dollar invested when the asset was purchased is equivalent to two dollars at the price level prevailing at the time of sale, but a capital gains tax must still be paid.

More generally, the capital gains tax, T, can be expressed as:

$$T = am[(1 + g)^k(1 + p)^k - 1] \quad \ldots (7)$$

where p is the (assumed constant) annual rate of inflation. The first term in brackets in Equation (7) represents the value in nominal dollars of one dollar invested k years earlier. The nominal value of the asset after k years depends on both the annual growth rate in real value, g, and the annual rate of increase in the price level, p. The tax is imposed on the difference between the value at the time of sale, in current prices, and the value at the time of purchase, in prices prevailing k years earlier.

In the presence of inflation, the after-tax real yield is the annual growth rate at which 1 dollar invested in year 1 will increase in value to the amount realized after k years, net of capital gains taxes, where both before-tax proceeds and taxes paid are expressed in year 1 dollars. Thus, the real after-tax rate of return is computed from the equation:

$$(1 + n)^k = (1 + g)^k - (T/(1 + p)^k) \quad \ldots (8)$$

Substituting (7) into (8), the net rate of return is equal to:

$$n = ((1 + g)^k(1 - am) + am/(1 + p)^k)^{1/k} - 1 \quad \ldots (9)$$

Equation (8) shows that the net rate of return depends on the before-tax rate of return (g), the holding period (k), the percentage of capital gains included in taxable income (a), the taxpayer's marginal tax rate (m), and the rate of inflation (p). For any given real before-tax return, the after-tax rate of return is greater for longer holding periods and smaller for larger values of the percentage of capital gains included in

taxable income, the marginal tax rate, and the rate of inflation. Thus, the real effective tax rate falls with increases in the holding period, but rises with increases in the rate of inflation.

For yield assets, the real effective tax rate also increases with the rate of inflation because the nominal appreciation in the value of the asset needed to maintain the real value of the investor's wealth is subject to the capital gains tax upon sale. The expression for the after-tax rate of return for a yield asset is:

$$n = [(1 + g(1 - m))^k - am(1 - (1/(1 + p)^k))]^{1/k} - 1 \quad \ldots (10)$$

The second term in the brackets in Equation (10) represents the reduction in the after-tax yield caused by taxation of nominal appreciation that just compensates for inflation. If there were no tax on nominal appreciation (a=0) or no inflation (p=0), Equation (10) reduces to Equation (6) and the real effective tax rate is equal to the marginal tax rate, m.

Table 2.1 illustrates how changes in the holding period and the rate of inflation alter the effective tax rates on the returns to growth and yield assets. The calculations assume a 60 percent exclusion, a 50 percent marginal tax rate, and a real before-tax rate of return on growth assets of 4 percent. The nominal before-tax rate of return is higher for those cases with higher inflation. It is assumed that the real before-tax return on yield assets adjusts to keep after-tax returns equalized on both growth assets and yield assets for a top-bracket investor. Thus, the table shows how alternative assumptions about expected inflation rates and holding periods affect the relative before-tax returns, or the relative cost of capital, between activities where the return is in the form of annual cash flow and activities in which the return is in the form of appreciation.

Table 2.1 demonstrates that the effective tax rate on growth assets increases with inflation, but declines with increases in the holding period because of the benefits of tax deferral. For an asset held one year and one day, the effective tax rate is 20 percent with no inflation (40 percent of the 50 percent marginal tax rate), 29.8 percent with a 2 percent inflation rate, 43.8 percent with a 5 percent inflation rate, 57.0 percent with an 8 percent inflation rate, and 73.6 percent with a 12 percent inflation rate. For longer holding periods, the real effective tax rate is lower and is relatively less sensitive to changes in the rate of inflation. For example, for assets held 20 years, the effective tax rate rises from 14.9 percent with no inflation to 27.3 percent with 12 percent inflation.

The examples in Table 2.1 illustrate the ambiguity in determining "the" effective tax rate on the return on

Table 2.1

Effects of Inflation and Holding Period on Effective Tax Rates on Growth Assets and Yield Assets for a Taxpayer in the 50 Percent Bracket with a 60 Percent Exclusion 1/

Holding period (years)	Annual inflation rate (%)	Annual real after-tax return (%)	Annual real before-tax return on yield asset (%)	Effective tax rate (%)	
				Growth asset	Yield asset
1	0	3.2	6.4	20.0	50.0
	2	2.8	6.4	29.8	56.1
	5	2.2	6.4	43.8	64.9
	8	1.7	6.4	57.0	73.1
	12	1.1	6.4	73.6	83.5
10	0	3.3	6.6	17.4	50.0
	2	3.0	6.6	24.2	54.1
	5	2.7	6.6	32.2	58.9
	8	2.5	6.6	38.2	62.6
	12	2.2	6.6	43.9	66.0
20	0	3.4	6.8	14.9	50.0
	2	3.2	6.8	19.3	52.6
	5	3.1	6.8	23.4	55.0
	8	3.0	6.8	25.7	56.4
	12	2.9	6.8	27.3	57.3

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1/ The annual real before-tax rate of return on growth assets is 4 percent. The annual real after-tax return is the same on both assets. The calculations assume the growth asset has no cash flow returns and the real market value of the yield asset remains unchanged.

appreciating assets. For assets held for a long period of time, the effective tax rate can be extremely low when the inflation rate is zero; moreover, it does not rise dramatically with moderate increases in the rate of inflation. On the other hand, the effective tax rate on the return to appreciating assets can be extremely high if the taxpayer expects to sell the asset within a short period of time and if a significant portion of the increase in nominal value is expected to result from inflation rather than from real appreciation.

In contrast, the effective tax rate on yield assets does not vary as much with the holding period because the portion of the tax imposed on the real return is assessed every year. For an inflation rate of 8 percent, the effective tax rate on yield assets is 73.1 percent for a 1 year holding period and 56.4 percent for a 20 year holding period; in contrast, the effective tax rate on growth assets declines from 57.0 percent to 25.7 percent for the same increase in holding period. As the holding period increases, the required before-tax return on yield assets, relative to growth assets, increases. In contrast, the relative before-tax returns on the two assets are not altered by changes in the rate of inflation. For a holding period of one year, the effective tax rate on yield assets rises from 50.0 percent in the absence of inflation to 83.5 percent at an inflation rate of 12 percent, while the required before-tax return remains at 6.4 percent when growth assets earn a 4 percent before-tax return. For a holding period of 20 years, the effective tax rate on yield assets varies from 50.0 percent with no inflation to 57.3 percent at an inflation rate of 12 percent. The required before-tax return, for a 20 year holding period, is 6.8 percent at all inflation rates when the before-tax return on growth assets is 4 percent.

C. Effects of the 1978 and 1981 Tax Changes

The 1978 Act substantially reduced the effective tax rate on the return from appreciating assets by lowering the capital gains inclusion rate from 50 percent to 40 percent, removing capital gains from the base of the add-on minimum tax, and eliminating the requirement that taxpayers offset the untaxed portion of capital gains against income entitled to the benefits of the maximum tax on personal service income. However, the 1978 Act did not reduce the maximum marginal tax rate on ordinary income. The 1978 Act did lower marginal tax rates for many taxpayers by increasing exemptions, widening brackets, and reducing some statutory rates; however, most, and in many cases all, of the effect of this rate reduction was offset by bracket creep between 1977 and 1981.

In contrast, the 1981 Act lowered the marginal tax rate applied to all forms of income. In particular, rates were significantly reduced in the highest income bracket, where the

rate applied to fully taxed income from capital was reduced from 70 percent to 50 percent.

The decline in inflation that began in late 1981 has also substantially reduced real effective tax rates on the return to saving. Between 1976 and 1981, the average annual rate of inflation, as measured by the GNP deflator, was 7.9 percent. In contrast, the GNP deflator increased at an annual rate of 4.4 percent in 1982, 3.8 percent in 1983, and 3.7 percent in 1984.

Tables 2.2 and 2.3 show how the 1978 and 1981 tax changes and the decline in anticipated rates of inflation have raised the expected real after-tax rate of return to savers, and lowered real effective tax rates on the returns from different types of assets. In the examples illustrated in the two tables, the expected real before-tax yield on growth assets is taken to be 4 percent. The examples also assume that both growth and yield assets are held for 6.5 years. This holding period assumption corresponds to the average holding period, weighted by dollar volume of sales, of corporate shares sold in 1977.

The holding period assumption used to estimate effective tax rates represents a lower bound number, and therefore overstates average effective tax rates, because the computation of the average holding period does not take account of assets that are not sold during the lifetime of the purchaser. For growth assets held until death, the effective tax rate is zero because of the step-up in basis at death. Moreover, the average holding period for corporate shares is considerably shorter than the average holding period for other assets for which data are available.

Table 2.2 shows the effect of changes in tax laws and the decline in expected inflation on the effective tax rate on the return on growth and yield assets for the highest bracket taxpayer under the assumption that after-tax returns on the two asset types are equalized for taxpayers in the highest tax bracket. (Calculations for an alternative and less extreme assumption -- that after-tax returns are equalized for an average investor -- are presented in Table 2.3). At an 8 percent inflation rate, the change in capital gains taxation in the 1978 law reduced the effective tax rate on growth assets for a top bracket taxpayer from 117.6 percent to 63.5 percent. The extremely high real effective tax rates under both 1977 and 1979 law result from the fact that inflation accounts for two-thirds of the 12 percent nominal before-tax return on assets. However, the 1978 capital gains tax reduction by itself cut the effective tax rate almost in half and increased the anticipated real after-tax return corresponding to a 4 percent before-tax real return from -0.7 percent in 1977 to 1.5 percent in 1979. The reduction in the top bracket rate from 70 percent to 50 percent in the 1981 Act further increased the real expected return to 2.2 percent, and lowered the effective tax rate to 44.4 percent. At

Table 2.2

Effects of Inflation and Tax Law Changes
on Effective Tax Rates on Growth and Yield Assets
for a Top Bracket Taxpayer 1/

Assumed tax structure	Annual inflation rate (%)	Marginal tax rate (%)		Annual real after-tax return (%)	Annual real before-tax return yield asset (%)	Effective tax rate (%)	
		Capital gains	Ordinary income			Growth asset	Yield asset
Late 1970s inflation 2/							
1977 law	8.0	49.0	70.0	-0.7	7.2	117.6	109.8
1979 law	8.0	28.0	70.0	1.5	9.9	63.5	85.2
1984 law	8.0	20.0	50.0	2.2	6.5	44.4	66.0
Expected mid-1980s inflation 2/							
1977 law	4.0	49.0	70.0	0.6	7.2	85.7	92.0
1979 law	4.0	28.0	70.0	2.1	9.9	47.0	78.5
1984 law	4.0	20.0	50.0	2.7	6.5	33.1	59.0

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1/ The real before-tax rate of return on growth assets is 4 percent per year, compounded annually, and the holding period for both growth and yield assets is 6.5 years. The holding period is the sales-weighted average holding period for corporate shares sold in 1977, computed from IRS data on sales of capital assets in 1977.

2/ The annual rate of increase in the GNP deflator averaged 7.9 percent between 1976 and 1981, that then declined to 4.4 percent in 1982 (between 1981 IV and 1982 IV), 3.8 percent in 1983, and 3.7 percent in 1984.

an 8 percent rate of inflation, the effective tax rate under both 1979 law and current law is slightly below the statutory tax rate (70 percent in 1979, 50 percent in 1981).

The required return from an asset yielding cash flow returns was 7.2 percent in 1977. The effective tax rate at an 8 percent rate of inflation was 109.8 percent.8/ The 1978 capital gains tax cut lowered the tax rate on yield assets to 85.2 percent, but substantially widened the disparity in the tax treatment of the two types of assets. The before-tax return on yield assets required to produce the same after-tax return as that received on a growth asset with a 4 percent before-tax return increased from 7.2 percent to 9.9 percent. The reduction in the top bracket rate to 50 percent, on the other hand, lowered the effective tax rate on yield assets to 66.0 percent, at an 8 percent rate of inflation, and reduced the required before-tax return to 6.5 percent. The combination of the two changes lowered the required before-tax return on yield assets, relative to growth assets.

The decline in the inflation rate from around 8 percent to about 4 percent, taken by itself, had a smaller effect on expected real after-tax yields than the reductions in capital gains taxation and the top marginal rate. If 1977 law had remained in effect, the decline in inflation would have increased the expected real after-tax return from -0.7 percent to 0.6 percent. The effective tax rate on growth assets would have declined from 117.6 percent to 85.7 percent and the effective tax rate on yield assets would have declined from 109.8 percent to 92.0 percent.

The last row of Table 2.2 shows the after-tax return and the effective tax rates under current law for both yield assets and growth assets, at a 4 percent rate of inflation. The combination of the tax reductions since 1978 and the reduction in the expected rate of inflation lowered the estimated effective tax rate on growth assets from 117.6 percent to 33.1 percent and on yield assets from 109.8 percent to 59.0 percent for a top bracket taxpayer.

In contrast to the top bracket taxpayer depicted in Table 2.2, Table 2.3 shows similar data for an average recipient of capital gains on corporate shares. The average marginal tax rate on fully taxable income, weighted by sales, for taxpayers reporting long-term sales of corporate shares in 1977 was 39.9 percent. These same taxpayers faced an average marginal rate of 20.0 percent on capital gains realizations in 1977, because of the exclusion of 50 percent of realized long-term capital gains from the income tax under 1977 law.9/ The increase in the exclusion rate in 1978 to 60 percent, coupled with the removal of capital gains from the add-on minimum tax, lowered the average marginal tax rate that would have applied to 1977 long-term realizations to 14.8 percent in 1979. The marginal tax rate on ordinary income declined slightly to 37.0 percent for taxpayers

Table 2.3

Effects of Inflation and Tax Law Changes
on Effective Tax Rates on Growth and Yield Assets for an
Average Recipient of Gains on Corporate Shares 1/

Assumed tax structure	Annual inflation rate (%)	Marginal tax rate (%)		Annual real after-tax return(%)	Annual real before-tax return on a yield asset(%)	Effective tax rate (%)	
		Capital gains	Ordinary income			Growth asset	Yield asset
Late 1970s inflation							
1977 law	8.0	20.0	39.9	2.2	5.4	44.4	59.1
1979 law	8.0	14.8	37.0	2.7	5.5	32.5	50.8
1984 law	8.0	13.1	32.7	2.9	5.2	28.6	45.4
Expected mid-1980s inflation							
1977 law	4.0	20.0	39.9	2.7	5.4	33.1	50.7
1979 law	4.0	14.8	37.0	3.0	3.0	24.3	44.8
1984 law	4.0	13.1	32.7	3.1	5.2	21.4	39.9

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1/ Marginal tax rates in 1977 and 1979 are computed from the 1977 Sales of Capital Assets File and represent the gain-weighted average of the marginal tax rate on a dollar of fully taxed income for taxpayers selling corporate shares in 1977. The average marginal tax rate for ordinary income under 1982 law is computed by multiplying 37.0 by the ratio of marginal tax rates for families with twice median income in 1984 under the 1981 Economic Recovery Tax Act (38 percent) and the 1980 marginal tax rate of the same group under the old tax law (43 percent). The marginal tax rate on capital gains under 1982 law is 40 percent of the marginal tax rate on ordinary income.

Source: Economic Report of the President 1982, p. 120.

with long-term sales. The marginal tax rate on capital gains is 40 percent of the marginal tax rate on ordinary income under both 1979 law and 1984 law.

For 1984, the average marginal tax rate on ordinary income for the average recipient of capital gains on corporate shares is estimated to decline to 32.7 percent. This decline reflects the net effect of the three year marginal tax rate cut and bracket creep from estimated inflation between 1980 and 1984.

Table 2.3 shows that, at an 8 percent inflation rate, the 1978 capital gains tax cut reduced the average effective tax rate on growth assets from 44.4 percent to 32.5 percent and increased the expected after-tax return from 2.2 percent to 2.7 percent. This reduced the effective tax rate on growth assets to slightly below the average statutory marginal tax rate for realizers of gains. The 1981 Act further lowered the effective tax rate on growth assets from 32.5 percent to 28.6 percent and increased the after-tax return to 2.9 percent.

The reduction in inflation from around 8 percent to about 4 percent lowered the effective tax rate on growth assets from 44.4 percent to 33.1 percent and also increased the after-tax return corresponding to a real before-tax return of 4 percent from 2.2 percent to 2.7 percent. The combination of the 1978 and 1981 tax changes and the reduction in inflation in the early 1980s reduced the effective tax rate on growth assets from 44.4 percent to 21.4 percent -- a cut in the tax rate of over 50 percent -- and increased the estimated expected after-tax return from 2.2 percent to 3.1 percent.

The 1978 capital gains tax reduction increased the required before-tax return on yield assets, when the return on growth assets is held at 4 percent, from 5.4 percent to 5.5 percent. The subsequent cut in marginal tax rates, however, reduced the required before-tax return on yield assets to 5.2 percent. Thus, while the 1978 capital gains tax increased the relative tax advantage for growth assets, the 1981 cut in marginal tax rates provided a relative gain for yield assets. The combination of the two changes lowered the cost of capital on yield assets relative to growth assets.

In summary, the anticipated real effective tax rates facing prospective buyers of capital assets -- especially those assets that provide returns in the form of appreciation in value rather than annual cash payments -- have declined substantially between the late 1970s and the early 1980s because of both tax policy changes and the slowdown in the rate of inflation. Based on reasonable assumptions about average expected before-tax returns, the expected tax rates on appreciating assets have been reduced by more than half for the representative buyer of appreciating assets, and have fallen to just over one-fourth the pre-1978 rate for savers who then faced the top marginal tax rate on capital

gains. Although the effective rate facing any single investor varies greatly with the anticipated pre-tax rate of return and the planned holding period, the real effective tax rate is now below the statutory marginal tax rate applied to ordinary income for assets with average rates of return. At the same time, the relative tax advantage of growth assets compared to yield assets -- measured as a lower required before-tax return -- first widened as a result of the capital gains cuts in the 1978 Act, but then narrowed to less than the pre-1978 advantage as a result of the reduction in marginal tax rates in the 1981 Act.

D. Evidence from Sales of Capital Assets Files

Tables 2.2 and 2.3 show hypothetical effective tax rates confronting investors in the late 1970s and early 1980s, given reasonable assumptions about expected rates of inflation and expected real before-tax returns. An alternative approach to measuring the taxation of the returns to saving is to measure the effective tax rate actually paid on the income from date of purchase to date of sale generated by assets sold in recent years.

It should be emphasized that current saving behavior depends on expected future after-tax returns, and not directly on the fraction of real returns that were taxed away in the past. At any particular time, the capital gains tax is collected on the accumulation from past investments. Current capital gains tax rates only affect current saving decisions to the extent savers expect those rates to remain in effect at the time when assets purchased today are sold. Thus, the most relevant calculations of the effect of capital gains taxation on incentives to hold growth and yield assets are calculations such as those presented in Tables 2.2 and 2.3 that estimate how capital gains taxes affect expected future returns. Nonetheless, it is also useful to estimate the effective tax rate on appreciation from past asset purchases for assets sold in recent years, and how that effective tax rate, ex post, would have been reduced if those gains had been taxed at the lower rates prevailing after the 1978 Act.

These data provide a useful supplement to the ex ante data in Tables 2.2 and 2.3 for two reasons. First, they provide additional information because they are based on real before-tax returns actually earned by a sample of taxpayers who sold assets in recent years. To the extent that rates of return on assets sold differ from those earned on all assets, estimated effective tax rates will also differ. Second, the data on actual sales reported on taxpayers' returns enable one to estimate roughly how real effective tax rates on growth assets have differed in the past among taxpayers in different income groups.

The IRS studies on Sales of Capital Assets for 1973 and 1977 provide detailed data on purchases and sales of different types

of capital assets, including date of purchase, date of sale, type of asset, purchase price, and sales price. From these data, it is possible to compute the real before-tax rate of return, g, for any capital asset sold in 1973 and 1977 from the equation:

$$V = (1 + g)^k (1 + p)^k B \quad \ldots (11)$$

or

$$g = (V/(1 + p)^k B)^{1/k} - 1 \quad \ldots (11a)$$

where B is the purchase price of the asset, V is the sales price (before capital gains tax), p is the average annual percentage rate of increase in the GNP deflator between the date of purchase and the date of sale of the asset, and k is the number of years between purchase and sale.

The real after-tax rate of return is computed from the equation:

$$(V - T) = (1 + n)^k (1 + p)^k B \quad \ldots (12)$$

or

$$n = ((V - T)/(1 + p)^k B)^{1/k} - 1 \ldots (12a)$$

where T is the additional capital gains tax paid attributable to the sale of the asset and n is the real after-tax rate of return. The term (V-T) thus represents the net (after-tax) proceeds from the sale.

The capital gains tax attributable to the sale, T, is computed by simulating the individual tax model developed by the Office of Tax Analysis, using the tax calculators applicable for 1973 tax law, 1977 tax law, and 1979 tax law. For each taxpayer, the model computes the last dollar marginal tax rate for an additional dollar of long-term capital gain. This marginal tax rate on long-term gains (or reduced capital losses) for each taxpayer is then used to compute the additional tax liability attributable to any sale in the asset class.

The effective tax rate for any asset class is then computed from the equation:

$$t = (g - n)/g$$

where the before and after-tax rates of return, g and n, are weighted averages of the rates of return from all capital assets in the asset class. In computing the average rates of return, each transaction is weighted by its gross sales value. Note that, with inflation, a negative real before-tax return can accompany a positive nominal before-tax return. Such cases represent an extreme case of overtaxation, where positive capital gains taxes are paid even though the real rate of return is negative.10/

Table 2.4 shows the effective tax rates applied to real before-tax rates of return on corporate shares and non-business real estate sold in 1973 and 1977. The effective marginal tax rate at which net losses can be deducted is less than the effective tax rate on gains for two reasons. First, and more important, inflation raises the ratio of taxes to real gains, and lowers the ratio of (negative) taxes to real losses because nominal gains are greater than real gains and nominal losses are less than real losses. Second, some taxpayers have insufficient gains against which to offset all capital losses.11/

Aggregating across sales, net taxes per dollar of net real gain on all sales are greater than taxes per dollar of real gain on sales with positive gains because the additional tax per dollar of additional real gain is greater than the reduction in tax per dollar of real loss. Thus, in Table 2.4, the effective tax rate on all gains and losses for both corporate shares and non-business real estate is greater than the effective tax rate on returns with gains only.12/ For non-business real estate, very few returns showed losses; therefore, the effective tax rate on all returns is only slightly greater than the effective tax rate on returns with gains only.

Table 2.4 shows that the capital gains tax changes in the 1978 Act would have reduced the real effective tax rate on the income from corporate shares sold in 1977 from 29.4 percent to 19.8 percent, and on non-business real estate from 27.8 percent to 18.3 percent.

Table 2.5 compares the effective tax rates on assets sold in 1977 to the effective tax rates that would have resulted under alternative tax rules. Calculations are performed for all realized gains and losses, and for realized gains and losses on assets held for 25 years or more. In each category, the first two rows of Table 2.5 show the effective tax rates under the rules for taxing capital gains in 1977 and 1979. The third row estimates what the effective tax rate would have been, given 1977 realizations, if nominal capital gains were taxed at the same rate as ordinary income. The fourth row shows the effective tax rate if capital gains were taxed at the same rate as ordinary income, with a basis adjustment for inflation. In computing the tax rates shown in the third and fourth rows, it is assumed that the taxpayer confronts the same last dollar marginal tax rate on ordinary income as he would under 1977 law. Finally, the fifth row shows the last dollar marginal tax rate applied to ordinary income.

Table 2.5 shows that the effective tax rate on both corporate shares and non-business real estate sold in 1977 was significantly below the marginal tax rate confronted by the same taxpayers on ordinary income under both 1977 and 1979 rules for taxing capital gains. The tax rates on corporate shares and

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Table 2.4

Real Effective Tax Rates Applied to Capital Gains Income, 1973 and 1977 Realizations (%) 1/

Assets	1973 realizations	1977 realizations	
		1977 law	1979 law
Corporate shares			
All gains and losses	23.7	29.4	19.8
Returns with gains only	16.7	23.4	16.4
Returns with losses only	8.2	10.1	9.1
Non-business real estate			
All gains and losses	21.1	27.8	18.3
Returns with gains only	19.6	25.6	16.9
Returns with losses only	1.8	2.6	2.0

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1/ Calculations include long-term nominal gains and losses only (assets held over 6 months if sold in 1973 and over 9 months if sold in 1977). In computing average tax rates, transactions are weighted by dollar volume of sales.

Source: Computations from 1977 Sales of Capital Assets files.

Table 2.5

Real Effective Tax Rates on Capital Gains Income Under Alternative Tax Rules, 1977 Realizations (%) 1/

Assumed tax structure	Corporate shares	Non-business real estate
All realized gains and losses		
1977 tax law	29.4	27.8
1979 tax law	19.8	18.3
Full inclusion, no basis adjustment	54.9	48.5
Full inclusion, basis adjustment	35.4	30.1
Last dollar marginal tax rate, 1977 law	39.9	30.5
Assets held 25 years or more		
1977 tax law	27.3	26.2
1979 tax law	11.7	14.8
Full inclusion, no basis adjustment	37.1	49.1
Full inclusion, basis adjustment	26.4	23.6
Last dollar marginal tax rate, 1977 law	61.5	39.5

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1/ Calculations include long-term nominal gains only (assets held over 9 months). In computing average tax rates, transactions are weighted by dollar volume of sales.

Source: Computations from 1977 Sales of Capital Assets files.

non-business real estate held 25 years or more were lower than the effective tax rate on the return from all corporate shares and non-business real estate because the benefits from deferral of tax are greater for assets with longer holding periods and because assets held a longer time prior to 1977 were subject to less inflation.

Full inclusion of gains on all corporate shares and non-business real estate, without a basis adjustment for inflation, would raise the effective tax rate on the income from appreciation of both assets above the rate applied to ordinary income. The high effective tax rates that would apply if a full inclusion rule had been applied to all 1977 realizations -- 54.9 percent for corporate shares and 48.5 percent for non-business real estate -- result because a large portion of the gain from the sale of assets reflects changes in the general price level rather than a change in the real value of the asset. The taxation of inflationary gains more than offsets the benefits from deferral of tax on all gains, real and inflationary, until realization. The real effective tax rate would be reduced to 35.4 percent for corporate shares and 30.1 percent for non-business real estate if taxpayers were allowed to adjust the cost basis of assets for inflation. With a basis adjustment, the computed effective tax rates are slightly below the marginal tax rate on ordinary income, reflecting the benefit from deferral.

Finally, it is interesting to note that taxpayers realizing gains on corporate shares held 25 years or more are generally in a very high tax bracket. The marginal tax rate, weighted by sales, on an additional dollar of income for these realizers of very long-term gains on corporate shares is 61.5 percent, compared to 39.9 percent for all recipients of gains (and losses) on shares. However, even though the statutory marginal tax rate is higher for sellers of shares held 25 years or more, the effective tax rate applied to income from those shares was lower than the effective tax rate applied to income from all corporate shares. This comparison illustrates the importance of deferral for assets with long holding periods.

The effective tax rates shown in Tables 2.4 and 2.5 for 1977 and 1979 law are lower than the effective tax rates from current investments estimated in Table 2.3. Compared to the case of 4 percent inflation in Table 2.3 -- an inflation rate roughly comparable to the inflation during the holding period of assets sold in 1977 (though lower than the inflation rate during the late 1970s) -- the effective tax rate on corporate shares was 29.4 percent rather than 33.1 percent under 1977 law and 19.8 percent rather than 24.3 percent under 1979 law. The major reason for this difference is that the before-tax real yield on actual realizations, weighted by dollar value of sales, was much higher than the anticipated 4 percent real yield assumed for current asset purchases. In other words, long-term capital asset sales reported for tax purposes show higher rates of return than the long-term historical trends on all asset accruals.

Table 2.6 provides a more detailed breakdown of the annual rates of return and effective tax rates on corporate shares sold in 1977. The weighted average (by sales) annual before-tax nominal rate of return on these assets was 16.3 percent. This nominal return resulted from an average before-tax real return of 9.7 percent and an average inflation rate of 6.0 percent over the period the shares were held. The before-tax real rate of return was over 10 percent for shares held less than three years, but was only 6.1 percent for shares held 25 years or more. The effective tax rate for shares held for a long period of time was lower than the effective tax rate for all shares (21.7 percent for shares held 10 to 25 years and 18.6 percent for shares held 25 years or more compared to 29.4 percent for all shares). The lower effective tax rate on long-held shares reflects the benefits to taxpayers from deferring the payment of tax until realization. Had the 1978 Act changes been in effect for 1977 sales, the effective tax rates would have been 19.8 percent for all corporate shares and 11.7 percent for shares held more than 25 years (see Table 2.5).

Finally, Table 2.7 shows the rates of return and effective tax rates by income class for 1977 corporate share realizations. It is interesting to note that the effective tax rate for the highest income class (27.3 percent for over $200,000 AGI) was slightly below the effective tax rate for all income classes (29.4 percent). The higher statutory marginal tax rate imposed on taxable income in the highest income class was offset by the fact that these taxpayers generally sold shares with much higher before-tax rates of return. In particular, the nominal rate of return on shares sold in 1977 by taxpayers with AGI over $200,000 was roughly twice as large as the before-tax rate of return on all shares sold. Thus, for the highest income taxpayers, a much higher fraction of the before-tax nominal return was accounted for by real gains, rather than by inflationary gains, than for taxpayers as a whole.

III. The Effect of Capital Gains Taxation on the Incentive to Sell Appreciated Assets

A. Introduction

As previously noted, the capital gains tax is imposed when the gain on an asset is recognized or realized, rather than as gains accrue. In addition, the basis of inherited assets is the market value at the time acquired by the beneficiary, not the original purchase price paid by the decedent. As a result, for most assets, the capital gains tax can be permanently avoided if the asset is never sold. The opportunity to avoid the capital gains tax makes it profitable to refrain from some asset sales, even if the prospective seller expects to receive a higher rate of return from an alternative investment.

Table 2.6

Annual Rates of Return and Effective Tax Rates on Corporate Shares by Holding Period, 1977 Realizations

Holding period (years)	Annual before-tax nominal rate of return (%)	Annual before-tax real rate of return (%)	Annual after-tax nominal rate of return (%)	Annual after-tax real rate of return (%)	Effective tax rate (%)
0.75-1	16.4	10.2	12.7	6.7	34.7
1-2	20.8	14.2	16.1	9.8	31.3
2-3	26.1	17.9	21.2	13.3	25.9
3-4	19.3	10.8	16.1	7.9	27.2
4-5	10.7	3.2	9.0	1.6	49.2
5-10	11.2	4.5	9.8	3.2	29.5
10-25	11.6	6.5	10.1	5.1	21.7
25 +	10.2	6.1	9.0	5.0	18.6
Total	16.3	9.7	13.3	6.8	29.4

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Source: Computations from 1977 Sales of Capital Assets File.

Table 2.7

Annual Rates of Return and Effective Tax Rates
on Corporate Shares by Income Class, 1977 Realizations

Adjusted gross income ($thou)	Annual before-tax nominal rate of return (%)	Annual before-tax real rate of return (%)	Annual after-tax nominal rate of return (%)	Annual after-tax real rate of return (%)	Effective tax rate (%)
0-5	7.5	1.0	7.5	1.0	3.1
5-10	5.7	-0.6	5.4	-0.9	1/
10-15	10.2	4.0	9.4	3.2	19.9
15-20	12.5	5.9	11.5	4.9	16.9
20-30	9.9	3.4	8.6	2.2	34.6
30-50	10.3	3.9	8.7	2.5	36.0
50-100	16.0	9.4	12.7	6.3	33.3
100-200	23.5	16.5	18.1	11.5	30.7
200 +	33.0	25.8	25.5	18.7	27.3
Total	16.3	9.7	13.3	6.8	29.4

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1/ In this case, a positive tax was imposed on a negative real rate of return.

Source: Computations from 1977 Sales of Capital Assets File.

This "lock-in" effect associated with the capital gains tax as structured under existing law was a major reason cited for reducing the capital gains inclusion rate during the debates on the Revenue Act of 1978. Some proponents of the 1978 changes argued that the unlocking of past gains from a lowering of rates would be so great that Federal tax revenues would actually increase.

It is important not to confuse the lock-in effect with any disincentive to saving resulting from the taxation of income from capital. The lock-in effect results purely from the fact that the tax is imposed upon recognition by sale or exchange, rather than when the income is accrued, and depends on the amount of capital gains tax as a fraction of the sales price of the asset. In contrast, as noted in the previous section, the capital gains tax affects the incentive to save by altering the prospective after-tax rate of return to the buyer of an asset. The expected present value of the tax on an anticipated future sale, not the tax actually paid when the asset is sold, influences the decision to save by altering the expected return to this particular form of saving. Thus, the tax rate that influences saving is not measured as a percentage of the gain or the sales price, but rather is measured as a percentage reduction in the expected rate of return over the entire planned holding period of the asset. For assets held for many years, a large tax upon realization, computed as a share of the gain, may in fact only reduce the rate of return over the life of the asset by a small amount.

The relationship between such tax impediments to the sale of appreciated assets and any possible inefficiency in the allocation of saving among types of capital assets is not well established. For capital to be allocated efficiently among uses, prospective yields on alternative investments must be equalized. The tax on capital gains realizations does cause some asset holders to be "locked in" to existing investments. However, for marginal returns in a market to be equalized, it is not necessary for all participants to have no impediments to exchange. Rates of return on alternative investments can be driven to equality if there are a sufficient number of market participants, with a sufficient amount of wealth, who are not "locked-in" to particular investments by the tax system. Since the allocation of new saving among investments, the allocation of saving by tax-exempt institutions such as pension funds, and the allocation of a large share of saving by taxable investors not held in the form of assets with unrealized appreciation are all not impeded by the tax on realized gains, it is unlikely that the capital gains tax prevents enough movement of funds among assets to keep expected after-tax yields on alternative assets from being equalized. The fact that prospective yields among alternative investments are differentially taxed indeed leads to an inefficiency in the allocation of the capital stock because the assets with the highest expected after-tax returns are not always those with the highest before-tax returns. However, the "lock-in" effect does not necessarily worsen this misallocation.

Rather, the inefficiency or misallocation associated with the "lock-in" effect is of a different type. Since the taxation of gains upon realization impedes some sales that might otherwise take place, the capital stock may be allocated inefficiently among individuals. That is, even if society as a whole is holding the right total amount of all assets, the total expected return from the capital stock, and thus the total economic welfare of asset holders, would be greater if ownership rights to particular assets could be reallocated among individuals.

The inefficiency which occurs when ownership rights are misallocated among individuals can take several forms. At the very least, tax impediments to asset sales prevent people from holding the assets they most prefer. For example, suppose a taxpayer wishes to sell asset A in order to purchase asset B at prevailing market prices, but is impeded from doing so by the capital gains tax. In this case, he is prevented from holding the asset that he believes would yield the highest after-tax return, if asset B could be purchased with the before-tax proceeds from the sale of asset A. Since asset prices reflect the market's expectation of future earnings, the taxpayer's wish to sell A in order to purchase B reflects the fact that his expectation of relative future returns from the two assets is different from the expectations of other shareholders. The taxpayer may be right or wrong in his perception, and his loss or gain from the transaction may be offset by the gain or loss for the investor who would have sold B to purchase A. Nonetheless, in an ex ante sense, total welfare could be reduced when individuals are impeded from holding the assets they most prefer.

Moreover, the lock-in effect might result in a loss of productivity in those cases where the ownership and management of an asset or enterprise are not clearly separable. For example, an individual starting a new company often owns a significant fraction of the company's shares. If this individual is relatively more skilled at starting new enterprises than at managing a large ongoing organization, net productivity may increase if he sells his shares in the organization once it attains a certain size. A capital gains tax imposed at the time of sale might prevent the organization from "going public", and thus prevent the efficiencies that would otherwise result from a reallocation of management personnel.

Another example of this type of inefficiency is caused by the imposition of a capital gains tax on the sale of a personal residence. Individuals clearly have different preferences for residing in a particular structure. Thus, any tax that deters an individual from changing his personal residence when changed circumstances would otherwise cause him to move could lower the total value of the stock of housing. Special provisions of the tax law that allow rollover of the sale of personal residences and a $125,000 exemption from capital gains tax for taxpayers of age 55 or older prevent the capital gains tax from imposing a severe "lock-in" effect on homeowners.

Finally, it should be noted that some asset portfolio rearrangements desired by private investors are motivated by tax considerations rather than productivity concerns. Under the current tax system, there is a tendency for taxpayers in high tax brackets to seek to hold tax-preferred assets, thus driving down the before-tax yields on such assets relative to heavily taxed assets. Thus, for any given supplies of different types of assets, investors as a whole maximize after-tax returns when fully taxed assets are held by investors in low tax brackets and tax-preferred assets are held by investors in high tax brackets.13/ The taxation of capital gains upon realization may impede the movement toward an optimal allocation of assets among households -- from a tax minimization point of view -- by discouraging the sales of some assets by investors whose marginal tax brackets have changed. To the extent that "lock-in" prevents wealth holders from fully exploiting the opportunities in the tax system, it may increase Federal revenues in ways that would not be observed merely by looking at total realizations of capital gains.

The next two parts of this section discuss two separate aspects of the effects of the capital gains tax on the decision to sell assets -- the effect of the capital gains tax on the decision to sell currently productive assets, and the effect of the capital gains tax in those situations in which payment of the tax is triggered by a termination of the production process.

B. Empirical Evidence on the Effects of Taxing Sales of Appreciated Assets

Suppose an individual sells an asset, A. The proceeds from the sale of one unit (such as a share of stock) of A are equal to the price per unit minus the capital gains tax. If the price is V dollars per unit, and the capital gains tax paid when the asset is sold is T, the individual can purchase an additional (V-T) dollars of an alternative asset, B, for the sale of a unit of the asset worth V dollars.14/ Alternatively, to purchase one dollar of asset B, the individual will have to sell V/(V-T) dollars of asset A. Define the ratio V/(V-T) as the tax price of realizations -- the value of an asset A that must be sold to finance the purchase of one dollar of an alternative asset.

More generally, the tax price of realizations can be expressed as:

$$P = (1 + i)^n/((1 + i)^n(1 - am) + am) \quad \ldots (13)$$

In Equation (13), P is the tax price of realizations for a given asset, i is the annual nominal yield over the period the asset was held, n is the number of years the asset was held, a is the percentage of capital gains included in taxable income, and m is the taxpayer's marginal tax rate. If i is positive (the asset has increased in value), the tax price of realizations is greater

than one and increases as the values of i, n, a, and m increase. If i is negative, the tax price of realizations is less than one and is smaller for larger values of n, a, m, and the absolute value of i, where a is interpreted as the fraction of the loss in asset value that can be deducted against other taxable income.

A tax price of realizations greater than one indicates a tax barrier to asset sales; a tax price less than one implies a tax subsidy to asset sales. However, the tax price of realizations at any point in time does not fully describe how the capital gains tax affects the incentive to sell an appreciated asset. For example, suppose an individual owns an asset that has increased in value at 10 percent per year since the date of purchase, and is expected to continue to increase at the same rate. The tax price of realizations will increase every year the asset is held, because the ratio of the tax base (the value of the asset in excess of the purchase price) to the total value of the asset will continually increase as the asset's nominal value rises. This increase in the tax price will continue until the owner dies, at which point the tax basis of the asset becomes the value at death and the owner's beneficiary faces a tax price of realizations equal to one.

The tax price of realizations as defined above is a good measure of the lock-in effect of the capital gains tax if the asset need not be sold to produce a stream of future income and if the individual is able to borrow against the future earnings from the asset, or has enough other sources of funds, to finance any large immediate consumption requirements.15/ If the individual is seeking to maximize the present discounted value of yields from his portfolio, then he will balance any reduction in the amount available for investment caused by the capital gains tax against any prospective increase in the rate of return on alternative assets. The tax price of realizations is a measure of the sacrifice in principal associated with switching to other assets.

Tables 2.8-2.10 illustrate the tax price of realizations for taxpayers who realized long-term capital gains and losses in 1973 and 1977. Table 2.8 shows the tax price of realizations by income class for selected capital assets in 1973, weighted by the value of assets sold. On average, the tax price was 1.041 for all capital assets under then prevailing tax law, a modest disincentive to selling assets to finance purchases of other assets. The tax price for sales of corporate shares was 1.066, slightly higher than the tax price for all assets. The tax price for other securities was 1.000 because on average these securities did not increase in value over the period they were held.

The tax price of realizations on all capital assets in 1973 was substantially above 1.05 only for taxpayers with income in excess of $100,000. For these taxpayers, the disincentive to selling assets was significant. Moreover, since these data only

Table 2.8

Tax Price of Realizations for
Long-Term Sales, 1973 Realizations

Income class ($thou)	Asset type				All capital assets
	Corporate shares	Other securities	Non-business real estate	Timber	
0-5	1.001	0.991	1.008	1.007	1.005
5-10	1.009	0.995	1.015	1.017	1.010
10-15	1.017	0.984	1.034	1.060	1.017
15-20	1.020	1.003	1.029	1.097	1.018
20-30	1.024	1.001	1.046	1.087	1.024
30-50	1.033	0.998	1.082	1.293	1.037
50-100	1.056	1.001	1.089	1.187	1.051
100-200	1.104	1.003	1.110	1.317	1.075
200 +	1.231	1.002	1.185	1.349	1.168
Total	1.066	1.000	1.062	1.156	1.041

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1/ The tax price is calculated as the ratio of before-tax proceeds from asset sales to after-tax proceeds from asset sales.

Source: Computations from 1973 Sales of Capital Assets File.

show assets that were in fact sold, they presumably understate the tax price from potential realizations for those assets for which sales were contemplated. Taxpayers with income in excess of $200,000 faced an average tax price of realizations of 1.168 for all capital assets and 1.231 for corporate shares. Thus, these taxpayers faced an excise tax of 18.8 percent (.231/1.231) of the value of corporate shares sold.

Table 2.9 shows the same data for 1977. The average tax price of realizations for all assets and for corporate shares was slightly higher in 1977 than in 1973. However, the tax price for corporate shares in the highest income class was significantly higher, rising from 1.231 in 1973 to 1.320 in 1977. The tax price is high in the upper income classes because these taxpayers face higher marginal tax brackets, generally earn above-average returns, and generally hold assets for longer periods of time so that larger gains are accumulated. Therefore, high income taxpayers on average are selling assets for which the taxable gain is a relatively large fraction of the sales price.

Table 2.10 shows how the tax price of realizations on long-term sales of capital assets would have been reduced if 1979 law were in effect for 1977 realizations. On average, the tax price of realizations would have fallen from 1.053 to 1.032, a decline of only 2.1 percentage points. However, the tax price of realizations for taxpayers with incomes over $200,000 would have fallen by almost 10 percentage points (from 1.227 to 1.131) for all assets and by 14 percentage points (from 1.320 to 1.180) for corporate shares. In summary, the average reduction in the lock-in effect -- as measured by the tax price of realizations -- due to the 1978 Act was small. However, the reduction in the tax price of realizations, particularly for corporate shares, was significant for taxpayers with very high incomes. Thus, the 1978 Act appears to have provided a substantial reduction in the disincentive to the realization of gains by taxpayers in the highest tax brackets.

Tables 2.8-2.10 show only data for long-term sales because the 1978 Act did not affect directly the taxation of short-term capital gains and losses. It is worth noting, however, that the tax price of realizations for short-term gains and losses is generally quite close to one. Even though short-term transactions do not receive preferential capital gains rates, the tax price of realizations is low because the ratio of gain or loss to the sale price of the asset is generally small for assets held one year or less. Therefore, the taxation of short term gains and losses, even though imposed at higher rates than the taxation of (and offset for) long-term gains and losses, imposes a very small distortion on the incentive to realize such gains and losses.

Table 2.9

Tax Price of Realizations for
Long-Term Sales Under
1977 Law, 1977 Realizations 1/

Income class ($thou)	Asset type				All capital assets
	Corporate shares	Other securities	Non-business real estate	Timber	
0-5	1.000	1.006	1.009	1.000	1.005
5-10	1.006	1.000	1.039	1.076	1.013
10-15	1.014	1.002	1.026	1.092	1.022
15-20	1.012	1.015	1.046	1.002	1.021
20-30	1.016	1.006	1.063	1.138	1.024
30-50	1.035	1.007	1.117	1.241	1.045
50-100	1.073	1.027	1.187	1.289	1.082
100-200	1.128	1.014	1.205	1.341	1.115
200 +	1.320	1.015	1.290	1.293	1.227
Total	1.093	1.014	1.096	1.187	1.053

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1/ The tax price is calculated as the ratio of before-tax proceeds from asset sales to after-tax proceeds from asset sales.

Source: Computations from 1977 Sales of Capital Assets File.

Table 2.10

Tax Price of Realizations for
Long-Term Sales Under 1979 Law,
1977 Realizations 1/

Income class ($thou)	Asset type				All capital assets
	Corporate shares	Other securities	Non-business real estate	Timber	
0-5	0.999	1.004	1.009	1.000	1.002
5-10	1.003	1.000	1.015	1.021	1.006
10-15	1.008	1.002	1.018	1.062	1.013
15-20	1.008	1.014	1.029	1.001	1.013
20-30	1.009	1.004	1.041	1.098	1.015
30-50	1.017	1.005	1.066	1.155	1.025
50-100	1.045	1.016	1.110	1.184	1.051
100-200	1.080	1.010	1.129	1.222	1.073
200 +	1.180	1.010	1.170	1.185	1.131
Total	1.054	1.009	1.057	1.119	1.032

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1/ The tax price is calculated as the ratio of before-tax proceeds from asset sales to after-tax proceeds from asset sales.

Source: Computations from 1973 Sales of Capital Assets File.

C. Realization as a Productive Decision

The tax price of realizations, as defined above, is not a good measure of the tax impediment to realizing gains if the asset produces consumption value to some member of society only when realized. An example of such an asset is a tree grown to produce logs (but not a fruit tree). The tree produces a current economic service, in the form of housing services, paper products, or firewood, only after it is cut. Therefore, there must be a realization event, and a capital gains tax paid, within some finite time period if the asset is to be put to its most productive use. In this case, the issue is when, rather than whether, to realize a gain.

For example, suppose a tree grown for lumber production is growing at the rate i. If the relative price of lumber is unchanged, the tree's value is expected to increase by (1+i) times its prior year value. The change in the capital gains tax liability if the tree is cut down after n+1 years rather than n years is

$$am\ ((1+i)^{n+1} - 1) - am\ ((1 + i)^{n} - 1) \quad \ldots (14)$$

Thus, deferring realization increases the capital gains tax liability by the ratio

$$((1 + i)^{n+1} - 1)/((1 + i)^{n} - 1) \quad \ldots (15)$$

The tax liability grows at a faster rate than does value when realization is deferred because the initial cost of the asset is not in the tax base. Deferral raises the tax price of realizations. Thus, if a tax were imposed only on the sale of the tree, and not on other assets, the tax on realizations would shorten the holding period and produce a negative lock-in effect.

Suppose more generally that the same income tax rates were imposed both on the proceeds of the sale of the tree and on capital income generally. Suppose also that the economic value of the tree increases rapidly in the early years after planting, but eventually begins to exhibit diminishing returns. Net income to the investor will be maximized if the tree is cut down when the rate of increase in value is equal to the opportunity cost of deferring realization -- the foregone net interest earnings on alternative assets. A tax imposed at the same rate on the capital gain from the sale of the tree and on cash flow capital income generally will delay realization; equal rate taxation will reduce the opportunity cost of deferral, the after-tax interest on other assets, by more than it reduces the growth rate of after-tax proceeds from the sale of the tree. Thus, there will be a "lock-in" effect from capital income taxation generally. The intuition behind this result is that a tax imposed at equal rates on the gain from tree growing and on cash flow capital

income favors tree growing where tax is deferred until the capital income is realized. Since the major element of "capital" invested in trees is deferred realization, the tax system, by providing a preference for "capital" invested in tree-growing, will cause tree production to be more capital-intensive; that is, tree-growing will involve a longer holding period than it would in the absence of any capital income taxes.

If a capital gains preference is introduced -- that is, the rate of tax on realization of capital gains is lowered -- and standing timber is defined as a capital asset, then the optimal holding period becomes even longer, because the growth rate of the after-tax proceeds increases while the opportunity cost is unchanged. Therefore, a capital gains preference, in this case, delays realization, although a lowering of the tax rate on both capital gains and ordinary income would cause realization to occur sooner.16/ In this case, a longer holding period means that more "capital-intensive" methods are used to produce timber.

Table 2.11 illustrates these relationships between capital gains taxation, ordinary income tax rates, and the return to investors from delaying realization of an asset held for its future consumption value. In Table 2.11, the consumption value from selling the asset is assumed to grow at a declining rate -- it increases by 20.5 percent in the first year, 19.5 percent in the second year, and 1 percent less per year thereafter. The interest rate is 10 percent. In the absence of any taxes (the "base case" in the table), the optimal holding period is 11 years; in earlier years, the increase in value from waiting exceeds the interest rate of 10 percent, while in later years the value of the asset grows less than the interest rate. Case 1 illustrates the growth in after-tax proceeds from sale if an income tax of 50 percent is imposed on both the gain on the asset -- the difference between the sales price (consumption value) and the purchase price ($100) -- and on the yield from alternative assets. The growth in sales proceeds from delaying realizations declines, but by less than the yield on alternative assets which falls to 5 percent. The optimal holding period increases to 15 years. Case 2 illustrates the effect of allowing capital gains treatment for the asset, with 40 percent of capital gains included in taxable income. If the tax rate on alternative assets remains at 50 percent, the discount rate will be unchanged at 5 percent. The holding period increases from 15 to 16 years as a result of the capital gains preference.

IV. Summary

All taxes imposed on market rewards result in some efficiency costs for the economy by distorting price signals faced by individuals and firms. When people respond to these distorted price signals, inefficiencies in a wide variety of economic

Table 2.11

Example of Optimal Holding Periods of Asset Held for Future Consumption Value 1/

Year	Base Case		Case 1		Case 2	
	Consumption value	Marginal yield	Proceeds from sale	Marginal yield	Proceeds from sale	Marginal yield
0	100.00		100.00		100.00	
1	120.50	.205	110.25	.103	116.40	.164
2	144.00	.195	122.00	.107	135.20	.162
3	170.64	.185	135.32	.109	156.51	.158
4	200.50	.175	150.25	.110	180.40	.153
5	233.58	.165	166.79	.110	206.86	.147
6	269.79	.155	184.90	.109	235.83	.140
7	308.90	.145	204.45	.106	267.12	.133
8	350.61	.135	225.31	.102	300.49	.125
9	394.43	.125	247.22	.097	335.54	.117
10	439.79	.115	269.90	.092	371.83	.108
11	485.97	.105	292.99	.086	408.78	.099
12	532.14	.095	316.07	.079	445.71	.090
13	577.37	.085	338.69	.072	481.90	.081
14	620.67	.075	360.34	.064	516.54	.072
15	661.02	.065	380.51	.056	548.82	.062
16	697.37	.055	398.69	.048	577.90	.053
17	728.75	.045	414.38	.039	603.00	.043

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1/ The interest rate is 0.10. In the Base Case, the tax rate and the discount rate are 0, and the optimal holding period is 11 years. In Case 1, the tax rate is 0.5, the discount rate is 0.05, capital gains are fully included in income, and the optimal holding period is 15 years. In Case 2, the tax rate is 0.5, the discount rate is 0.05, 40 percent of capital gains are included in income, and the optimal holding period is 16 years.

choices result, and it is likely that the amount of work effort and the size of the capital stock are diminished. Some distortions imposed by taxation are inevitable, however, if public services are to be financed by taxes based on some measure of ability to pay.

Under the U.S. income tax, the effective tax rate on real income from property varies greatly among different types of capital and different methods of finance. This can result in significant inefficiency in the allocation of the existing capital stock. In addition, any tax on the return to saving favors current consumption over saving for future consumption because the social return from investment, as measured by the before-tax return from an additional dollar of capital, exceeds the after-tax return from saving received by households. This can lead to lower than optimal rates of saving and capital accumulation.

Reducing the tax on realized capital gains has several potential consequences for the efficiency of resource use in the U.S. economy. First, it may increase efficiency by reducing the bias against saving that is one feature of an income tax. Second, it may reduce efficiency by increasing the tax disparity among types of assets, favoring those with returns in the form of appreciation ("growth assets") relative to those providing immediate cash returns ("yield assets"). Third, it increases efficiency by reducing an impediment to the sale of appreciated assets that results because the income from appreciation is taxed only when realized, not as accrued, and because gains transferred at death permanently escape taxation under the current U.S. income tax. Finally, changes in the tax rate imposed on capital gains realizations can affect the efficiency of the economy by altering the tax rates that must be imposed on income generally to maintain the same total revenue.

Changes in the capital gains tax alter incentives for saving by changing the real after-tax rates of return on growth and yield assets. The effective tax rate on the real return to saving, expressed as the percentage reduction due to capital income taxation in the before-tax annual rate of return, measures how much the tax system alters the rewards to saving. Under current tax rules, this effective tax rate varies greatly among assets, depending on the rate of inflation, the before-tax return on the asset, and the number of years the asset is held.

This chapter presented two alternative sets of computations of the effective tax rates on growth and yield assets and how they were altered by recent legislative changes. The first set of computations provided measures of the taxation of a representative growth asset, defined as an asset with an expected real rate of return of 4 percent and an expected holding period of 6.5 years (the average for all stocks sold in 1977); the calculations were performed for the case where the marginal

investor was a top bracket taxpayer and the case where the marginal investor had a marginal tax rate equal to the average marginal tax rate for all investors selling corporate shares in 1977. When the marginal investor was a top bracket taxpayer, the estimated real effective tax rate on growth assets was 118 percent in 1977, assuming an 8 percent expected rate of inflation. The reduction in capital gains taxes in 1978, the further reduction in marginal tax rates in the 1981 Act, and the decline in inflation rates (to an assumed 4 percent for the early 1980s) reduced this estimated effective tax rate to 33 percent. Thus, the combination of tax policy changes and the decline in inflation has reduced the tax rate on the "typical" appreciating asset from a confiscatory level of over 100 percent in 1977 to a rate significantly lower than the tax rate on ordinary income. When the marginal investor had an "average" marginal tax rate, the same changes in tax policy and inflation reduced the effective tax rate on growth assets from 44 percent to 21 percent. Moreover, these tax rates overstate the average individual tax rates on the return to equity, especially for growth assets, because the computation of the average holding period does not account for the fact that many assets are not sold during the lifetime of the owner, and thus escape capital gains taxation entirely.

The effective tax rate on the return to a representative yield asset, defined as an asset which appreciated at the rate of inflation and had a real annual cash flow of 4 percent, also declined because of the tax policy changes and the reduction in inflation. The 1978 capital gains tax cut widened the disparity between growth and yield assets, but the 1981 Act tax rate reductions narrowed this gap to less than it had been prior to the 1978 Act.

The second set of computations calculated effective tax rates for corporate shares and non-business real estate actually sold in 1977. These computations reveal that effective tax rates on the returns from assets actually sold were much lower than the estimated tax rates on assets with a 4 percent real rate of return. According to these computations, the 1978 Act reduced the effective tax rate on appreciation of corporate shares from 29 percent to 20 percent, and reduced the effective tax rate on appreciation of non-business real estate from 28 percent to 18 percent.

These results suggest that the changes in capital gains taxation in the 1978 Act offset what had become a very high real tax burden on the return to saving and investing in growth assets. At the same time, the 1978 capital gains tax reduction widened an existing large disparity between the taxation of growth assets and yield assets. The reduction in marginal tax rates in the 1981 Act, combined with the decline in the rate of inflation, has further reduced the tax burden and significantly narrowed the disparity between growth and yield assets. These

changes, on average, have left effective tax rates on yield assets slightly above marginal tax rates on ordinary income (because of the tax imposed on nominal gains when assets are sold), but reduced the tax rate on growth assets to less than the tax rate on ordinary income, even after accounting for the failure to adjust basis for inflation.

This chapter also examined how the 1978 Act affected the "lock-in" effect, or the disincentive to sell assets with accrued gains. The tax price of realizations was defined as the value of an asset that one would need to sell, subject to the capital gains tax, in order to finance the purchase of one dollar of an alternative asset. Using data on sales of all capital assets, the tax price of realizations was shown to be on average only slightly greater than one (the price in the absence of any capital gains tax) in 1973 and 1977. On average, this tax price was not greatly affected by the 1978 Act. For example, if 1979 law had been in effect in 1977 the tax price of realizations on assets sold in 1977 would have been 1.03 instead of 1.05, a decline of only 2 percentage points. The tax price of realizations was, however, reduced substantially for taxpayers in the highest income groups. For taxpayers with incomes over $200,000, the tax price of realizations for corporate shares would have been 14 percentage points lower -- 1.18 instead of 1.32 -- if 1979 law had been applied to 1977 realizations. Thus, while on average the capital gains tax does not significantly affect the incentive to sell assets, it does impose a significant tax price on sales by taxpayers with very high incomes. This impediment to asset sales was reduced significantly by the Revenue Act of 1978.

This chapter has examined in detail the effect of the 1978 changes in capital gains taxation on relative prices -- the real returns from investment in certain types of assets and the costs of altering one's portfolio. The next two chapters examine how these relative price changes are likely to have altered saving and investment, economic growth, the allocation of capital among industries, total realizations of capital gains, and Federal tax revenues.

FOOTNOTES TO CHAPTER 2

1/ The cost of these additional distortions can be quite large. For example, a recent study estimates that the marginal deadweight loss of an extra dollar of revenue raised through a uniform increase in all U.S. taxes is between 17 and 56 cents. See Charles L. Ballard, John B. Shoven, and John Whalley, "General Equilibrium Computations of the Marginal Welfare Costs of Taxes in the United States", American Economic Review, March, 1985.

2/ In this discussion, income is defined as the amount an individual can consume while leaving net worth unchanged, or alternatively as the sum of consumption and the change in net worth. See U.S. Department of the Treasury, Blueprints for Basic Tax Reform, January, 1977.

3/ For example, the 1977 Treasury Department study of tax reform (see footnote 2) outlines two ideal tax bases -- a comprehensive income tax and a comprehensive "cash flow" income tax that exempts saving from the tax base. Under the former concept, increases in asset values would be taxed at the same rate as other forms of income on an accrual basis, with a basis adjustment for inflation and full deductibility of losses (although the Treasury study makes an exception and recommends taxation of capital gains upon realization). Under the cash flow concept, the purchase of all assets would be tax deductible, while the proceeds of asset sales (both return of capital and gains) would be fully taxable but only when consumed. An alternative version of the cash flow tax would allow no deduction for the purchase of assets, but would exclude all gains and losses from the tax base.

4/ In computing the arbitrage benefit to the investor/borrower, one must, of course, take account of any tax on interest income received by the lender. The interest rate paid by the borrower will in general tend to be higher than it would otherwise be because of the taxation of interest income. An arbitrage benefit can result, however, if the marginal tax rate of the borrower is greater than the marginal tax rate at which after-tax returns on taxable securities are equilibrated with returns on competing assets (such as tax-exempt bonds). In this case, the increase in the borrower's before-tax interest costs due to the taxation of lenders will be less than the tax benefit he receives from the deductibility of interest. In the past decade, the marginal tax rate at which after-tax returns on tax-exempt and taxable securities are equilibrated has ranged from 20 to 35 percent, so one can presume that the ability to deduct interest costs incurred to finance investment in tax-preferred assets provides potential arbitrage benefits to many high tax bracket investors.

5/ For one analysis of how the tax system favors "natural deferral" industries, see Joseph J. Cordes and Steven M. Sheffrin, "Taxation and the Sectoral Allocation of Capital in the United States," National Tax Journal, December, 1981.

6/ Some recent theoretical work suggests that taxes on corporate dividends may not affect the shares of corporate profits that are retained and distributed. In these models, it is shown that the present value of after-tax corporate distributions made from past earnings is unaffected by the timing of the distributions as long as the rate of return on investments by corporations is the same as the discount rate of individual investors. As a result, shareholders are found to be indifferent between dividends and retentions and the dividend-payout ratio is indeterminate and unaffected by taxes on distributions. In addition, the tax on distributions is found to have no effect on the real investment decisions of corporations with past retained earnings. For an elaboration of this view, see Alan J. Auerbach, "Share Valuation and Corporate Equity Policy," Journal of Public Economics, June, 1979; Alan J. Auerbach, "Tax Integration and the 'New View' of the Corporate Tax: A 1980s Perspective," Proceedings of the National Tax Association, Tax Institute of America, 1981; and David F. Bradford, "The Incidence and Allocation Effects of a Tax on Corporate Distributions," Journal of Public Economics, March, 1981. In contrast, other models imply that taxes on distributions and capital gains may affect corporate distribution policy and the allocation of capital among alternative investment activities. For example, see Martin Feldstein and Jerry Green, "Why Do Companies Pay Dividends?" American Economic Review, March, 1983.

7/ The question of whether taxation of the returns to investment reduces risk taking is a controversial one. Theoretical arguments suggest that a proportional tax with full loss offset increases the proportion of wealth allocated to high risk investment by risk averse investors; this occurs because taxation reduces the variance of expected after-tax returns to investment. However, the applicability of this argument to the case of capital gains taxation is limited by the facts that the tax system is progressive, the deductibility of capital losses is limited, and nominal rather than real capital gains are subject to tax. For a general discussion of this issue, see Gerald E. Auten, "Capital Gains: An Evaluation of the 1978 and 1981 Tax Cuts," in Charls E. Walker and Mark A. Bloomfield, eds., New Directions in Federal Tax Policy for the 1980s (Cambridge: Ballinger Publishing Co., 1983).

8/ The calculation of a lower effective tax rate on yield assets than on growth assets when the after-tax return on both is negative does not imply that there is a lower tax burden on yield assets. In fact, in the example, the required before-tax return on yield assets (7.2 percent) is higher than the required return

on growth assets (4 percent). A comparison of required before-tax returns provides the correct measure of the relative tax burden on the two assets.

9/ For some taxpayers, the effective exclusion rate was less than 50 percent because of the minimum tax on capital gains and the poisoning of the maximum tax on earned income. For others, the effective exclusion rate was greater than 50 percent because they were subject to the alternative tax of 25 percent that applied to the first $50,000 of gains, and were in a marginal tax bracket greater than 50 percent. The data indicate that the sales-weighted exclusion rate was slightly below 50 percent.

10/ Although "negative" effective tax rates could be computed in such cases, no such computations are made in the tables below (see Table 2.7) in order to avoid the appearance of subsidies.

11/ Under current law, taxpayers may deduct one-half of the excess of net long-term capital loss over net short-term capital gain, up to a maximum of $3,000. Losses in excess of $3,000 may be carried forward indefinitely to future years. The computations of the marginal tax rate on capital gain income do not take account of the present value of the future tax deductions from capital loss carryovers. Thus, the reduction in tax liability per dollar of capital loss is somewhat understated in the computations, and the net effective tax rate on all returns (including returns with both net gains and net losses) is therefore slightly overstated.

12/ A simple example may be used to illustrate this point. Suppose taxpayer A has real gains of $100, on which he pays a tax of $20 (a tax rate of 20 percent), while taxpayer B has real losses of $50, on which he receives a reduction in tax liability of $5 (a tax rate of 10 percent). The total real gain of the two taxpayers is $50 and the net change in taxes is $15, for a tax rate of 30 percent on net gains. The tax rate on net gains is greater than the tax rate on returns with gains only because of the lower rate on loss offsets.

13/ For more discussion of this point, see Martin J. Bailey, "Progressivity and Investment Yields Under U.S. Income Taxation," Journal of Political Economy, April-May 1974; and Harvey Galper and Eric Toder, "Measuring the Incidence of Taxation of Income from Capital," National Tax Association - Tax Institute of America, Proceedings of the Seventy-Fifth Annual Conference on Taxation, October, 1982.

14/ This discussion abstracts from any other transaction costs incurred in buying and selling assets. Non-tax transaction costs do impede asset sales, but do not distort appropriate incentives if prices faced by transactors reflect real resource costs (for example, services provided by brokers) attributable to transactions.

15/ The step-up in basis at death strengthens the probability that an individual will try to avoid selling an asset during his lifetime.

16/ For a more formal discussion of the effects of the capital gains tax when an investment project is terminated, see Joseph E. Stiglitz, "Some Aspects of the Taxation of Capital Gains," Journal of Public Economics, July, 1983.

Chapter 3

THE EFFECTS OF CAPITAL GAINS TAX REDUCTIONS ON SAVING, ECONOMIC GROWTH AND RESOURCE ALLOCATION

The 1978 capital gains tax reduction lowered the tax burden on a portion of the return to some forms of household saving. As a result, it increased the overall incentive to save and also provided incentives to reallocate capital to those particular forms of investment most favored by the tax change.

This chapter provides a general description of how changes in the taxation of capital gains affect saving, capital formation, economic growth, and the allocation of capital among industries. It then presents evidence showing how the capital gains tax changes enacted in 1978 are likely to alter saving, investment, economic growth, and the allocation of capital over time. The chapter then concludes with a discussion of the effects of the capital gains tax changes on investment in emerging, technology-based firms.

The analysis in this chapter focuses on the effects of changing the tax structure holding the level of government expenditures fixed. Therefore, the effects of reducing the capital gains tax are considered in a revenue-neutral context in which other taxes would need to be raised if revenues were reduced. The case in which lower capital gains taxes do not reduce revenues is also examined. This case is relevant because the increased realizations induced by the tax change act to offset the negative effect on revenues of the reduction in the tax rate on realized gains.

The first section of this chapter provides an overall perspective on how much the 1978 capital gains tax reduction is likely to have increased saving. It provides estimates of the effect of the tax change on the expected real after-tax return available to savers, and then discusses in general terms the likely effect of a one-time increase in after-tax returns on saving, capital formation, and economic growth. Then, the next section discusses the effects of reducing capital gains taxes on the returns to different types of financial claims, and on the relative real costs of capital among industries after supplies of different types of financial assets have adjusted to the tax change.

The following section presents estimates of the effects of the 1978 capital gains tax reduction on economic growth, capital formation, productivity and wages, the allocation of resources among industries, and the standard of living of households at different initial income levels. These estimates are derived by simulating a general equilibrium model of the U.S. economy

originally developed for the Office of Tax Analysis of the U.S. Department of the Treasury by leading academic experts in the field of public finance.1/ The model is designed to capture the effects on the economy of changes in the tax structure.

The final section of the chapter focuses more specifically on the effects of the capital gains tax change on emerging and high-technology firms, with particular reference to effects on the level of investment by professional venture capital firms. The mechanisms through which a change in the capital gains tax might affect these types of investments are discussed and then developments in this sector since 1978 are reviewed.

I. The Effects of Capital Gains Tax Reductions on Saving Incentives

A. Introduction

The 1978 reduction in capital gains taxation increased the incentive to save by increasing the after-tax return available to households. The previous chapter shows how the 1978 capital gains tax cut, the further reductions in marginal tax rates in the 1981 Act, and the decline in the expected rate of inflation since 1981 have increased the expected real after-tax return available to savers holding particular assets. In this section, some rough calculations are presented that provide a general perspective on the probable long-run quantitative impacts of the 1978 capital gains tax reduction on aggregate saving and on capital formation in the U.S. economy.

Households hold their wealth in many forms, only some of which give rise to expected taxable capital gains. For example, about 40 percent of household wealth consists of owner-occupied housing and consumer durables; the former largely escapes capital gains taxation because of rollover provisions, while the latter rarely produce any capital gains. In addition, another large share of household wealth is held either in the form of bank deposits, pension fund rights, or life insurance reserves -- which do not result in capital gains tax liability -- or in fixed-interest securities on which, in the long run, expected capital gains are zero. Even for those assets on which households may expect to receive capital gains -- principally corporate shares and assets used in non-corporate enterprises -- a large component of the return to capital is taxed as dividend income, rental income, or business income. Taxes on these other forms of capital income were not directly reduced by the capital gains provisions of the 1978 Act.

This section provides rough estimates of the aggregate effect of the capital gains tax reduction on the overall return available to savers, taking account of all other sources of income from capital. This is done by first showing how the tax reduction increased the long-run expected real rate of return on

average for those assets with expected capital gains (either real or inflationary), and then combining those estimates with data on aggregate holdings of household wealth to compute a weighted average increase of the return to saving on all assets.

The initial increase in after-tax returns on assets that are expected to yield taxable capital gains will be diluted and distributed over all assets as households bid up the prices of gains-producing assets relative to other assets. In addition, household saving in the model increases in response to the tax reduction, which permits additional capital investment. With a larger capital stock, pre-tax rates of return will be lower on all assets, offsetting in part the initial increase in the incentive to save. In equilibrium, total household saving and the aggregate capital stock will be somewhat higher as a result of the capital gains tax reduction, after-tax returns on all forms of saving will increase and, on average, before-tax returns (the cost of capital) will decline.

B. Effects on Expected After-Tax Returns

Table 3.1 shows the allocation of household wealth among types of assets, as reported in the flow of funds accounts published by the Federal Reserve Board. It can be seen in Table 3.1 that only about 35 percent of household equity is invested in assets on which the return is likely to be subject to a capital gains tax when the asset is sold -- corporate equities and equity in non-corporate businesses. Moreover, about 10 percent of the assets of non-corporate enterprises -- consisting mostly of financial assets and inventories -- are also either not taxed as capital gain or not likely to result in net capital gains.

Table 3.2 summarizes the calculation of after-tax returns on assets that on average give rise to taxable capital gains (hereafter referred to as capital gains assets). The estimates represent expected after-tax returns on representative capital gains assets held by the average saver who reports capital gain income. The table shows how these estimated after-tax returns might have changed initially as a result of the changes in the tax treatment of capital gains enacted in 1978.

Capital gains assets are subdivided into four broad categories -- corporate shares, land (other than owner-occupied), residential structures (other than owner-occupied), and non-residential plant and equipment owned by non-corporate enterprises. The four capital gains assets so defined accounted for 32.3 percent of household net worth in 1979. The three forms of non-corporate equity differ in both the rate of economic depreciation assumed and the depreciation allowed for tax purposes. These differences affect the tax rate on real income from the asset and the net present value of tax liability when assets are sold.

Table 3.1

Household Wealth by Asset Type, 1979

Type of asset	Amount ($bil)	Percentage of net worth
Tangible assets 1/	3,330.4	44.4
Bank deposits, currency, and fixed interest securities	2,037.9	27.2
Pension fund reserves	598.6	8.0
Corporate equities	911.3	12.2
Equity in non-corporate business	1,710.7	22.8
Miscellaneous assets	66.7	0.9
Total assets	8,875.2	118.4
Total liabilities	1,380.5	18.4
Net worth	7,494.6	100.0

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1/ Tangible assets include owner-occupied housing (structures and land), consumer durables, residential structures, plant and equipment, and land held by non-profit institutions.

Source: Balance Sheets for the U.S. Economy, 1945-1981, Board of Governors of the Federal Reserve System, Washington, D.C., April, 1982.

Table 3.2

Initial Change in After-Tax Return on Capital Gains Assets Due to the 1978 Act by Asset Type 1/

Asset type	Total capital ($bil)	Percent of net worth	Before-tax return(%)	After-tax return(%) 1977	1979
Corporate equity	911.3	12.2	4.00	1.46	1.92
Non-corporate equity					
Land	815.5	10.9	4.35	1.46	1.91
Residential structures 2/	312.1	4.2	4.24	1.46	1.80
Non-residential plant and equipment	383.6	5.1	4.75	1.46	2.03
All capital gains assets	2,422.6	32.3	4.27	1.46	1.92
Total net worth	7,494.6	100.0			

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1/ The assumptions used in the calculations are as follows. The average marginal tax rate 0.40 in 1977, and 0.37 in 1979; the capital gains tax rate is 0.204 in 1977 and 0.16 in 1979. Inflation averages 8.0 percent per year. The real before-tax return on corporate shares is 4.0 percent. The average holding period is 6.5 years for stocks and 8.0 years for other assets. The real dividend-payout ratio for stocks is 0.75.

2/ Excludes farm residences.

The calculation of after-tax returns assumes an initial real rate of return on corporate equity, net of corporate taxes but gross of personal income taxes, of 4 percent; 3 percent of this return is dividend yield and 1 percent is expected real appreciation. There is assumed to be no expected real appreciation of non-corporate equity, but the nominal value of non-corporate assets increases with inflation. The rate of inflation is assumed to be 8 percent, the rate prevailing on average between 1976 and 1980. The expected holding period is 6.5 years for corporate shares and 8 years for non-corporate assets. The "average" saver in this calculation has a marginal tax rate of 40 percent on ordinary income in 1979; 51 percent of realized capital gains are included in taxable income under pre-1978 law. (The 51 percent inclusion rate takes account of the fact that some taxpayers paid add-on minimum taxes or lost some benefits of the maximum tax on earned income because of capital gains preferences under 1977 law.)

Under these assumptions, the tax rules prevailing in 1977 reduced the real after-tax return on corporate shares to 1.46 percent, a reduction of almost 65 percent of the before-tax reurn of 4.00 percent. This after-tax return is taken to be the same on all capital gains assets under the assumption that after-tax returns among assets were equilibrated in 1977. The column labeled before-tax return in Table 3.2 then shows the real before-tax return on each capital gains asset required to produce an after-tax return of 1.46 percent, given the tax rates, tax depreciation rules and economic depreciation rates for representative assets in each class, the assumed holding periods, the capital gains inclusion rates and recapture rules, and the assumed 8 percent inflation rate.

The last column in Table 3.2 shows the real after-tax returns on each asset, given 1977 before-tax returns and the tax rules prevailing after the 1978 capital gains tax reduction. The 1978 capital gains tax changes reduced the capital gains inclusion rate to 40 percent in 1979. In addition, the computed average marginal tax rate of gains realizers declined to 37 percent because the reduction in taxable capital gains would have put some taxpayers in lower rate brackets at 1977 realizations levels. The expected real after-tax return is shown to increase substantially, in percentage terms, for all capital gains assets. On average, the rate of return increases to 1.92 percent, an increase of 31.5 percent. However, since this increase applies to only 32.3 percent of all household net worth, the average return to all household saving increases by slightly more than 10 percent.

The major reason for the dramatic increase in real after-tax returns on capital gains assets shown in Table 3.2 is the assumption of an 8 percent rate of inflation. At that inflation rate, the expected capital gains tax relative to real capital income is quite large, especially for assets with little or no expected real appreciation. The reduction in inflation since

1981 has dramatically lowered real individual tax burdens on capital gains assets. For example, at an inflation rate of 4 percent and a pre-tax real return of 4 percent, and at the average marginal tax rate on capital gains realizations expected under 1984 law (when the tax rate reductions in the 1981 Act are fully phased in), the estimated real after-tax return on corporate shares is 2.23 percent under the 1977 capital gains provisions and 2.39 percent under the 1979 capital gains provisions. Under these assumptions, the 1978 capital gains tax cut by itself increases the real after-tax return on this "representative" corporate stock by only 7 percent, compared to an increase of roughly 31 percent at an 8 percent rate of inflation and with pre-1981 law marginal tax rates. Thus, the impact of the 1978 capital gains tax reduction on the incentive to save was much larger at the inflation rates (and marginal tax rates) prevailing in the late 1970s than the impact would be under current conditions.

The calculations in Table 3.2 overstate the burden of capital gains taxation, and thus the benefits of reducing capital gains taxation, by failing to account for the large amount of gains that are untaxed at death. Table 3.3 shows an alternative calculation of the increase in after-tax returns on capital gains assets under the assumption that 30 percent of accrued capital gains escape tax permanently because of the step-up in basis at death.2/ Under this assumption, the 1978 capital gains tax reductions increased the after-tax return to capital gains assets from 1.86 percent to 2.22 percent, an increase of 19.4 percent. The estimated increase in the real after-tax return to all saving is then about 6.3 percent.

In conclusion, the calculations presented here show that, in the aggregate, the 1978 capital gains tax changes probably resulted in a modest increase in the real after-tax returns available to savers. At an 8 percent expected inflation rate, expected real returns increased on the order of 6 to 10 percent. However, at currently prevailing inflation rates and marginal tax rates, the difference made by the 1978 capital gains tax provisions is only on the order of about 2 to 3 percent.

C. Effects on Saving and Capital Formation

The initial increase in the after-tax rate of return on capital gains assets brought about by a reduction in capital gains taxation causes savers to shift savings from those forms of wealth not receiving a tax reduction. These movements of funds lower before-tax returns on capital gains assets and raise before-tax returns on other forms of wealth until risk-adjusted after-tax returns are again equilibrated. As a result, the initial benefits of the capital gains tax reduction will be distributed over all assets. With fixed asset supplies, the eventual increase in the overall rate of return to all wealth is equal to the initial increase in the after-tax rate of return on

Table 3.3

Initial Change in After-Tax Return on Capital Gains Assets Due to the 1978 Act, by Asset Type with Estimated Gains at Death Excluded 1/

Asset type	Total capital ($bil)	Percent of household net worth	Before-tax return (%)	After-tax return (%) 1977	1979
Corporate equity	911.3	12.2	4.00	1.86	2.00
Non-corporate Equity					
Land	815.5	10.9	4.44	1.86	2.21
Residential structures 2/	312.1	4.2	4.59	1.86	2.16
Non-residential plant and equipment	363.6	5.1	4.83	1.86	2.32
All capital gains assets	2,422.6	32.3	4.36	1.86	2.22
Total net worth	7,494.7	100.0			

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1/ The assumptions are the same as in Table 3.2, except capital gains rates in both 1977 and 1979 are reduced by 30 percent to account for estimated untaxed gains at death.

2/ Excludes farm residences.

capital gains assets multiplied by the share of all wealth held as capital gains assets.

The ultimate effect of this increase in after-tax returns to saving on the saving rate, and the growth rates of the capital stock, national income, productivity, and real wages depends on 1) the response of household saving to changes in the after-tax rate of return, 2) the responsiveness of capital investment to changes in the cost of capital, and 3) the extent to which the supply of domestic saving constrains the total amount of resources available for domestic capital investment. Evidence from the existing research on each of these three critical questions will be examined in turn.

1. **The Interest Elasticity of Saving.** The issue of how sensitive private saving is to a change in after-tax rates of return has long been controversial. An increase in the after-tax rate of return has offsetting effects on the incentive to save out of a given amount of income. With higher after-tax returns, the price of future consumption declines relative to current consumption, causing households to substitute future for current consumption by saving more. On the other hand, with higher available rates of return, households do not need to save as much to enjoy a given amount of future consumption. In the past, it was widely believed that this "income effect" -- the fact that an increased return makes it possible to consume more in the future with less current saving -- largely offset the relative price or "substitution effect" of higher interest rates, causing private saving to be insensitive to the rate of return. Indeed, the apparent long-run constancy of the private saving rate was a subject of several major research papers.3/

More recently, both theoretical and econometric studies have reexamined the question of how private saving responds to changes in after-tax interest rates. In one frequently cited econometric study, Boskin estimated that a one percent increase in the after-tax real interest rate will increase private saving by between 0.2 and 0.4 percent.4/ Boskin's findings, however, have been challenged by others who maintain that the evidence fails to show any relationship between private saving and the rate of return.5/ In addition, theoretical work by Summers that uses a life-cycle model to conclude that private saving is very sensitive to the rate of return has also been disputed.6/ Even if private saving is not positively related to interest rates, it is still widely accepted, based on both theory and empirical research, that an increase in the real after-tax return to saving will cause households to allocate a higher share of their wealth to future consumption rather than current consumption.7/ If household disposable income is left unchanged by substituting taxes on wages or consumption for taxes on capital income, then the tax change will cause private saving to increase because there will be a substitution effect leading to reduced current consumption, but no income effect allowing both current and future consumption to increase.

If the higher of Boskin's estimates is used (an elasticity of saving with respect to the real after-tax return of 0.4), the estimated increase of between 6 and 10 percent in the after-tax return to saving caused by the 1978 capital gains tax changes would increase the private saving rate by roughly between 2.5 percent and 4 percent. This represents an upper bound estimate of the effect of an increase in the after-tax return resulting from the 1978 capital gains tax changes on the private saving rate.

2. Investment and the Cost of Capital. The increase in private saving described above will increase the capital stock. In equilibrium, the increase in the capital stock depends on both the response of private saving to the after-tax rate of return and on the response of the demand for capital services to changes in the before-tax return, as derived from the relationship between the marginal productivity of capital and the capital stock.

Estimates of the long-run demand for capital as a function of the interest rate have been derived from econometric studies of production that show how levels of output depend on varying levels of capital, labor, and other productive inputs. These production studies, combined with models of profit-maximization by firms, generally imply increases in the desired capital stock of between 0.5 percent and 1.0 percent for any 1 percent decline in the cost of capital.8/ Such increases in the capital stock, by driving down marginal returns on capital, will lower before-tax rates of return, thus somewhat offsetting the initial increase in after-tax returns to savers. In equilibrium, the after-tax return will rise by less than the 6 to 10 percent range that is consistent with constant before-tax returns, saving rates and the capital stock will increase by correspondingly smaller amounts, and the before-tax return on capital will decline. The increase in capital per worker will cause labor productivity and real before-tax wages to be higher.

Of course, these increases in the capital stock could take a long time to materialize. Moreover, changes in the cost of capital from short-run factors, such as the influence of aggregate monetary and fiscal policies on interest rates, are likely to swamp changes resulting from the 1978 capital gains tax provisions. These factors make it impossible to detect immediate effects on investment from the capital gains tax cut. Nonetheless, to the extent that the capital gains tax cut reduced the cost of capital in the long run, it should result over time in a larger capital stock than would otherwise be obtained.

3. Investment and the Supply of Domestic Savings. Finally, the effects described above depend on the general assumption that changes in domestic saving have an important effect on the total supply of saving available for domestic investment. At the extreme, if U.S. companies confront a constant cost of funds

determined on world capital markets, and if aggregate world saving is not substantially affected by changes in U.S. private saving behavior, then a tax cut that raises after-tax returns only to U.S. savers will not reduce the cost of capital in the United States. In this extreme case, domestic capital formation would not be significantly affected by a reduction in the taxation of individuals' capital income, unless those tax benefits are available only for returns on capital investments in the United States.

It has been argued by some that domestic saving is still the primary source of domestic investment in the major developed nations, and that it is therefore reasonable to analyze the effects of changes in U.S. capital tax provisions as if the United States were a closed economy.9/ A closed economy model is in fact used in the subsequent analysis presented in this chapter. It is worth noting, however, that the availability of foreign supplies of saving, and the possibility of domestic saving being invested abroad, reduces the effect that an increase in the supply of domestic saving would otherwise have on the cost of capital for domestic investment and on capital formation.

D. Conclusions

This section has presented a brief overview of the likely long run effect of the 1978 capital gains tax reduction on aggregate saving, investment, and economic growth. The likely overall effects on saving and capital formation are shown to be modest, largely because taxable capital gains represent only a fraction of capital income received by U.S. households. The capital gains tax does, however, impose a substantial real effective tax rate on a significant amount of private saving, largely because the tax is imposed on inflationary gains as well as on real income from capital.

The next section of this chapter discusses in more detail how changes in the capital gains tax work through financial markets to alter relative costs of capital among industries and firms, thereby affecting the allocation of capital among industries. Following that discussion, simulations are presented using a model that simultaneously estimates the long-run effects of changes in the capital gains tax on the rate of aggregate capital formation and on the allocation of capital among alternative uses.

II. The Effects of Capital Gains Tax Reductions on Financial Markets and Capital Allocation 10/

A. General Discussion

One mechanism through which a change in the taxation of capital gains affects the allocation of capital among sectors of the economy is through its effects on financial markets. Firms

finance their capital stock with a mixture of debt and equity claims that are differentially affected by changes in capital gains taxation. This mixture of financial claims differs among industries and among firms within an industry. Therefore, changes in the relative prices of these financial claims may have differential effects among firms and industries on the cost of capital. In turn, these changes in the relative cost of capital can affect the allocation of capital among industries and, ultimately, the types of final outputs produced.

Firms finance their holdings of capital by issuing debt and equity. The tax treatment of returns to debt and equity differs at both the corporate and personal levels. At the corporate level, interest paid to bondholders is deductible from corporate taxable income, but dividend payments are not deductible. At the personal level, the returns on debt instruments are generally taxable (except for certain tax-exempt "industrial development bonds" issued by state and local governments and then lent to corporations), while the returns from equity claims are taxed partly as ordinary income and partly as capital gain. Dividend payments on equity claims are taxed as ordinary income (in excess of a $100 per taxpayer exclusion), but taxes on any income arising from appreciation of equity claims are deferred until realization and then taxed at favorable capital gains rates. Shares issued by firms with low dividend-payout ratios will therefore be taxed primarily as capital gain; shares of firms with high dividend-payout ratios will be taxed primarily as ordinary income.

An increase in the exclusion rate on capital gains increases the relative attractiveness of those assets whose income derives in the form of asset appreciation. Such a change, in general, benefits stocks more than bonds and stocks with low dividend-payout ratios more than stocks with high dividend-payout ratios. Prices of those relatively favored financial claims should rise initially to reflect the increase in their after-tax returns. Therefore, increasing the capital gains exclusion rate increases the price of equity claims compared to debt claims, and increases the price of "growth" stocks compared to "yield" stocks.

These initial changes in the relative prices of securities suggest that certain firms and industries will be more favorably affected by an increase in the exclusion rate than will others. In particular, firms with low debt-equity ratios and low dividend-payout ratios would appear to benefit the most because the claims to the income derived from their earnings are most heavily in forms that receive the benefits of the capital gains preference. Thus, increases in the capital gains exclusion rate would tend to benefit those firms and industries -- particularly growing firms and industries -- that rely heavily on equity finance and pay relatively low dividends. Since their cost of funds is reduced, this analysis suggests that more capital will flow to those sectors.

B. Qualifications

This general description of the effect of a reduction in capital gains taxation on the allocation of capital among industries is based on three implicit assumptions. First, the analysis assumes that the increase in the capital gains exclusion rate does not affect debt-equity ratios and dividend-payout ratios. That is, firms do not respond to the more favorable taxation of capital gains at the household level by increasing equity relative to debt in their corporate financial structures. As a result, the initial change in relative security prices is not offset, either wholly or in part. Second, the sources of funds to finance new investments for a firm are assumed to be the same as those that financed the existing capital stock of the firm. Third, an increase in the capital gains exclusion rate is assumed to decrease the required before-tax return on shares issued by firms with low dividend-payout ratios.

Each of these three assumptions is discussed below. To the extent any of these assumptions is not satisfied, the link between increasing the exclusion rate and favoring investment in firms with low debt-equity and low dividend-payout ratios is weakened. There are several reasons to believe that none of these three conditions is strictly satisfied in the United States economy.

1. **Adjustments in the Supplies of Securities.** A firm's leverage or debt-equity decision is based on balancing a number of considerations. Firms must compare the benefits from the fact that interest payments are deductible from taxable income against the costs of increased exposure to bankruptcy risk as the debt-equity ratio is increased. In addition, by reducing taxable income, increasing interest deductions beyond a certain point may limit a firm's ability to utilize other deductions and credits (such as accelerated depreciation allowances and the investment tax credit) fully. A firm must also take into account the relative price of debt versus equity claims as revealed in the market in order to determine its optimal financial structure. On the margin, a firm takes all these factors into consideration in calculating an optimal leverage or debt-equity position.

Since an increase in the capital gains exclusion rate increases the price of equity relative to debt claims in the market, firms will find it profitable to substitute some of their debt claims for equity claims. This process may take some time because firms can only gradually retire debt, issue additional stock, or increase equity capitalization through retained earnings. Over time, however, as the supply of equity claims increases relative to the supply of debt, the relative price of equity to debt will fall.

As an extreme case, it is possible that these supply adjustments could restore the relative prices of debt and equity claims that prevailed before the reduction in capital gains

taxation.11/ In that case, the economy as a whole would have less debt and more equity; however, individual firms, after an adjustment period, would confront the same relative costs of raising capital by debt and equity issues as they did before the capital gains tax reduction. Since initial relative costs of capital among firms would be restored, the changes in financial markets brought about by the tax change would not alter the relative costs of capital among industries. In short, the capital gains tax cut would lead to an adjustment in relative supplies of financial claims rather than to a reallocation of physical capital among firms and industries.

An adjustment of the type described above -- a complete adjustment of supplies of securities to offset the relative price change in favor of equity supplies -- is unlikely. Firms may be reluctant to change their capital structures enough to offset completely the added advantage conferred on equity finance by the increase in the exclusion rate. Other non-tax considerations may also be important in firms' capital structure decisions. However, as long as some firms do adjust the composition of their capital structures, a portion of the initial relative price change will be reversed. In other words, the permanent relative price adjustment in favor of equity claims will be less than the initial price adjustment. This dampening of the relative price change will also reduce incentives to reallocate physical capital among industries.

2. **Average vs. Marginal Financing Ratios.** In evaluating the effects on the allocation of capital of a reduction in the taxation of capital gains, it is important to distinguish between a firm's average debt-equity ratio on its entire capital stock and its marginal debt-equity ratio for financing new investment. Even if the relative price change in favor of equity claims induced by the tax changes persists, it will not reduce the relative cost of capital for firms that currently have low debt-equity ratios unless they are also the firms with the lowest debt-equity ratios for new investment.

Firms with low average debt-equity ratios will find that the outstanding value of their securities will be favorably affected by any change in capital gains taxation that raises the relative price of equity claims. In terms of this value or wealth effect, firms with low average debt-equity ratios will be the ones that profit most from this change. However, unless these are also the firms with the lowest marginal debt-equity ratios, they will not be provided with an incentive to attract capital from other industries.

This conclusion is based on the view that relative price effects rather than wealth effects are what determines the allocation of capital among sectors. The distribution of wealth among firms does not in itself affect the relative rates of return on different uses of capital. It should be noted, however, that some economists do attribute a role to wealth

effects in investment decisions.12/ For example, if a firm's owners are more optimistic about its future prospects than the market, an increase in the wealth of its principal shareholders will cause more capital to flow to the firm for investment projects even if the relative costs of raising new capital and relative yields as perceived by the market as a whole remain unchanged.

3. **Market Valuation of Dividends and Retained Earnings.** Finally, the view that capital gains taxation will lower the costs of capital for firms with low dividend-payout ratios rests on a presumption that relative market values of these firms will rise in response to a capital gains tax reduction. To date, empirical evidence sheds little light on this issue. Econometric studies have generally failed to detect any systematic market preference for securities of firms with low dividend-payout ratios, despite their tax advantages. When account is taken of risk differentials, it appears that the required price-earnings ratios on securities are independent of dividend-payout ratios.13/

There are several possible explanations for this result. First, the studies themselves may have failed to detect a premium for low dividend-payout securities because of the difficulty in correctly adjusting the returns on securities to account for differential risks. Second, the public may simply have a strong preference for receiving income in the form of dividends -- either because of their information content or because of transactions costs of converting share appreciation to cash -- that overrides the tax advantage from receiving income in the form of asset appreciation. Finally, there may be different preferences among the buyers of equities, with institutions and low-bracket taxpayers preferring dividend-paying stocks and high bracket taxpayers preferring growth stocks. The corporate sector as a whole may adjust the relative supplies of stocks with different dividend-payout ratios so as on average to equalize the cost at the margin from issuing "yield" and "growth" stocks.

If the latter explanation is correct, an increase in the capital gains exclusion rate could disturb this equilibrium by increasing shareholders' demands for growth stocks. The question is whether or not changes in dividend-payout ratios in response to these demands will be large enough to restore the estimated equality between risk-adjusted rates of return on "growth" and "yield" stocks.

To sum up, the ability of firms to respond to changes in the relative prices of debt and equity claims by changing debt-equity and dividend-payout ratios dampens the effects of a change in capital gains taxation on the allocation of capital among firms and industries. In addition, because marginal debt-equity ratios are not necessarily identical to average debt-equity ratios, the firms or industries with the lowest observed debt-equity ratios may not be the firms or industries which are provided with the

greatest incentive to expand their capital stock as a result of a reduction in the capital gains tax. Finally, empirical studies showing that the market does not appear to pay a premium for shares with low dividend-payout ratios may be interpreted to suggest that the initial effects on market prices of a cut in the capital gains tax will be overturned by adjustments in dividend-payout ratios.

C. Conclusions

A reduction in the taxation of capital gains, by changing the relative prices of different types of financial claims, tends to reallocate capital toward those firms and industries with low debt-equity ratios and low dividend-payout ratios. However, changes in the supplies of financial claims over time tend to offset the effects on the relative prices of securities, and thus on the relative costs of capital to different firms, of the initial increase in the demand for equity shares of firms with low dividend-payout rates. It is unlikely that changes in firms' financial policies can completely offset the changes in the relative prices of securities resulting from a change in the capital gains exclusion rate. However, any calculation of the changes in relative capital costs to industries which is based on an assumption of no adjustments in corporate financial policy is likely to be an upper-bound estimate that overstates the impact of changes in the capital gains tax on the allocation of capital among sectors.

III. General Equilibrium Model Estimates of the Effects of Capital Gains Tax Reductions on Capital Allocation, Economic Growth, and Welfare

A. Introduction

This section provides estimates of the effects of the capital gains tax reduction on capital allocation, saving, economic growth, and the welfare of taxpayers in different income classes. These estimates were obtained from simulations using the Treasury General Equilibrium Model, which has been developed over the past six years by a team of academic economists in consultation with the Office of Tax Analysis of the Department of the Treasury. The model represents the state of the art in the analysis of the economic distortions generated by different types of taxes.14/

The model incorporates taxes at the Federal, state, and local level and can be used to evaluate how a change in one or several taxes affects overall economic performance. In the model, taxes alter the relative prices confronted by firms and individuals; the relative price changes resulting from tax policy changes induce responses in factor supplies and in demands for factor services and consumer goods. By analyzing these responses in a consistent economic framework, the model shows how changes in tax policy alter national output, consumption of different

final goods, production by different industries, incomes of different groups, supplies of labor services and saving, and economic growth.

A general equilibrium model differs from the type of macroeconomic models commonly used to forecast unemployment rates, inflation rates, and economic growth. Basically, most macroeconomic models focus on changes in aggregate demand and on how these changes will affect near term prospects for the economy. In contrast, general equilibrium models concentrate on equilibrium economic values and generally neglect factors causing short run fluctuations, such as changes in monetary policy, anticipated short-term changes in supplies and demands from the rest of the world, and current levels of inventories and plant capacity utilization. Instead, general equilibrium models focus explicitly on how policies that alter relative prices affect resource allocation among uses, including the choice between current consumption and capital accumulation. In that sense, the Treasury General Equilibrium model can be viewed as fully incorporating "supply side" economic effects, because economic growth in the model is increased only by policies that either increase factor supplies -- supplies of labor and, especially, capital -- or that improve the efficiency of resource allocation among sectors. However, since the model assumes full employment, it cannot be used to evaluate policies that reduce involuntary unemployment by increasing aggregate demand.

This type of model provides the appropriate framework to use in analyzing the long run effects of a reduction in capital gains taxes on economic growth. In the past few years, any effects the 1978 capital gains tax reduction may have had on overall economic performance were swamped by large short run changes caused by swings in monetary policy, overall levels of taxation and spending, structural tax policy changes other than those in the treatment of capital gains, changes in world oil prices, and other factors. In the long run, the capital gains tax reduction will improve the performance of the economy to the extent that the long run improvement in certain economic incentives -- particularly the reduction in current tax distortions favoring current consumption over saving -- outweigh any possible adverse effects on the allocation of capital due to the targeting of the tax reduction only to some forms of investment and any adverse distributional consequences from focusing a tax cut on the highest income households. A general equilibrium model is the best analytical tool for analyzing this question because it provides insights on how particular types of changes in the tax structure affect the long run performance of the economic system.

The next part of this section presents the results of simulating the 1978 capital gains tax reduction in the model. Several alternative assumptions regarding the offsetting tax increases required to hold revenues constant are analyzed, including the assumption that the capital gains tax reduction does not have to be "paid for" because increased realizations

offset the revenue effect of the reduction in the tax rate. Although the results of these simulations must be viewed as illustrative rather than definitive, they provide some interesting insights on the long run impact of the 1978 capital gains tax reduction.

It is important to recognize that the results of policy simulations with any model are determined by key assumptions contained in the model about the nature of the economic system. A general description of the model, which specifies the major assumptions about the economic behavior of firms and households, the overall economic environment, the degree of responsiveness of factor supplies and consumer demands to relative prices, and how changes in capital gains tax rules alter equilibrium values, is provided in the Appendix.

B. Simulation Results

The effect of the 1978 capital gains tax reduction was simulated by lowering the inclusion rate on capital gain income by 20 percent, and then solving the model for the resulting new equilibrium values. One feature of the model is a government budget constraint that requires that any loss in revenue due to a tax cut be replaced by an alternative source of revenue or result in a decline in government expenditure. In the first set of simulations presented below, the rate of asset turnover remains constant and there is a net revenue loss from lowering the inclusion rate on capital gain income. In this case, it is assumed that this revenue loss is offset by increasing marginal personal income tax rates. In the second set of simulations, it is assumed that no tax increase is required because increased turnover of assets offsets the rate reduction and keeps revenue from capital gains taxes unchanged at the new capital gains inclusion rate.

Since all capital income taxes in the model are modeled as accrual taxes (taking into account whatever benefits are conferred by deferral), a special assumption is needed to account for the possibility of revenue feedback from increases in realizations. The model does, however, automatically take account of any revenue "feedback" from increases in growth and improvements in the efficiency of resource use.

1. Alternative Revenue Replacement Assumptions. There are two alternative ways of specifying an across the board increase in marginal tax rates which could replace any revenue lost from cutting taxes on capital gains -- an additive replacement tax and a multiplicative replacement tax. Under an additive replacement tax, it is assumed that the loss in capital gains tax revenue is offset by increasing all marginal income tax rates under the personal income tax by the same absolute amount. For example, if necessary, the marginal tax rate might be increased by one percentage point in all brackets. Under this assumption, upper income groups would experience a relatively smaller percentage

increase in taxes than would lower income groups. The model solves for the amount of tax change (i.e., the increase in marginal tax rates) required. That solution takes into account the effects on national income and on the tax base of reducing the effective tax rate on returns to capital, but does not take into account increases in realizations.

An alternative revenue replacement assumption would be a multiplicative replacement tax. Under a multiplicative replacement tax, the revenue would be replaced by increasing all marginal personal income tax rates by the same percentage rather than by the same number of percentage points. Under this assumption, the increases in marginal tax rates would leave the percentage distribution of taxes by income class unchanged. After-tax income is reduced by a relatively greater amount for upper income groups because these groups experience a greater increase in tax as a percentage of income. Compared to the additive replacement tax, the multiplicative replacement tax shows slightly smaller relative gains to upper income groups from reducing the capital gains tax. In effect, a larger proportion of the initial tax cut from lowering the capital gains tax is offset by higher personal income taxes imposed on upper income individuals to maintain government revenue.

The results of simulating the model with a multiplicative replacement tax were qualitatively very similar to the results of simulations using an additive replacement tax. Therefore, the results using the multiplicative replacement tax are not shown separately.

In the case where no tax increase is required, it is assumed that increased turnover of assets -- i.e., the increase in realizations out of a given stock of accrued gains -- in response to the capital gains tax cut will be sufficiently large that government revenue from capital gains taxes will be unchanged. As will be discussed in Chapter 4, there is considerable evidence that this assumption is realistic; the capital gains tax reductions of 1978 appear to have increased long run realizations enough to offset the revenue losses from lower capital gains tax rates.

This case is modeled by assuming that government revenues are balanced by imposing higher lump sum taxes on each household in proportion to their initial shares of capital gains taxes paid. That is, the households who receive a direct reduction in taxes on capital gains income are assumed to increase realizations enough so that their total tax payments remain constant. These lump sum taxes reduce the disposable income of the households who pay them and increase the revenue of the government, but they do not reduce incentives to save or to work. In effect, as a result of increased realizations, the tax cut on capital gains leaves unchanged the tax payments of direct beneficiaries and thus government revenues and expenditures, increases the incentive to

save, and lowers the cost of capital for those industries financed by assets subject to the capital gains tax.

2. Simulation Results when the Additive Replacement Tax is Required. Table 3.4 shows the simulated effects of the 1978 capital gains tax reduction after 5, 20, and 50 years under the assumption that the tax cut is financed by increasing marginal personal income tax rates by the same absolute amount. The results of this simulation, and of the others shown in this section, are displayed as percentage deviations from the simulated growth path under pre-1978 tax law.

It is important to emphasize that these results are not intended to be forecasts of how the capital gains tax changes would alter national income after any specified period of time. As noted above, the model does not take account of short-run factors that could cause income to deviate from its long-run growth path. Rather, the time periods shown in the table represent approximations of how long it would take for the capital stock adjustments induced by the tax change in the model to occur, given that increases in the stock of capital in any year are limited by the estimated increase in the rate of saving.

The capital gains tax cuts are shown to increase the annual rate of investment (and private saving) by about 1.1 percent. The investment increase gradually augments the capital stock, and as a result raises national income. The simulated change in the capital stock after 50 years, however, is only one-half of one percent, relative to the capital stock simulated to occur under the pre-1978 capital gain rates. This increase in the capital stock is probably an overstatement because it is based on an upper-bound assumption of how private saving responds to changes in after-tax returns.

Labor supply is reduced slightly because the increase in personal income tax rates required to offset the revenue loss from cutting capital gains taxes lowers after-tax wages. Labor productivity and gross wages increase because of the increase in capital per worker. Private consumption at first decreases because a greater share of income is saved, but ultimately increases slightly because the larger national income produced by the larger capital stock allows increases in both saving and consumption.

The final row of Table 3.4 provides an estimate of how households perceive their change in living standards as a result of the tax cut. The measure of increased "welfare" is best described as the aggregate dollar amount that households would be willing to pay to have the outcome of the new tax structure rather than the old. In the model, this evaluation of household welfare takes account of the amount of leisure and expected future consumption, as well as current consumption. It is consistent with the preference structure that determines household labor supply and saving decisions.

Table 3.4

General Equilibrium Effects on National Aggregates of the 1978 Capital Gains Tax Reduction with an Additive Replacement Tax (%) 1/

Aggregate	Years after tax reduction		
	5	20	50
Investment	1.11	1.11	1.09
Capital stock	0.10	0.31	0.53
National income	-0.01	0.06	0.13
Consumption	-0.14	-0.02	0.11
Labor supply	-0.11	-0.11	-0.11
Labor productivity	0.10	0.17	0.24
Welfare	0.03	0.08	0.13

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1/ Changes in national aggregates are expressed as percentage deviations from the levels simulated to occur under pre-1978 law.

In the long run, the aggregate increase in welfare is about the same as the aggregate change in national income. In the short run, however, the change in welfare is slightly greater than the change in national income because households anticipate greater future consumption from current investment decisions. Aggregate welfare is shown to increase in all time periods as a result of the capital gains tax cut. The main reason for this increase is that the tax cut, by reducing disincentives for saving, leads to an allocation of resources between current and future consumption more consistent with household preferences.

Table 3.5 shows changes in output and in the use of capital and labor by each of the 19 producer goods industries in the model. The largest increases in output occur in capital-intensive industries and their suppliers -- motor vehicles, mining (including petroleum and natural gas), metals and machinery, petroleum refining, and construction. While the complexity of all the interactions in the model precludes a full explanation of these changes, reasons can be suggested for the observed pattern. The outputs of the construction, metals and machinery, and motor vehicle industries are heavily used as investment goods. Petroleum refining and crude petroleum and natural gas are capital-intensive industries that receive a significant direct cost reduction from the capital gains tax cut. Also, the outputs of these two industries and mining are heavily used as inputs (coal, iron ore, oil and gas) in production by many other industries.

It is interesting to note the simulated effects of the capital gains tax reduction on certain specially taxed industries. The high degree of tax exemption under pre-1978 law of real estate (including owner-occupied housing) and agricultural income from land means that these industries do not receive a significant cost reduction from the capital gains tax cut. As a result, capital is bid away from these industries, their relative production costs rise, and output is lower than it would have been without the capital gains tax reduction.

The second column of Table 3.5 highlights how changes in the capital stock are spread unevenly among industries. The largest percentage increase in the capital stock is in the fairly capital-intensive mining industry. (Mining also benefits because a portion of mining royalty income is taxed as capital gain.) Most industries show increased capital, but reduced employment of labor, as the tax changes encourage substitution of capital for labor. In some industries, expansion is so great that use of both capital and labor increases; these include metals and machinery, construction, and finance and insurance. In real estate and government enterprises, there is substitution of labor for capital because these sectors receive little or no significant direct benefit from lower capital gains taxes and as a result face higher relative costs of capital due to competition for capital resources from other industries.

Table 3.5

Changes in Output, Capital Use, and Labor Use
After 20 Years from 1978 Capital Gains Tax
Reduction with Additive Replacement Tax (%) 1/

Industry	Output	Capital	Labor
Mining	0.53	2.35	-0.05
Motor vehicles	0.48	1.62	-0.08
Crude petroleum and gas	0.42	0.85	-0.08
Metals and machinery	0.39	1.50	0.16
Petroleum refining	0.36	0.83	-1.11
Construction	0.33	1.67	0.27
Lumber, furniture, stone, clay and glass	0.28	1.79	-0.21
Finance and insurance	0.26	1.76	0.49
Chemicals and rubber	0.25	1.46	-0.21
Paper and printing	0.15	1.68	-0.24
Trade	0.12	1.72	-0.11
Government enterprises	0.05	-0.73	0.41
Services	0.01	1.08	-0.13
Textile, apparel and leather	0.00	1.06	-0.14
Food and tobacco	-0.10	0.32	-0.21
Transportation, communication and utilities	-0.13	0.49	-0.21
Agriculture, forestry and fisheries	-0.25	-0.26	-0.23
Real estate	-0.29	-0.34	0.17

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1/ Changes in output, capital and labor are expressed as percentage deviations from the levels simulated to occur under pre-1978 law.

Table 3.6 shows changes in consumption after 5, 20, and 50 years and changes in welfare for each household group. The change in welfare is measured as the present value of future changes in consumption and leisure, with future values discounted at a real interest rate of 4 percent.

Table 3.6 shows the capital gains tax cut lowers consumption for all income groups 5 years after the change, largely because of increased saving rates. Over time, the increased saving increases the capital stock and national income, allowing both consumption and saving to rise. After 20 years, consumption is still lower than it would have been without the capital gains tax cut, but has increased for households with income less than $10,000 per year and for households with annual income greater than $50,000. After 50 years, consumption is greater for all income groups.

The present value of welfare by household group is displayed in the last column of the table. The increase in welfare from the capital gains tax cut is largely concentrated in the highest income group. All other groups show changes in welfare of less than 0.02 percent relative to the base case, or 5 percent or less of the increase for the highest group. Welfare increases very slightly for income groups between $6,000 and $16,000, is unchanged for income groups between $16,000 and $24,000, and declines slightly for income groups between $24,000 and $40,000. Upper middle income groups show a slight decline in welfare because they have a relatively high proportion of labor income which is now taxed at a slightly higher marginal rate. For other groups, the increases in before-tax wages and transfer payments resulting from the increase in the capital stock and in output (government transfer payments are a fixed share of output in the model) outweigh the effects of higher marginal tax rates. The highest income class benefits most directly from lower tax rates on the return to saving.

The changes in relative prices, economic growth, and the distribution of income attributable to the capital gains tax cut all have implications for how consumer dollars are allocated among final goods and saving. Table 3.7 displays these changes in consumption patterns 5 years, 20 years, and 50 years after the tax change. After 50 years, the only consumption good experiencing a decline relative to the base case is housing. Saving increases by 1.1 percent. Consumer goods with relatively large increases are gasoline and other fuels (0.5 percent) and financial services (0.5 percent).

The decline in consumer housing purchases is not due to an increase in the number of hours one has to work to purchase housing; the price of housing in terms of wages actually declines. Rather, the decline in housing reflects relatively lower prices for other consumer products that induce consumers to shift their pattern of purchases. In effect, the relative

Table 3.6

Changes in Real Consumption and Welfare by Income Class from the 1978 Capital Gains Tax Reduction with an Additive Replacement Tax (%) 1/

Household income class 2/	Change in real consumption: Years after tax change			Welfare change
	5	20	50	
0 - 6,000	-0.08	0.01	0.09	0.00
6,000 - 8,000	-0.09	0.01	0.10	0.02
8,000 - 10,000	-0.11	0.00	0.10	0.02
10,000 - 12,000	-0.12	-0.01	0.10	0.02
12,000 - 14,000	-0.13	-0.01	0.10	0.02
14,000 - 16,000	-0.15	-0.03	0.09	0.01
16,000 - 20,000	-0.18	-0.05	0.07	0.00
20,000 - 24,000	-0.19	-0.06	0.07	0.00
24,000 - 30,000	-0.22	-0.08	0.05	-0.01
30,000 - 40,000	-0.24	-0.10	0.03	-0.02
40,000 - 50,000	-0.22	-0.08	0.05	0.01
50,000 +	-0.10	0.24	0.38	0.38
Total	-0.14	-0.02	0.11	0.07

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1/ Changes in consumption and welfare are expressed as percentage deviations from the levels simulated to occur under pre-1978 law.

2/ Income figures are 1980 levels.

Table 3.7

Consumer Product Consumption Changes
from the 1978 Capital Gains Tax Reduction
with an Additive Replacement Tax 1/

Consumer product	Years after tax change		
	5	20	50
Food	-0.2	0.0	0.1
Alcoholic beverages	-0.1	0.0	0.1
Tobacco	-0.2	0.0	0.1
Utilities	-0.1	0.0	0.1
Housing	-0.6	-0.4	-0.2
Furnishings	0.0	0.1	0.2
Appliances	0.0	0.1	0.1
Clothing & jewelry	-0.1	0.0	0.1
Transportation	-0.1	0.0	0.1
Motor vehicles, tires & auto repairs	0.0	0.1	0.2
Services	-0.1	0.0	0.1
Financial services	0.2	0.4	0.5
Reading, recreation, miscellaneous	-0.1	0.0	0.1
Nondurable, nonfood household items	0.0	0.1	0.2
Gasoline and other fuels	0.2	0.3	0.5
Saving	1.1	1.1	1.1

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1/ Changes in consumption are expressed as percentage deviations from the levels simulated to occur under pre-1978 law.

advantage of tax-favored owner-occupied housing is reduced because the capital gains tax reduction lowers costs more in other sectors of the economy.

3. **Simulation Results when No Replacement Tax is Required.** Tables 3.4a and 3.6a display the results from simulating the effects of a capital gains tax cut using the Treasury General Equilibrium Model under the assumption that increased turnover of assets exactly offsets the effects of the capital gains tax on Federal revenue. As will be shown in Chapter 4, the best available econometric estimates show that annual revenue from capital gains taxes either increased or was roughly unchanged in the long run by the 1978 capital gains tax reduction, as the revenue effect of the decline in tax rates was offset by an increase in realized gains. Thus, this simulation probably represents a more realistic simulation of the effects of changing the capital gains tax provisions than the analysis in the previous sub-section which assumed no change in realizations.

In the simulation, Federal revenue is held constant by imposing tax increases in the form of lump sum taxes on each household class exactly equal to the reduction in capital gains taxes from the 1978 changes. As a result, there is initially -- i.e., prior to behavioral adjustments -- no change in the distribution of the tax burden. Although it would appear that this might lead to no economic changes, in fact the substitution of lump sum taxes for capital income taxes has two important consequences. First, because of the reduction in the capital gains tax, the incentive to save is increased and costs of capital are reduced by relatively greater amounts to those sectors that issue claims subject to capital gains taxation. In contrast, the offsetting lump sum tax does not alter the rewards households receive from either work effort or saving. In effect, the tax change improves economic incentives without reducing revenue to the Federal government.

The second consequence of substituting a lump sum tax for a capital gains tax on households receiving capital gain income relates to how one interprets the resulting changes in after-tax income. In effect, people are realizing more gains -- that is, selling more assets on which past gains have been accrued -- because the tax price of such sales has been lowered. In comparison to the base case, the new lump sum taxes are being paid to the government voluntarily, as households decide to change their behavior. Since the increases in realizations that give rise to the lump sum taxes are voluntary, households who make them cannot be worse off than they were at the initial level of realizations. Thus, in evaluating welfare changes, taxes paid in response to a reduction in the "tax price of realizations" -- that is, what has been modeled as lump sum taxes -- are not counted as a reduction in welfare.

As shown in Table 3.4a, the assumption that no tax increase is required to keep revenue constant implies that the effects of

Table 3.4a

General Equilibrium Effects on National Aggregates of the 1978 Capital Gains Tax Reduction Assuming No Revenue Cost (%) 1/

Aggregate	Years after tax reduction		
	5	20	50
Investment	1.19	1.17	1.15
Capital stock	0.10	0.33	0.56
National income	0.10	0.17	0.24
Consumption	0.01	0.14	0.28
Labor supply	0.04	0.03	0.03
Labor productivity	0.06	0.14	0.21
Welfare	0.06	0.12	0.17

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1/ Changes in national aggregates are expressed as percentage deviations from the levels simulated to occur under pre-1978 law.

the capital gains tax reduction are more positive than those in the case in which the additive replacement tax is required (Table 3.4). After 50 years, the simulated increase in annual investment is 1.15 percent (compared to 1.09 percent under the additive replacement tax), in capital stock, 0.56 percent (compared to 0.53 percent), in national income, 0.24 percent (compared to 0.13 percent), in consumption, 0.28 percent (compared to 0.11 percent), and in welfare 0.17 percent (compared to 0.13 percent). Since there is no increase in marginal tax rates on labor income, and since the capital stock rises because of the improved incentive to save, real after-tax wages increase. As a result, labor supply increases by 0.03 percent (instead of declining by 0.11 percent). However, labor productivity rises at a slightly smaller rate compared to the additive replacement tax because, with a greater labor supply, the increase in capital per worker is slightly smaller.

Table 3.6a displays changes in consumption after 5, 20, and 50 years and changes in households' perceived welfare for each household income class. When realizations increase enough to prevent a reduction in revenue from capital gains taxes, all household income classes experience a net increase in economic welfare. The percentage increase in welfare remains largest for the highest income class but, in contrast to the additive replacement tax case, the welfare change is now positive for all income classes. Most household income classes benefit, in percentage terms, about half as much as the highest income class. Significantly, upper middle income groups -- those households earning between $24,000 and $50,000 per year -- now experience net gains rather than losses or negligible gains. The reason for this change is that, when an increase in realizations offsets the revenue effects of lower capital gains tax rates, it is unnecessary to recover Federal revenue losses by raising marginal tax rates that fall heavily on middle and upper-middle income wage earners.

Table 3.6a also shows that in this case the capital gains tax reduction increases consumption after 50 years for all household income classes, and increases consumption after 5 years and after 20 years for all household income classes except the highest income group. For this group, consumption initially falls because a larger share of disposable income is saved, while actual capital gains taxes paid remain constant. Over time, the rise in GNP growth makes it possible for consumption to rise for all groups, even though saving rates are higher.

4. Simulation Results when the Effective Tax Rate on All Capital Income is Reduced. An alternative simulation was performed to compare a reduction in the capital gains tax to a general reduction in taxes on the return to capital. In the comparative simulation, the shares of individual capital income subject to the personal income tax and to the corporate income

Table 3.6a

Changes in Real Consumption and Total Welfare by Income Class from the 1978 Capital Gains Tax Reduction Assuming No Revenue Cost (%) 1/

Household income class 2/	Change in real consumption: Years after tax change			Welfare change
	5	20	50	
0 - 6,000	0.04	0.13	0.22	0.10
6,000 - 8,000	0.05	0.16	0.26	0.14
8,000 - 10,000	0.07	0.18	0.30	0.16
10,000 - 12,000	0.07	0.19	0.31	0.17
12,000 - 14,000	0.06	0.19	0.31	0.17
14,000 - 16,000	0.07	0.200	0.33	0.18
16,000 - 20,000	0.07	0.20	0.33	0.17
20,000 - 24,000	0.05	0.19	0.33	0.18
24,000 - 30,000	0.04	0.18	0.33	0.17
30,000 - 40,000	0.02	0.16	0.31	0.17
40,000 - 50,000	0.01	0.15	0.30	0.20
50,000 +	-0.20	-0.06	0.09	0.40
Total	0.01	0.14	0.28	0.22

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1/ Changes in consumption and welfare are expressed as percentage deviations from the levels simulated to occur under pre-1978 law.

2/ Income figures are 1980 levels.

tax rate are both reduced by 4.3 percent, with the revenue replaced by adding a constant amount to all individual marginal tax rates (an additive replacement tax). These reductions in the inclusion rate for capital income and for income subject to the corporate tax were selected so as to require the same compensating increase in personal marginal tax rates as was required to offset a 20 percent reduction in the inclusion rate for capital gains.

Tables 3.4b through 3.6b display the results of this simulation of an across the board reduction in capital income taxes. A comparison of Tables 3.4b and 3.4 shows that this general reduction in capital income taxes results in slightly greater increases in investment, the capital stock, national income, consumption (after 50 years), productivity, and total welfare than does a reduction in inclusion rates on capital gain income alone (when both types of capital tax reduction are offset by the same change in marginal personal income tax rates). The more general reduction in capital income taxes achieves better results because it causes a more general rather than selective improvement in the allocation of resources among industries.

Table 3.5b shows that an across the board reduction in capital income taxes increases output for all industries except real estate and services. Real estate output declines by 0.39 percent because the relative tax advantage afforded to investment in owner-occupied housing is reduced when capital income taxes are lowered. The output of services remains constant because the service industry is a relatively labor-intensive sector, and thus loses more from the small increase in the cost of labor (the rise in the before-tax wage) than it gains from the reduction in the cost of capital. Capital use increases for all industries other than real estate and government enterprises, while labor use increases in some industries and declines in others. Capital intensive industries -- construction, motor vehicles, crude petroleum, and mining -- still experience some of the largest gains in output and increases in capital use.

Finally, Table 3.6b shows the change in economic welfare by household income group. Again, the general reduction in capital income taxation is shown to be slightly better than the reduction in capital gains taxes alone, particularly for lower income households. However, the differences between the two tax changes are small.

The more favorable results for a more general reduction in capital income taxes, compared to a reduction in taxes on capital gain income alone, disappear if one takes account of the revenue offsets from induced realization. For example, a comparison of Tables 3.4a and 3.4b shows that, when no revenue replacement taxes are required, the capital gains tax cut leads to a larger increase in national income, consumption, and labor supply, and about the same change in investment and the capital stock, as does a general reduction in capital income taxation. In effect,

Table 3.4b

General Equilibrium Effects on National Aggregates of a Reduction in Capital Income Inclusion Rates of 4.3 Percent with an Additive Replacement Tax (%) 1/

Aggregate	Years after tax reduction		
	5	20	50
Investment	1.20	1.18	1.16
Capital stock	0.10	0.33	0.56
National income	0.00	0.07	0.17
Consumption	-0.14	-0.01	0.13
Labor supply	-0.11	-0.12	-0.12
Labor productivity	0.11	0.19	0.27
Welfare	0.04	0.09	0.15

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1/ Changes in national aggregates are expressed as percentage deviations from the levels simulated to occur under pre-1978 law.

Table 3.5b

Changes in Output, Capital Use, and Labor Use, by Industry After 20 Years from a Reduction in Capital Income Inclusion Rates of 4.3 Percent with an Additive Replacement Tax (%) 1/

Industry	Output	Capital	Labor
Mining	0.20	0.70	0.04
Motor vehicles	0.35	1.41	-0.16
Crude petroleum and gas	0.20	0.68	-0.37
Metals and machinery	0.29	1.42	0.06
Petroleum refining	0.09	0.11	0.02
Construction	0.31	2.45	0.22
Lumber, furniture, stone, clay and glass	0.22	0.86	0.01
Finance and insurance	0.07	0.70	-0.26
Chemicals and rubber	0.22	1.70	-0.33
Paper and printing	0.11	1.36	-0.21
Trade	0.17	1.65	-0.04
Government enterprises	0.06	-0.05	0.12
Services	0.00	0.88	-0.12
Textile, apparel & leather	0.05	2.13	-0.22
Food and tobacco	0.12	1.95	-0.37
Transportation and communication	0.25	1.58	-0.23
Agriculture, forestry and fisheries	0.10	0.23	-0.13
Real estate	-0.39	-0.46	0.30

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1/ Change in output, capital and labor are expressed as percentage deviations from the levels simulated to occur under pre-1978 law.

Table 3.6b

Changes in Real Consumption and Welfare by Income Class from a Reduction in Capital Income Inclusion Rates of 4.3 Percent with an Additive Replacement Tax (%) 1/

Household income class2/	Years after tax change			Welfare change
	5	20	50	
0 - 6,000	0.01	0.10	0.20	0.11
6,000 - 8,000	-0.04	0.07	0.17	0.08
8,000 - 10,000	-0.08	0.03	0.15	0.06
10,000 - 12,000	-0.10	0.02	0.14	0.06
12,000 - 14,000	-0.12	0.01	0.13	0.05
14,000 - 16,000	-0.15	-0.02	0.12	0.03
16,000 - 20,000	-0.18	-0.05	0.09	0.01
20,000 - 24,000	-0.20	-0.06	0.08	0.01
24,000 - 30,000	-0.23	-0.09	0.06	-0.01
30,000 - 40,000	-0.25	-0.10	0.04	-0.01
40,000 - 50,000	-0.23	-0.08	0.06	0.02
50,000 +	-0.07	0.22	0.37	0.36
Total	-0.14	-0.01	0.13	0.08

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1/ Changes in consumption and welfare are expressed as percentage deviations from the levels simulated to occur under pre-1978 law.

2/ Income figures are 1980 levels.

the advantage of reducing capital gains taxes, as long as one is operating in the range where tax rate cuts do not reduce revenue from capital gains taxation, is that, relative to more general reductions in capital income taxation, they do not reduce work incentives and labor supply because they do not require offsetting increases in marginal tax rates. Moreover, as can be seen by comparing Tables 3.6a and 3.6b, a reduction in the capital gains tax, when no offsetting increases in marginal tax rates are required, provides much more benefit to households with income less than $50,000 than does a more general reduction in capital income tax rates.

C. Conclusions

In this section, a general equilibrium model of the U.S. economy was used to estimate the long run effects of the 1978 capital gains tax reduction on economic growth, capital formation, and the standard of living of households in different income classes. The model was simulated under different assumptions about how the tax cut would need to be financed, including a scenario in which gains realizations increase enough to make the tax cut self-financing. The model was also used to compare the effects of reducing capital gains taxes with the effects of more general reductions of taxes on income from capital.

The 1978 capital gains tax changes are shown to generate a noticeable, but modest increase in annual saving and investment of slightly over 1 percent. This rise in investment over time increases the capital stock, leading to a rise in national income, productivity, before-tax wages, and overall economic welfare, where welfare is defined to include the value of leisure and the expected present value of future consumption. All of these variables increase by much less than 1 percent. Consumption at first declines, reflecting a voluntary decision by households to save a larger proportion of their income, but eventually increases because the rise in national income ultimately makes it possible to have higher consumption and saving. Even after 50 years, however, the annual increase in consumption is estimated to be less than 0.3 percent.

The capital gains tax reduction is shown to provide the largest net benefit to taxpayers in the highest income group. However, most other households also benefit slightly from the capital gains tax cut because the induced increase in the capital stock raises productivity and real before-tax wages. If it is assumed that induced realizations make the capital gains tax cut self-financing, then all household income groups benefit because there are no required offsetting increases in marginal tax rates; the welfare increases are distributed more uniformly across income classes in this case, although the highest income group still receives the largest benefit.

The relatively modest benefits from the capital gains tax reduction of 1978 reflect the fact that the dollar amount of the tax cut was small, relative to the total taxation of income from capital and relative to the size of the economy. As illustrated in the second section of this chapter, the capital gains tax cut of 1978 did not greatly increase after-tax returns from capital. Nonetheless, the important conclusion is that the tax reduction did produce net benefits -- even if one assumes that there were no induced realizations and that increases in marginal tax rates were required to maintain government revenues.

Finally, a comparison of the benefits of the 1978 capital gains tax reduction with the potential benefits of an alternative, broad-based reduction in capital income taxes is sensitive to the amount of induced realizations from cutting capital gains taxes. If there are no induced realizations, the model results indicated that a more general reduction in capital income taxes would have been preferable; if there are enough induced realizations to offset fully the lower capital gains rates, then the capital gains tax reduction was shown to be preferable.

Chapter 4 discusses in detail evidence on the effects of reducing the tax rate on capital gains on realizations of gains and on Federal revenue from capital gains taxes.

IV. The Effects of Capital Gains Tax Reductions on Emerging and High-Technology Firms

A. Introduction

The previous three sections of this chapter discussed the impact of the 1978 capital gains tax reduction on overall saving, capital formation, economic growth, and on the allocation of capital among broadly-defined industries. This section examines in more detail the effects of reducing capital gains taxes on emerging and high-technology firms, with particular emphasis on the set of investments often referred to as venture capital.

In the years following the 1978 Act, there has been spectacular growth in the amount of new capital committed to professional venture capital firms. These firms serve the important role of bringing together suppliers of risk capital and entrepreneurs whose companies are developing and marketing new products and services, many of them in "high tech" industries. The set of professional venture capital firms for which published data are available are not the only source of high tech capital or of innovative activity. Nonetheless, the growth in venture capital firms following the reduction in capital gains taxes has been a significant development.

Apart from a presumably small increase in overall saving, a reduction in capital gains taxes may be expected to encourage investment in emerging firms and industries for two reasons. First, there may be an increase in the supply of funds to these industries to the extent that lower capital gains taxes cause investors to reallocate funds from other investments. Second, there may be an increase in the number of people willing to leave stable jobs to undertake entrepreneurial activities, thereby creating an increased demand for funding of these activities.

This section reviews the reasons to expect a direct relationship between lower capital gains taxes and increases in the funding of new and emerging enterprises, and then evaluates the evidence on this subject based on available data on funding of new enterprises before and after 1978. The first part of this section discusses generally the relationship between capital gains taxes and the incentive to invest in new and/or risky businesses. The next part reviews evidence on the financial structures of both new and high technology firms, compared to other firms and industries, and discusses the relationship between financial structure and the effect of lower capital gains taxes. The final part of this section provides a more detailed discussion of the role of venture capital firms and of what the available evidence reveals about the effects of reduced capital gains taxes on venture capital activity.

B. Effects on Risk-Taking and Natural Deferral Activities

An implicit assumption that underlies much of the economic analysis of capital gains taxation and risk taking is that the proportion of an investment's return that is paid in the form of price appreciation increases with the riskiness of the investment.15/ One situation consistent with this assumption occurs when an investor, at the time of investment (time 0), expects no return to his investment between time 0 and some future point in time (t), but expects a stream of revenues beginning at time t. Although the owner-investor does not receive any net revenue between time 0 and time t, the investment activity nevertheless realizes a return during this period. The return can be characterized as a reward for waiting, as well as for assuming risk, and is determined by the difference between the initial value of the ownership share at time 0 and the capitalized value of the expected earnings stream when the investment's prospects become better known at time t. The return to the investment over this period (which could be either positive or negative) would be paid in the form of price appreciation (depreciation) in the ownership share. If t exceeded the minimum required holding period (currently 6 months), this return would be taxed as a long-term capital gain.

Equity investments in new firms engaged in the development and/or application of new technologies are likely to encounter a gestation period with zero revenue as described above. Such investment activities would, therefore, be a type of "natural

deferral" activity because the accrual of income in the form of price appreciation rather than cash flow returns results from the inherent nature of the investment. Favorable taxation of capital gains encourages real capital to flow toward such activities.16/

Thus, to the extent that reduced taxation of capital gains benefits natural deferral activities, a wide variety of risky investment activities may be encouraged. At the same time, not all natural deferral activities are necessarily risky. Moreover, many risky investments do not involve development and/or application of new technologies; there are also risks, for example, in investment in commodities subject to large price fluctuations. Hence, favorable tax treatment of capital gains is not necessarily an efficient way of targeting tax incentives to emerging and high technology industries, although it does help entrepreneurial activity generally.

C. Effects on Emerging High-Growth, High-Technology Firms

Another reason that reduced taxation of capital gains might be of particular value to firms in high-growth, high-technology sectors relates to the way such firms are financed. It is widely believed that reduced taxation of capital gains generally favors equity relative to debt-financed investments. If this premise is correct, and if high-growth, high-technology firms rely on equity finance more than other firms, then this difference in firm financial structures provides another reason to expect lower capital gains taxes to help emerging, high-technology firms.

An earlier section of this chapter examined the issue of how reduced capital gains taxation is relatively beneficial to firms with low debt-equity ratios. It was concluded that the changes in prices of financial assets resulting from a cut in capital gains taxes are indeed likely to reduce relative costs of capital for such firms, but that the initial effects on asset prices may be largely overturned by changes in market supplies of debt and equity.

Tables 3.8, 3.9 and 3.10 present data on the financial structures of high-technology firms, small high-technology firms, and new firms as compared with other corporations. Table 3.8 presents data showing the relative importance of equity as a source of external finance to firms in technology-based industries, compared to other industries. Table 3.9 presents estimates of the ratio of equity (including retained earnings) to total assets for ten industries traditionally viewed to be technology-based. Table 3.10 presents the ratio of new equity issues to new debt issues for firms incorporated for one year or less and for established firms.

Table 3.8 shows that high-technology industries as a group are somewhat more likely to rely on equity as a source of finance than are manufacturing industries, but do not rely more on equity than do most other industry groups. Moreover, Table 3.9 shows

Table 3.8

Equity Offerings as a Share of
Corporate Primary Cash Offerings
by Industry Groups

Year	High tech-nology	Energy extrac-tion	Manufac-turing	Serv-vices	Utili-ties	Trade	Finance	Agril-culture
1971	.30	.94	.19	.60	.38	.38	.12	.06
1972	.48	.45	.36	.62	.40	.63	.08	.15
1973	.27	.99	.33	.39	.42	.31	.25	.05
1974	.09	.49	.03	.10	.24	.02	.03	.11
1975	.06	.33	.12	.11	.38	.35	.04	.06
1976	.25	.53	.21	.15	.40	.23	.07	.02
1977	.14	.13	.09	.46	.30	.15	.06	.04
1978	.33	.36	.15	.13	.38	.18	.07	.07
1979	.17	.22	.13	.34	.26	.24	.02	.02

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Source: Securities and Exchange Commission, Registered Offering Statistics Tapes, 1972-1976, 1976-1979.

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that there is considerable variance among high-technology industries in their reliance on equity as a source of finance. Some rely more heavily on equity than "all manufacturing", while others have lower ratios of total equity to assets. The more consistent pattern shown in Table 3.9 is that small firms rely more heavily on external equity, and less on retained earnings, than do larger, more established firms. This may occur because relatively more small firms are new firms, rather than because of a difference in financing methods due to firm size per se. Table 3.10 documents the importance of external equity for new firms. It shows that, in most years during the 1970s, the ratio of new equity issues to new debt issues was much greater for new firms than for established firms.

Thus, although there is evidence that on average firms in high technology sectors would benefit relatively more than manufacturing firms in general from the changes in financial asset prices resulting from a reduction in capital gains taxes, this is not true for all high technology sectors. Further, the data in Table 3.9 suggest that the market value of small firms would not increase disproportionately from such changes because small firms do not in general have higher ratios of total equity assets than do established firms. However, the data show that small firms rely more heavily on external equity finance than do more established firms.

These observations raise the question of whether firms are more likely to be affected by changes in capital gains taxation if their principal form of equity finance is the issue of new equity shares rather than reinvestment of retained earnings. When retained earnings, including the capital gains arising from retained earnings, are taxed less heavily than dividends, it is less costly to finance new investments through retained earnings than by paying dividends and issuing new equity shares.17/ For this reason, most corporations -- other than regulated public utilities -- rarely issue new equity shares and pay dividends at the same time. Some economists have further argued that the cost of capital is lower for firms with retained earnings than for new firms because the taxes that shareholders of established firms must pay with respect to future dividends are already capitalized in share prices.18/

While these arguments suggest that new corporations are at a disadvantage compared to established corporations in raising equity capital, they also imply that this disadvantage results from the tax on corporate distributions, not the tax on capital gains. A reduction in capital gains taxes will reduce equally the tax on appreciation of old and newly-issued equity claims. Thus, while new firms may confront a higher cost of capital than existing firms because they must issue new equity rather than finance investment from retained earnings, reducing the capital gains tax may have little effect on this differential. The

Table 3.9

Relative Importance of Equity Finance for Selected Industries, by Size of Firms, 1976 1/

IRS industry classification	All firms			Small firms		
	External equity to assets	Retained earnings to assets	Total equity to assets	External equity to assets	Retained earnings to assets	Total equity to assets
Industrial chemicals plastics, & synthetics (2815)	.08	.43	.51	.22	.38	.60
Drugs (2830)	.07	.53	.60	.19	.38	.57
Agricultural & other chemical products (2898)	.13	.42	.55	.12	.28	.40
Special industry machinery(3550)	.07	.39	.46	.12	.35	.47
Office & computing machines (3570)	.11	.37	.48	.11	.26	.37
Radio, TV, & communication equipment(3665)	.05	.33	.38	.10	.22	.32
Electronic components & accessories (3670)	.05	.41	.46	.11	.26	.37
Aircraft, guided missiles, and parts (3725)	.07	.31	.37	.14	.30	.44
Scientific instruments & measuring devices (3815)	.06	.46	.52	.11	.44	.55
Optical, medical, & opthalmic goods (3845)	.08	.53	.61	.18	.35	.53
All manufacturing	.07	.40	.47	.11	.34	.45

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1/ Small firms are those with assets less than or equal to $5 million.

Source: Sourcebooks of the Statistics of Income, 1976.

Table 3.10

Ratio of the Dollar Volume of New Equity to the Dollar Volume of New Debt by Age of Firm 1/

Year	New firm	Established firm
1971	1.78	.43
1972	1.85	.52
1973	5.40	.57
1974	.19	.18
1975	.60	.30
1976	.64	.39
1977	.32	.38
1978	1.58	.37
1979	3.70	.30

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1/ New firms are defined as those incorporated for one year or less, and established firms are defined as those incorporated for more than one year.

Source: Sourcebooks of the Statistics of Income, 1976.

benefit to new and emerging firms from reducing the capital gains tax results more from the "natural deferral" aspect of their activities than from the form of finance per se.

D. Effects on the Suply of Venture Capital

It is possible that the types of investors who supply funds to emerging, innovative enterprises are more sensitive than other investors to the tax treatment of capital gains. The investors most frequently mentioned in this context are the "venture capitalists" who specialize in providing financial capital to new firms. The discussion below examines the importance of venture capitalists as a source of long-term funds to emerging enterprises, and assesses the extent to which venture capitalists may be particularly sensitive to the tax treatment of capital gains.

The amount of new capital committed to venture capital firms has increased spectacularly in the past few years. According to data supplied by Venture Economics, the total capitalization of venture capital firms more than tripled in the five years following the 1978 capital gains tax cut, rising from $3.5 billion in 1978 to $12.1 billion in 1983. New private capital committed to these firms was $570 million in 1978, $319 million in 1979, $900 million in 1980, $1.3 billion in 1981, $1.8 billion in 1982, and $4.5 billion in 1983. It should be noted that these firms, although they have grown spectacularly, still account for a very small fraction of the total U.S. capital stock. The estimated $12.1 billion invested in venture capital firms in mid-1982 is about 0.1 percent of total net worth at the end of 1983 (which amounted to $11.2 trillion) and less than 1 percent of the market value of equity of all non-financial corporations (about $1.7 trillion).

1. The Role of Venture Capitalists in Emerging Enterprises. Tables 3.11-3.13, present some evidence on the role played by venture capitalists in the financing of new enterprises. Table 3.11, based on data prepared for the National Venture Capital Association, shows the distribution of venture capital investments in 1981 by type of investment. This table suggests that venture capitalists do, in fact, have a propensity to invest in high-technology oriented investment activities.

Tables 3.12 and 3.13 provide information on the relative importance of venture capital to emerging enterprises, both technological and non-technological. These data are based on financial information compiled by Charles River Associates (CRA) from a sample of 31 small technology-based firms and 26 small non-technological firms making their first public offerings between 1970 and 1974.19/

Table 3.12 shows that investors who were readily identifiable as venture capitalists provided approximately 12 percent of the

Table 3.11

Venture Capital Investments
by Type of Investment

Industrial activity	Percent of total number of investments
Communications	11.2
Computer related	30.0
Other electronics	14.5
Genetic engineering	6.2
Medical/health related	7.0
Energy	4.9
Consumer related	4.9
Industrial automation	6.2
Industrial products	4.4
Other	10.5
Total	100.0

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Source: National Venture Capital Association.

Table 3.12

Average Share of External Capitalization of Small Technology-Based Firms By Type of Security and Type of Investor (%)

Type of investor	Equity	Type of security: Short term loans	Type of security: Long term loans	Total
Insiders	13.6	1.3	0.9	15.8
Unaffiliated individuals	11.3	0.5	3.5	15.3
Venture capitalists	9.8	0.6	1.9	12.3
Companies other than venture capitalists	4.4	0.7	7.0	12.1
Banks	-	16.8	2.7	19.5
Government agencies	-	-	2.1	2.1
Unknown	14.7	2.0	6.2	22.9
Total	53.8	21.9	24.3	100.0

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Source: Charles River Associates, An Analysis of Venture Capital Market Imperfections, final report prepared for Experimental Technology Incentives Program, U.S. Department of Commerce, National Bureau of Standards, 1976.

total external capitalization (excluding trade debt) of technology-based firms. If unaffiliated individuals and unknown investors were also assumed to be venture capitalists, the share of external capitalization attributable to venture capital would be as much as 50 percent. According to CRA, the capitalization of small, technology-based firms is 75 percent of their total external funds (including trade debt in the total). Thus, these estimates imply that venture capitalists supplied between 9 and 38 percent of external funds to this sample of small technology-based firms.

Table 3.13 shows that venture capitalists played a relatively less important role in the external finance of small, non-technological firms, providing between 7 and 36 percent of total external capitalization. Since capitalization was estimated by CRA to be 70 percent of total external funds for this group of firms, the percentage of external funds supplied by venture capitalists was between 5 percent and 25 percent.

The data in Tables 3.11-3.13 permit several broad conclusions to be drawn about the role of venture capital. First, formally organized venture capitalists appear to have a clear preference for investments in technology-based enterprises. Second, formally organized venture capitalists do play an important role in the financing of new, small firms, particularly those which are technology-based. At least as important a role, however, is played by individuals not formally organized as venture capitalists, and by "insiders" -- those individuals directly involved in developing and managing incipient enterprises.

2. **The Role of Capital Gains Taxes.** The impact of changes in the tax treatment of capital gains on the amount of capital supplied by venture capitalists depends on both the extent to which the return to venture capital is paid in a form that qualifies for capital gains treatment, and the extent to which venture capitalists are themselves subject to capital gains taxes. Tables 3.12 and 3.13 provide information on the percent of income received by venture capitalists that is likely to receive capital gains treatment. Of the 12.3 percent of total external capitalization of new technological firms supplied by formally organized venture capitalists, 80 percent (9.8/12.3) was in the form of equity. Among unaffiliated and unknown investors, the corresponding shares of equity participation were 74 percent and 64 percent. In the case of non-technological firms, of the 6.9 percent of total external capitalization provided by formal venture capitalists, 74 percent (5.1/6.9), was in the form of equity. The corresponding shares of equity participation among unaffiliated individuals and unknown investors were 55 percent and 12 percent.

The sensitivity of the supply of venture capital to the capital gains tax depends on the personal tax status of suppliers of venture capital. It is important to recognize that venture capital is supplied by a diverse group of investors. Some

Table 3.13

Average Share of External Capitalization of
Small Non-Technology-Based Firms
By Type of Security and Type of Investor (%)

Type of investor	Equity	Type of security: Short term loans	Type of security: Long term loans	Total
Insiders	16.4	3.3	3.6	23.3
Unaffiliated individuals	4.3	-	3.5	7.8
Venture capitalists	5.1	0.3	1.5	6.9
Companies other than venture capitalists	1.3	6.2	4.1	11.6
Banks	-	13.4	14.6	28.0
Government agencies	-	-	1.1	1.1
Unknown	2.6	6.8	11.9	21.3
Total	29.7	30.0	40.3	100.0

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Source: Charles River Associates, An Analysis of Venture Capital Market Imperfections, final report prepared for Experimental Technology Incentives Program, U.S. Department of Commerce, National Bureau of Standards, 1976.

venture capitalists are individual investors rather than formal venture capital firms. There are a wide variety of more organized sources of venture capital, including single-person venture capital firms, private venture capital partnerships, small business investment companies, investment bankers, commercial banks and bank trust departments, insurance companies, university endowment funds, pension and profit-sharing funds, mutual funds, closed-end investment companies, and major non-financial corporations. As shown in Table 3.14, in recent years between 16 and 32 percent of such formally organized venture capital has been provided by individuals and families who are subject to the personal income tax (another 21 to 32 percent has been provided by insurance companies and corporations generally subject to the corporate tax on capital gains).

The evidence in Tables 3.12-3.14 may be used to place the role of organized "venture capital" suppliers into perspective and to assess the extent to which lowering the capital gains tax increases the supply of capital from this source. First, the data in Tables 3.12 and 3.13 suggest that between 9 and 38 percent of the external funds flowing into small technological firms represented equity supplied by venture capitalists. In the case of non-technological firms, the corresponding percentages are between 5 and 25 percent. The data in Table 3.14 suggest further that at most 32 percent of the funds supplied by formally organized venture capitalists will be directly sensitive to changes in personal income taxation. Thus, using the 32 percent figure, between 3 and 12 percent of the external funds flowing to small, technological firms in recent years represented capital supplied by venture capitalists who are directly sensitive to the personal tax treatment of capital gains. In the case of non-technological firms, between 1 and 8 percent of funds are provided by this group.

The data in Tables 3.12-3.14 further suggest that only a portion of the recently observed increase in venture capital flows can be attributed to the impact of the 1978 reductions in capital gains taxes on outside suppliers of venture capital to emerging firms. Roughly 47 percent of the increase in venture capital committed in 1981, compared to 1978, was from sources not directly affected by the 1978 reduction in capital gains taxes; this figure increases to roughly 60 percent if one argues that insurance companies are sufficiently lightly taxed that they should be viewed as unresponsive to changes in capital gains taxation. In addition, the share of venture capital supplied by individuals and families -- the source most sensitive to changes in the individual capital gains tax -- declined from 32 percent in 1978 to 23 percent in 1981 and declined further to 21 percent in 1983.20/

However, it should be noted that the supply of venture capital from sources not directly affected by changes in the tax treatment of capital gains may nevertheless be affected indirectly. To the extent that taxable formally organized

Table 3.14

Sources of Committed Capital to
Independent Private Venture Capital Funds

Source	1978	1979	1980	1981	1982	1983	Total
Dollar amounts ($mil)							
Pension funds	32	53	197	199	474	1,070	2,025
Insurance companies	35	8	88	132	200	410	873
Individuals and families	70	39	102	201	290	715	1,417
Corporations	22	28	127	142	175	415	909
Endowments and foundations	19	17	92	102	96	267	593
Foreign	38	26	55	90	188	531	928
Total	216	170	661	866	1,423	3,408	3,408
Percent of total capital committed							
Pension funds	15	31	30	23	33	31	30
Insurance companies	16	4	13	15	14	12	13
Individuals and families	32	23	16	23	21	21	21
Corporations	10	17	19	17	12	12	13
Endowments and foundations	9	10	14	12	7	8	9
Foreign	18	15	8	10	13	16	14
Total	100	100	100	100	100	100	100

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Source: Venture Economics

venture capitalists, as well as taxable insiders and founders (discussed in the next section), play the primary role in identifying potentially successful ventures -- only to be followed by supplies of venture capital from non-taxable or lightly-taxed investors -- the supply of venture capital from non-taxable sources is indirectly affected by the tax treatment of capital gains.

3. The Role of Insider-Founders. The previous discussion pertains only to participation in ventures by outside investors. As shown in both Tables 3.12 and 3.13, insiders who are presumably the founders of emerging enterprises are also an important source of financing for such emerging enterprises. Furthermore, a larger share of insider financing is likely to be in the form of equity than in the case of financing from outside investors, and such investors are likely to be taxable and these directly sensitive to changes in the tax treatment of capital gains.

More significantly, the willingness of "insider-founders" to commit their own financial resources to new enterprises is presumably a pre-condition for the establishment of such enterprises. In this sense, the 1978 cut in capital gains taxes may have increased the demand for venture capital funds by making it more attractive for entrepreneurs to attempt to establish new enterprises. An increased demand for funds by entrepreneurs would widen the range of investment opportunities available to prospective suppliers of venture capital, thereby inducing more funding both from outside investors who benefit from reductions in personal capital gains taxes and outside investors (such as pension funds) who do not benefit directly.

As discussed in the first part of this section, committing resources -- whether in the form of financial capital or foregone wage and salary earnings -- to new ventures is likely to involve both risk and deferral of returns. One attraction of taking such risks is the possibility of transforming otherwise fully taxable wage and salary income into capital gain. For example, in a survey of 122 corporate executives, Holland found a number of engineers and scientists who responded that favorable tax treatment of capital gains was a factor in inducing them to shift from salaried employment to management of their own firms.21/ Similarly, in a recent survey of executives in the semi-conductor industry conducted by Charles River Associates, favorable capital gains treatment of stock options was cited as an important incentive in attracting skilled technical manpower to new start-up firms.22/

E. Conclusions

This section has examined the effects of reducing capital gains taxes on emerging, high-technology firms. The principal conclusion is that there are good reasons to expect lower capital gains taxes to cause some reallocation of capital from other

sectors of the economy to new enterprises. The experience of venture capital firms since 1978 is consistent with that expectation. However, examination of the data suggests that improved incentives to suppliers of outside funds due to lower capital gains taxes -- the principal reason often cited for the increased flow of funds to venture capital firms after 1978 -- may be a less important factor (among others causing this increase) than is commonly believed.

The most important reason to expect capital gains taxes to benefit new enterprises is that investments in such firms are likely to accrue earnings in a way that qualifies them for capital gains treatment. Such investments are likely to fall within a broader class of natural deferral activities, all of which benefit, relative to other types of investments, from favorable capital gains treatment.

A considerably less compelling argument is that emerging, high-technology firms rely on equity finance. The evidence shows that such firms are not much more reliant on equity finance in general than most firms, but rather are more reliant on external as opposed to internal equity. Reduced taxation of capital gains favors both types of equity, and therefore should not be of special benefit to firms that rely relatively more on external equity.

Finally, while reduced taxation of capital gains does affect some outside venture capitalists who supply funds to emerging firms, a substantial share of the increase in venture capital funds since 1978 has been supplied by investors not directly affected by changes in the personal tax treatment of capital gains. However, reduced taxation of capital gains may indirectly affect the supply of such funds and may also expand the investment opportunities available to venture capitalists not subject to the capital gains tax by encouraging entrepreneurs to establish new enterprises.

FOOTNOTES TO CHAPTER 3

1/ The model was developed for the Treasury Department by Professor John Shoven of Stanford University and Professor John Whalley of the University of Western Ontario. For a full description of the model, see C. Ballard, D. Fullerton, J. B. Shoven, and J. Whalley, General Equilibrium Analysis of U.S. Tax Policies (North-Holland, 1983).

2/ An estimate of untaxed gains at death was constructed using historical data on capital gains realizations, revaluations of capital assets, and data on wealth transfers reported on Federal estate tax returns.

3/ See, for example, Edward F. Denison, "A Note on Private Saving," Review of Economics and Statistics, August 1958, and Paul A. David and John L. Scadding, "Private Savings: Ultrarationality, Aggregation and Denison's Law," Journal of Political Economy, March-April 1974.

4/ See Michael J. Boskin, "Taxation, Saving and the Rate of Interest," Journal of Political Economy, April, 1978.

5/ See, for example, E. Philip Howrey and Saul H. Hymans, "The Measurement and Determination of Loanable-Funds Saving," and comments by Robert Z. Lawrence, Michael J. Boskin, and John A. Brittain, in Joseph E. Pechman, ed., What Should be Taxed: Income or Expenditure (Washington, D.C., The Brookings Institution, 1980).

6/ See Lawrence H. Summers, "Capital Taxation and Accumulation in a Life Cycle Growth Model," American Economic Review, September, 1981, and Owen J. Evans, "Tax Policy, the Interest Elasticity of Saving, and Capital Accumulation: Numerical Analysis of Theoretical Models," American Economic Review, June, 1983.

7/ For a discussion of the relationship between the interest elasticity of saving and the substitutability of current for future consumption in a two-period model, see Martin S. Feldstein, "The Welfare Cost of Capital Income Taxation," Journal of Political Economy, April, 1978. For empirical estimates of the effects of interest rates on the allocation of consumption over time in a life-cycle framework, see Jonathan Skinner, "Variable Lifespan and the Intertemporal Sensitivity of Consumption," NBER Working Paper, February, 1983.

8/ For a discussion of some of these studies, see Ernst R. Berndt, "Reconciling Alternative Estimates of the Elasticity of Substitution," Review of Economics and Statistics, February, 1976.

9/ See Martin Feldstein and C. Horioka, "Domestic Saving and International Capital Flows," Economic Journal, June, 1980.

10/ This section is based on material originally prepared for the Treasury Department by Joseph Cordes and Steven Sheffrin.

11/ For an exposition of this extreme case, see Merton H. Miller, "Debt and Taxes," Journal of Finance, May, 1977.

12/ For example, see Steven J. Nickell, The Investment Decision of Firms (Cambridge University Press, 1978).

13/ For examples of studies that compare the market valuation of dividends and capital gains, see Roger Gordon and Burton Malkiel, "Taxation and Corporate Finance," in Henry Aaron and Joseph Pechman, eds., How Taxes Affect Economic Behavior (Washington, D.C., Brookings, 1981), and Robert H. Litzenberger and Krishna Ramoswarny, "The Effect of Personal Taxes and Dividends on Capital Asset Prices: Theory and Empirical Evidence," Journal of Financial Economics, 1980.

14/ For a full discussion of the model, see Ballard, Fullerton, Shoven, and Whalley, op.cit. Briefer descriptions may be obtained from numerous journal articles. For example, see Don Fullerton, A. Thomas King, John B. Shoven, and John Whalley, "Tax Integration in the United States: A General Equilibrium Approach," American Economic Review, September 1981.

15/ For example, see Roger Gordon and Burton Malkiel, "Taxation and Corporate Finance," in Henry Aaron and Joseph Pechman, eds., How Taxes Affect Economic Behavior (Washington, D.C., Brookings Institution, 1981).

16/ See Joseph J. Cordes and Steven M. Sheffrin, "Taxation and the Sectoral Allocation of Capital in the United States," National Tax Journal, December, 1981.

17/ See, for example, Mervyn A. King, Public Policy and the Corporation, (London, Chapman and Hall Ltd., 1977), Chapter 4.

18/ The point that the tax on distributions from retained earnings has already been capitalized in the value of shares, and therefore does not affect required pre-tax returns to corporate investment, has been made by Auerbach and Bradford. See Alan J. Auerbach, "Tax Integration and the 'New View' of the Corporate Tax: A 1980s Perspective," Proceedings of the National Tax Association-Tax Institute of America, 1981, and David F. Bradford, "The Incidence and Allocation Effects of a Tax on Corporate Distributions," Journal of Public Economics, March, 1981. For a more extended discussion of this point, and its relationship to changes in the capital gains tax, see Cordes and Sheffrin, op.cit.

19/ See Charles River Associates, An Analysis of Venture Capital Market Imperfections, final report prepared for Experimental Technology Incentives Program, U.S. Department of Commerce, National Bureau of Standards, 1976.

20/ The increase in capital supplied by pension funds is attributable in part to the liberalization of Securities and Exchange Commission regulations that limit the participation of pension funds in these ventures.

21/ See Daniel Holland, "The Effect of Taxation on Effort: Some Results for Business Executives," National Tax Association--Proceedings of the 62nd Annual Conference, September, 1969.

22/ See Charles River Associates, Innovation, Competition, and Government Policy in the Semi-Conductor Industry, final report prepared for Experimental Technology Incentives Program, U.S. Department of Commerce, National Bureau of Standards, 1980.

Chapter 4

THE EFFECTS OF CAPITAL GAINS TAX REDUCTIONS ON FEDERAL REVENUE

I. Introduction

A. Effects on Realizations and on the Income Tax Base

As noted in earlier chapters, capital gains are subject to tax only when realized rather than as accrued. If capital gains tax rates are sufficiently high, there is a strong incentive to avoid or defer taxation of past gains by avoiding or delaying realizations. For taxpayers who wish to leave appreciated property to their heirs, this incentive to delay realization is strengthened by the fact that the basis of inherited assets is their market value when acquired by the beneficiary, rather than the cost basis of the decedent. Thus gains transferred at death escape Federal income taxation entirely. Taxpayers also may transfer capital gains by gift, in which case the gain is not realized at the time of the gift, but the recipient's basis is the cost basis of the donor. These opportunities to avoid or defer realization imply that the existence of high capital gains tax rates deters taxpayers from some portfolio rearrangements that they would otherwise find advantageous.

In any year, realizations of capital gains are only a small fraction of accrued gains. For example, net annual realized gains averaged only slightly over 3 percent of the stock of accrued gains between 1947 and 1980. In part, this reflects the existence of accrued gains on many assets, such as some noncorporate business assets and some closely-held corporations, that rarely would be sold or exchanged even if capital gains taxes were zero. Nonetheless, the existence of such a large stock of accrued gains, relative to annual realizations, suggests a significant potential for unlocking accrued gains in response to lower capital gains tax rates.

In the debates preceding enactment of the 1978 Act, some suggested that lowering capital gains tax rates would cause so much unlocking of gains that Federal revenue would increase. A cut in capital gains tax rates should lead to an increase in realizations by reducing the costs to taxpayers of rearranging their portfolios and of liquidating assets to obtain funds for consumption. An increase in Federal revenue from capital gains taxes would occur only if lower capital gains tax rates induced an increase in realizations sufficiently large to offset the decline in the tax rates applied to capital gains realizations. Thus, the issue of whether revenue from capital gains taxes increases or decreases when capital gains tax rates decline cannot be determined on theoretical grounds.

Regardless of the direction of the revenue effect, one would expect the short-run increase in realizations in response to a capital gains tax cut to be larger than the long-run increase. Since taxpayers are realizing gains from a stock of past accruals, which have in some cases accumulated over many years, additional gains unlocked by lower capital gains taxes in the first few years after a tax cut are not constrained by the volume of recently accrued gains. However, as past accumulated gains are realized, the stock of potential realizations from these past accruals will decline. Although lower capital gains taxes should increase the turnover of assets in the long run, one would expect a one-time "unlocking" in the first year or first several years after a tax cut that is larger than the long-run effect.1/

A reduction in capital gains taxes can also alter the tax base over time by changing the size and composition of the capital stock. However, as discussed in the previous chapter, any growth in the capital stock and in GNP due to increased saving in response to the capital gains tax reduction of 1978 is likely to have been relatively small and to have taken many years to materialize. Also, a capital gains tax reduction may induce changes in the methods of financing the capital stock which may either increase or decrease revenue.

To the extent a capital gains tax reduction would induce capital to shift from owner-occupied housing and consumer durables, which yield returns in the form of untaxed service flows to households, to assets in corporations and unincorporated businesses, the tax base would increase. However, to the extent that capital would shift from assets producing ordinary income in the form of rental income, taxable interest, dividends, and net income of unincorporated businesses, to assets producing returns in the form of capital gains, the overall income tax base would decline. In the long run, an increase in observed capital gain income might not be indicative of an increase in the income tax base if capital gains were being substituted for ordinary income.

As a result of these changes in the size and composition of the capital stock and in the methods of financing capital, the total effect on the overall income tax base in response to a change in capital gains taxes is uncertain in sign as well as in magnitude. In contrast, both the economic theory discussed in Chapter 2 and the statistical evidence described below indicate that lowering the capital gains tax has a significant effect on realized gains by increasing taxable sales and exchanges of assets with accrued gains. Therefore, the analysis in this chapter focuses on the effect on Federal revenue of the "unlocking" of gains induced by a reduction in capital gains taxes. It is worth noting, however, that there are much more complex "feedback" effects of changing the capital gains tax -- which might either increase or decrease revenue -- that have not as yet been studied.

B. Historical Evidence on Realizations

Before beginning a discussion of the statistical analysis in this report of the effects of capital gains tax reductions on realizations, it is useful to review the historical evidence on capital gains realizations. Table 4.1 shows capital gains in adjusted gross income, excluded gains, total gains, and taxes paid on capital gain income for returns with net long-term gains in excess of net short-term losses and/or net short-term gains for the years 1954-1982. Taxes paid on capital gain income are computed from the Treasury's individual tax model as the difference between taxes actually paid and taxes that would have been paid if returns with positive net gains instead had gains equal to zero. Excluded gains are equal to one half of net long-term gains in excess of net short-term losses for the years 1954-1978, and 60 percent of net long-term gains in excess of net short-term losses for years beginning in 1979.

The overall trend for realizations throughout the 1950s and 1960s is upward, although there are declines in years of recessions (1957, 1960) and in years of declines in the stock market (1957, 1960, 1962, 1966, 1969). During most of the 1970s, total realizations were volatile with little trend. There were sharp declines in realizations during the recession periods of 1970 and 1974-1975, and large increases in realizations in periods of economic expansion such as 1971-1972 and 1976. The most dramatic year-to-year change occurred in 1979 when total realized capital gains increased by over 45 percent. This increase corresponded to the reduction in tax rates under the 1978 Act, and occurred during a period with a rising stock market, increasing Gross National Product and high inflation rates.

In 1980, 1981 and 1982, the year-to-year increases in total realized capital gains were 1.6 percent, 8.5 percent and 11.4 percent. The small increase in realizations in 1980 suggests that at least some of the very large increase in realizations in 1979 represented a one-time unlocking of accrued gains. However, this interpretation is clouded by the facts that the first half of 1980 was a recession period and that late in the year some realizations may have been delayed in anticipation of lower tax rates under tax changes being proposed for 1981.

In order to focus on changes in realizations of capital gains over the period of reductions in capital gains tax rates, Table 4.2 shows realized long-term capital gains by adjusted gross income class for the years 1978-1982. The data in this table show that the large increase in realizations between 1978 and 1979 occurred in all income classes, but was most pronounced in the highest income classes that benefited most from the capital gains tax reductions. Thus long-term gains increased by 140 percent in the $500,000 to $1 million income class, and by 317 percent in the $1 million and over income class.

Table 4.1

Capital Gains and Taxes Paid on Capital Gain Income
for Returns with Net Capital Gains, 1954-1982

Year	Gains in adjusted gross income	Excluded gains 1/	Total gains	Taxes paid on capital gain income
1954	3,732	3,425	7,157	1,010
1955	5,126	4,755	9,881	1,465
1956	4,991	4,692	9,683	1,402
1957	4,128	3,982	8,110	1,115
1958	4,879	4,561	9,440	1,309
1959	6,797	6,340	13,137	1,920
1960	6,004	5,743	11,747	1,687
1961	8,291	7,710	16,001	2,481
1962	6,821	6,630	13,451	1,954
1963	7,468	7,111	14,579	2,143
1964	8,909	8,522	17,431	2,482
1965	11,069	10,415	21,484	3,003
1966	10,960	10,388	21,348	2,905
1967	14,594	12,941	27,535	4,112
1968	18,854	16,753	35,607	5,943
1969	16,078	15,361	31,439	5,275
1970	10,656	10,192	20,848	3,161
1971	14,559	13,782	28,341	4,350
1972	18,397	17,472	35,869	5,708
1973	18,201	17,556	35,757	5,366
1974	15,378	14,839	30,217	4,253
1975	15,799	15,104	30,903	4,534
1976	20,207	19,285	39,492	6,621
1977	23,363	21,974	45,337	8,104
1978	26,232	24,294	50,526	9,104
1979	31,331	42,112	73,443	11,669
1980	32,273	41,859	74,582	12,459
1981	34,713	46,225	80,938	12,684
1982	38,514	51,639	90,153	12,900

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1/ For 1954-1978, 50 percent of net long-term gains in excess of net short-term losses for returns with capital gains; for 1979-1982, 60 percent such net long-term gains.

Table 4.2

Capital Gains by AGI Class, 1978-1982 1/

AGI ($thou)	Capital gains 1978 ($mil)	Capital gains 1979 ($mil)	Capital gains 1980 ($mil)	Capital gains 1981 ($mil)	Capital gains 1982 ($mil)
10 or less	5,946	7,672	8,256	9,005	8,696
10-20	6,832	7,189	6,977	5,428	4,870
20-30	6,985	7,737	6,890	6,082	4,601
30-50	8,865	11,121	9,790	9,611	9,234
50-100	8,409	11,407	12,589	13,602	13,286
100-200	5,489	8,920	9,109	10,922	10,859
200-500	4,201	7,850	9,119	10,601	12,091
500-1000	1,720	4,126	5,304	5,504	7,584
1000+	2,198	9,156	8,156	9,729	17,186
Total	50,646	72,178	76,192	80,484	88,407

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1/ Includes realized net long-term capital gains after loss carryover.

Source: U.S. Internal Revenue Service, Statistics of Income - Individual Income Tax Returns, 1978-1982.

In 1980, realized capital gains in the highest income class declined by 11 percent, even though total gains increased and the number of returns in this income class increased by nearly 23 percent, from 3,601 to 4,414. In 1981, realized long-term gains increased in all of the income classes with AGI above $50,000. While the largest increase, 19%, occurred in the $1 million and over income class, the number of returns in this income class grew at a slightly faster rate of nearly 20 percent. Thus there did not seem to be a strong immediate response to the reduction of the maximum tax rate on long-term capital gains from 28 percent to 20 percent on assets sold after June 9, 1981. However, it should be noted that the tax rate cut was in effect for only roughly half of the year, and that the beginning of the 1981-1982 recession in July, 1981 tended to reduce the amount of capital gains realized in 1981.

In 1982, with the lower capital gains tax rates in effect for the full year, realized long-term gains increased by 77 percent in the $1,000,000 and over class and by 38 percent in the $500,000-$1,000,000 income class, as compared to a total increase of slightly less than 10 percent. While real Gross National Product declined for almost all of 1982 and the trough of the business cycle was not reached until very late in the year, the stock market rose sharply beginning in August 1982. Thus key economic forces other than the change in capital gains tax rates had offsetting effects on the change in realizations in 1982.

This brief discussion of changes in capital gains realizations over time illustrates some of the hazards of directly attributing year-to-year changes in realizations to changes in tax laws. First, it is difficult to separate the effects of macroeconomic factors such as inflation, recession, and economic growth from the effects of changes in tax rates. Realizations tend to increase with increases in real Gross National Product and tend to decline in recession periods. Second, realizations tend to vary directly with changes in the stock market. The stock market may in turn react to changes in tax rates on capital gains. Third, there can be one-time events that may affect year-to-year changes in realizations. For example, the Belridge oil merger in 1979 alone accounted for one-seventh of the increase in gains in that year. Fourth, it is not appropriate simply to compare gains in income classes across years. There is an upward trend in the distribution of returns in the income classes reported by the Internal Revenue Service as inflation and increases in real income move more taxpayers into higher income classes. Furthermore, the definition of Adjusted Gross Income, the income measure used to classify returns, changes from year to year. One of the most important changes in recent years was the reduction in the inclusion rate for long-term capital gains from 50 to 40 percent in the 1978 Act. Because of this change, AGI income classes are not strictly comparable before and after the capital gains tax reductions in the 1978 Act went into effect.

C. Statistical Approaches

The effect of lowering capital gains tax rates on realizations of capital gains can be examined using two different statistical approaches. One approach is a "cross-section" analysis of how realizations of capital gains differ among taxpayers that face different marginal tax rates. Using a cross-section sample of individual taxpayers in one or several years, one can estimate how capital gains realizations would increase if the capital gains tax were lowered. The estimated response of realizations to lower tax rates can then be used to simulate the effects on Federal revenue of the changes in capital gains taxes enacted in 1978 and 1981.

The alternative approach is a "time-series" analysis of how aggregate capital gains realizations change over time when capital gains tax rates are changed. Since there have been few major changes in capital gains tax rates until recent years, it is difficult to construct statistical tests of the relationship between realizations and capital gains tax rates using time-series data.2/ It is useful and instructive, however, to compare capital gains tax realizations and revenue following the 1978 Act and the 1981 Act to the levels of realizations and revenue that would have been projected to occur if there had been no change in capital gains taxes.

The next section of this chapter reviews cross-section studies on individual taxpayer behavior that examined the relationship between realizations of gains and capital gains taxes. A representative equation which was estimated in one of these studies is then simulated to estimate the effects of the 1978 Act and the 1981 Act on Federal revenue from capital gains taxes. The following section provides alternative estimates of the effects of the 1978 Act and the 1981 Act on revenue from capital gains taxes, based on a time-series analysis of realizations and revenue in 1979-1982 under different capital gains tax regimes. The final section summarizes the findings.

II. Evidence From Cross-Section Studies

A. Introduction

One way of investigating the effect of changes in capital gains taxes on capital gains realizations, and thus on Federal revenue from capital gains taxes, is to examine the behavior of taxpayers confronted with different marginal tax rates. Essentially, one uses data from a sample of tax returns to obtain a statistical relationship between capital gains realized by taxpayers and the characteristics of those taxpayers which are thought to influence realizations, including some measure of the marginal tax rate on gains. From these equations, one can derive estimates of how gains realizations would change in response to changes in the marginal tax rate on gains. The estimated

behavioral response of taxpayers to changes in the marginal tax rate on gains can then be used to simulate the effects on realizations and on revenue from capital gains taxes of any proposed changes in the capital gains tax.

The development of large-scale data files with information from thousands of individual tax returns and the increased interest by both academics and policymakers in the behavioral effects of the taxation of capital income have combined to make econometric analysis of capital gains realizations both feasible and important. In particular, the debate over the capital gains provisions of the 1978 Act stimulated interest in estimates of the degree of "unlocking" of gains that would result if capital gains tax rates were reduced. As a consequence, there have been a number of detailed econometric studies of capital gains realizations in recent years.

This section presents simulations of the effects of the capital gains tax reductions of 1978 and 1981 on realizations of long-term capital gains and Federal revenue from capital gains taxes. These simulations are based on econometric research, performed under contract to the Department of the Treasury, which uses a panel of individual tax return data for the years 1971-1975.3/ This research, referred to below as the "panel study," represents an extension of earlier work by Feldstein, Slemrod, and Yitzhaki, by Auten and Clotfelter, and by Minarik; it uses an improved data base and alternative equation specifications in an effort to resolve some of the unanswered questions from these earlier studies.4/ The consistent finding of all of this research is that differences in capital gains realizations among individuals are quite sensitive to differences in the marginal tax rate on capital gains. These studies all suggest that the 1978 capital gains tax reduction led to a significant unlocking of capital gains. While the exact quantitative magnitude of this unlocking remains in doubt, the equations estimated in the panel study provide the best evidence available at this time of how a change in capital gains taxation would affect gains realizations in the long run.

The next part of this section discusses some of the problems of interpretation common to all studies that attempt to estimate capital gains realizations behavior from cross-section data. This is followed by a brief summary of the results of the panel study. Finally, estimates based on simulating an equation from the panel study are presented that show how realizations of long-term capital gains, and revenue from capital gains taxes, were affected by the 1978 Act and the 1981 Act.

B. Issues in Cross-Section Studies of Gains Realizations

All of the cross-section studies of gains realizations postulate a behavioral equation that relates realized capital gains, either from sales of all assets or from sales of some subset of capital assets such as corporate shares, to measures of

marginal tax rates on gains realizations, wealth, and income, and to other variables, such as the taxpayer's age, that might affect gains realizations. The coefficient on the marginal tax rate variable (or variables) is then interpreted as an estimate of how much higher capital gains realizations would have been per unit difference in the marginal tax rate. That is, the estimated coefficient on the marginal tax rate can be used to infer what capital gains realizations would be in the long run, with all other variables held constant, if capital gains tax rates had been permanently higher or lower. However, because the estimates are derived by observing the behavior of taxpayers in different circumstances at one point in time, they provide no insight on how quickly realizations will adjust in response to changes in marginal tax rates.

All of the studies confront problems of design and interpretation. These problems are reviewed below.5/

1. **Definition of Marginal Tax Rate Variable.** One problem common to all the studies is that the marginal tax rate confronted by a taxpayer is not independent of the amount of gains realized. For taxpayers with less than $3,000 of short-term losses, the marginal tax rate on the first dollar of long-term gains is equal to the statutory marginal tax rate on ordinary income because the first dollar of gain reduces by one dollar the amount of short-term loss that can be deducted from ordinary income. For net long-term gains in excess of short-term losses, the marginal tax rate on gains is below the statutory marginal tax rate on ordinary income because of the capital gains exclusion. Except for top bracket taxpayers, the marginal tax rate generally rises with the amount of gains realized as additional taxable income from capital gains moves the taxpayer into a higher marginal tax bracket.

All of the studies recognize that the marginal tax rate on gains depends on the amount of gain realized and attempt various corrections in order to derive an "exogenous" measure of marginal tax rates -- a measure that is independent of gains realizations. The techniques used to obtain an exogenous measure of the difference in marginal tax rates confronted by taxpayers include using the tax rate on the first dollar of capital gains,6/ using a predicted last dollar rate based on an equation relating the last dollar rate to the first dollar rate and to an average amount of capital gains for subpopulations classified by dividends and adjusted gross income net of gains,7/ and using a predicted tax rate based on average capital gains by classes of taxpayers.8/ While all of these techniques remove the variation in marginal tax rates caused by differences in realizations, they also to some degree suppress the differences in tax circumstances among individuals.

2. **Measure of Potential Realizations.** In theory, potential gains realizations for any taxpayer are limited by the amount of accrued gains in his portfolio. Ideally, a measure of accrued

gains or potential realizations should be included in the equations for estimating the determinants of actual realizations. Unfortunately, data on accrued gains of individual taxpayers are not available. Moreover, even if one believes that ratios of accrued gains to wealth are similar among taxpayers, there are no tax return data on wealth.

In the absence of data on accrued gains or wealth, the studies all use "proxy" variables as rough measures of wealth differences among taxpayers. For example, dividend income is used as a proxy for ownership of corporate shares, and thus as a proxy for potential realizations of gains from selling stock. Combinations of dividend income and other forms of capital income (i.e. interest, rent, and partnership income) are also used as proxy measures for total wealth.9/

The studies also include measures of total income to reflect the fact that taxpayers at higher income levels may have accumulated more wealth over their lifetimes. The usual measure of total income used is adjusted gross income less included capital gains. The panel study uses a measure of positive income that includes all positive components of adjusted gross income, other than included capital gains, but does not deduct business losses. It is presumed that this variable better measures a taxpayer's economic circumstances because wealthy individuals often show a low adjusted gross income for tax purposes because of business or partnership losses which overstate real economic losses.

The inclusion of income and wealth variables in the equations means that the studies are estimating the extent to which taxpayers with low marginal tax rates, for any given level of income and estimated wealth, have a propensity to realize capital gains. Taxpayers may have a low marginal tax rate, relative to their income, for a number of reasons, including large family size or high levels of deductible expenditures, such as medical expenditures or charitable contributions.10/ It is impossible to determine statistically whether observed differences in capital gains realizations result from differences in marginal tax rates or from differences in other variables that are correlated with lower marginal tax rates. For example, if high medical expenditures are correlated with lower marginal tax rates, one cannot determine whether any resulting observed higher capital gains realizations are occurring because taxpayers are responding to the lower costs of realizations associated with lower marginal tax rates, or simply because taxpayers with high medical expenses are financing them by selling capital assets. In the absence of any persuasive reasons for believing otherwise, the analysis in this report assumes that deductible expenses do not have a significant effect on capital gains realizations, apart from their indirect effect through lowering marginal tax rates.

3. Separation of Transitory and Permanent Effects. A related issue in interpreting the results of cross-section studies is the separation of the transitory and permanent effects of differences among taxpayers in observed marginal tax rates. If an individual's other sources of income and deductible expenditures vary greatly from year to year, leading to large annual variations in marginal tax rates, it is rational for that individual to time realizations of capital gains so as to offset other fluctuations in taxable income. That is, capital gains will tend to be realized in years when taxable income, and marginal tax rates, would otherwise be low. There is evidence that some taxpayers in fact do time realizations to offset variations in other forms of income.11/

Thus, one reason past studies may have observed a strong relationship between capital gains realizations and marginal tax rates is that people are realizing gains in years marginal tax rates are temporarily low -- not that people are behaving differently because of permanent differences in tax circumstances. If the equations are only picking up a transitory effect, then they do not imply that realizations would increase in response to a permanent reduction in the tax rate on gains.

In order to separate the transitory and permanent effects of differences in marginal tax rates, the panel study included in the equation for estimating gains realizations separate variables for the permanent marginal tax rate (an average of the current tax rate and the tax rate for the two previous years) and the transitory marginal tax rate (the difference between the current tax rate and the permanent rate). It was found that both the permanent and the transitory marginal tax rates were statistically significant in explaining differences in realizations among taxpayers. Moreover, including a transitory tax variable in the equation only slightly reduced the estimated effect on realizations of permanent differences in marginal tax rates.

4. Appropriate Estimating Technique. The studies all fit some type of curve -- either a straight line or a relationship between squares, square roots, or logarithms of variables -- to the data. One problem with standard techniques is that they fail to account for the bunching of capital gains realizations at zero.12/ To adjust for this problem, the panel study used Tobit analysis -- an estimating technique that predicts both the probability of having any positive realizations, and the level of realizations for those who do realize, based on the values of variables that determine realizations behavior.13/ The use of Tobit analysis refines the measurement of the coefficients somewhat, but it does not alter the qualitative findings of earlier studies.

5. Evaluation. This section has provided a brief overview of some of the problems in designing and interpreting studies that attempt to estimate from observations of individual taxpayers'

behavior the extent to which realizations of capital gains will be altered by changing capital gains taxes. The purpose of the discussion was both to indicate how much serious and sophisticated effort has been devoted to these studies and to caution the reader that the results are still open to varying interpretations. The panel study resolves some of the questions raised by earlier studies, but other problems still remain.

C. Summary of the Results of the Panel Study

In the panel study, equations were estimated to explain differences in capital gains realizations among individuals for a variety of asset categories and for all assets. The equations were estimated using tax return information from a sample of approximately 17,000 taxpayers for the years 1971-1975. Since the construction of the permanent and transitory measures of marginal tax rates requires tax rates from the concurrent and two preceding years, the equations only explain realizations for the years 1973-1975. The estimated equations show that gains realizations are sensitive to differences in marginal tax rates on gains, when other relevant determinants of realizations are taken into account.

Table 4.3 summarizes five different equations estimated in the panel study which explain differences in realized gains among taxpayers.14/ The equations differ both in the way the dependent variable is defined and in the form of tax variables used. In some equations, the dependent variable is the ratio of gains to wealth, with wealth measured by the sum of dividends, interest, rent, and partnership income. In other equations, wealth is estimated by equations that use survey data on both wealth and capital income to estimate the relationship between wealth and the components of capital income.15/ (As noted above, some measure of wealth is used as a proxy variable for accrued gains, or potential realizations, in all of the econometric studies on gains realizations.) In Equation 4.4, the dependent variable is defined so as to constrain realizations to be no more than the amount of predicted wealth.

In each estimating equation, the marginal tax rate is defined as the difference between the tax liability at the average amount of net long-term capital gains (in excess of net short-term losses) for the taxpayer's wealth and income group and the tax liability if net capital gains were zero divided by the average amount of net capital gains for the taxpayer's group. The tax variables include different combinations of the permanent and transitory marginal tax rates, and the square root of those tax rates.

The last column of Table 4.3 displays the estimated elasticity for each equation, i.e., the percentage change in realizations per unit percentage change in the marginal tax rate. The elasticity is itself a function of the marginal tax rate; in

Table 4.3

Estimated Elasticities of Net Long-Term Capital Gains Realizations with Respect to Permanent Marginal Tax Rates on Long-Term Gains 1/

Equation	Dependent Variable	Estimated Tax Variables	Elasticity
4.1	Ratio of Gains to Wealth 2/	Permanent Tax Rate, Square Root of Permanent Tax Rate, Transitory Tax Rate	-2.20
4.2	Ratio of Gains to Wealth 2/	Permanent Tax Rate, Transitory Tax Rate	-1.34
4.3	Logarithm of Gains	Permanent Tax Rate, Square Root of Permanent Tax Rate, Transitory Tax Rate	-1.29
4.4	Log of 100 Minus Percentage of Gains	Permanent Tax Rate, Transitory Tax Rate	-1.73
4.5	Ratio of Gains to Predicted Wealth 3/	Permanent Tax Rate, Square Root of Permanent Tax Rate, Transitory Tax Rate	-1.16

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1/ The method of estimation was Tobit Maximum Likelihood, and the elasticity estimates were based on simulations of the data file used in the panel study. Elasticities were calculated by reducing the permanent tax rate on capital gains for each taxpayer by 10 percent and then using the equation to calculate the predicted increase in realized net long-term capital gains.

2/ The wealth variable is measured by the sum of dividends, interest, rent, and partnership income.

3/ The predicted wealth variable is based on estimates using data from the 1963 Federal Reserve Board Survey of Financial Characteristics of Consumers.

most of the equations estimated, the elasticity becomes smaller as the marginal tax rate declines. In each case shown in Table 4.3, the elasticity is calculated by reducing permanent marginal tax rates for all taxpayers in the panel study sample by 10 percent and then using the estimating equation to predict the resulting increases in gains. The estimated elasticities for a different sample would differ slightly because the total response depends on the distribution of gains realizations by marginal tax rate and by income class.

The absolute values of the estimated elasticities in all of the equations in Table 4.3 are greater than one. This indicates that all of the estimated equations predict that a small reduction in marginal tax rates on capital gains below 1973-1975 levels would increase revenue from capital gains taxes for the sample of taxpayers in the panel study file.

The other independent variables used in the five equations for estimating capital gains realizations were permanent income, transitory income, wealth, and dummy variables for age groups and for the years 1974 and 1975. (A sample equation is described in detail in the following subsection.) Realized gains were larger, as expected, for larger values of permanent income, transitory income, and wealth. The age variables reflect two offsetting effects on realizations. Older taxpayers may be expected to have more accrued gains per dollar of wealth, and therefore would be expected to realize more gains. However, a bequest motive would lead taxpayers to be more reluctant to realize accrued gains as they become older, because gains can be transferred tax free by bequest. The estimated coefficients showed gains higher, all other variables constant, for taxpayers age 50-59 and 60-69, but lower for taxpayers age 70 and over.16/ Finally, the dummy variables for 1974 and 1975 adjust for differences in market conditions in those years relative to 1973; in each case, given values of other variables, realizations were smaller in both 1974 and 1975 than in 1973.

The panel study also estimated equations for realizations of gains on particular asset classes. Table 4.4 shows that the estimated permanent tax rate elasticities, using equations with the same specification as Equation 4.3 in Table 4.3, were -2.07 for capital gains on corporate stock, -0.71 for real estate investments, and -0.43 for all other assets. These results suggest that realizations of capital gains on corporate stock are more sensitive to tax considerations and thus are affected to a greater degree by the lock-in effect than are other assets.

The general findings from the panel study of an absolute value of the elasticity of gains realizations slightly greater than 1.0 at early 1970s tax rates fall in the middle of the range of estimates from previous cross-section studies of gains realizations. A much larger response of realizations to marginal

Table 4.4

Comparison of Estimated Tax Elasticity for All Gains and Estimated Tax Elasticities for Subsets of Assets 1/

Type of Asset	Permanent Tax Rate Elasticity
Corporate shares	-2.07
Real estate	-0.71
All other assets	-0.43

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1/ The estimates are made using a logarithmic functional form where the dependent variable is the logarithm of gains and the independent variables are the permanent tax rate, square root of the permanent tax rate, transitory tax rate, permanent income, transitory income, wealth, and dummy variables for age 50 to 59, age 60 to 69, over age 70, 1974, and 1975. The method of estimation is Tobit Maximum Likelihood.

Source: Capital Gains Panel Study

tax rates was estimated in the early, pathbreaking research by Feldstein, Slemrod, and Yitzhaki (FSY), while studies by Minarik found a somewhat lower response.17/ The major reason for the high elasticity in the FSY results is that they assigned equal weight to all observations even though different observations in the Treasury data file they used represent different numbers of taxpayers. When the FSY equations were re-estimated with the panel study data with the observations weighted, the results were qualitatively similar to the other findings of the panel study. The Minarik studies that estimated a smaller response differed from FSY in the following three major respects: (a) the use of weighted regression; (b) the use of an alternative measure of the tax rate variable; and (c) the inclusion of additional explanatory variables in a more flexible functional form. From the results presented in the studies, it appears that the use of weighted regression was the main reason for the dramatically different findings.18/

D. Simulated Revenue Effects of the 1978 and 1981 Tax Changes

The effects of recent changes in the tax treatment of capital gains were simulated by comparing actual realizations in 1979 to what realizations might have been in 1979 under different rules for taxing realized capital gains. The estimated equation used to derive the effect of changes in marginal tax rates on realizations is Equation 4.3 in Table 4.3.19/ Specifically, the estimated equation is

$$\begin{aligned}\log G = {} & \underset{(3.18)}{14.216}\ TXP - \underset{(13.95)}{29.522}\ TXP^{1/2} - \underset{(8.54)}{26.289}\ TXT \\ & + \underset{(14.07)}{2.637}\ YP + \underset{(4.62)}{1.710}\ YT + \underset{(25.35)}{2.306}\ W \\ & + 1.078\ DA1 + 1.624\ DA2 - 0.124\ DA3 \\ & - 4.331\ D74 - 2.773\ D75 - 40.273,\end{aligned}$$

where t-statistics are in parentheses, G is net long-term gains, TXP and TXT are the permanent and transitory tax rates, YP and YT are permanent and transitory income, W is wealth, DA1, DA2 and DA3 are dummy variables for ages 50-59, 60-69, and 70 and over, and D74 and D75 are dummy variables for the years 1974 and 1975.

In performing the simulation, this equation was collapsed to the form

$$\log G = a + 14.216\ TXP - 29.522\ TXP^{1/2},$$

where a is a constant term unique to each taxpayer. In the simulation, the average amount of gains for the group is replaced by the taxpayer's actual gains in defining the marginal tax rate.

The value of a is calibrated so that the amount of each taxpayer's actual realizations of net long-term gains in 1979 is on the regression line. That is, the constant term encompasses errors in the predicting equation unique to each taxpayer.

Table 4.5 compares actual realizations of net capital gains in 1979 with simulated realizations under the tax provisions in effect prior to the 1978 Act. Restoring the pre-1978 capital gains tax rules raises the tax rate on net capital gains, at 1979 levels of realizations, from 17.8 percent to 25.4 percent and reduces predicted realized net capital gains by about $24.1 billion. Of this amount, about $3.0 billion is due to a reduction in the number of taxpayers realizing gains and about $21.0 billion is due to a reduction in gains by taxpayers continuing to realize gains.

Tables 4.6 and 4.7 show the resulting simulated change in revenue from capital gains taxes. Table 4.6 shows the revenue from taxes on all net long-term capital gains (long-term gains, in excess of long-term and short-term losses) for returns showing positive net long-term gains. In 1979, revenue from capital gains taxes on long-term capital gains was about $10.8 billion. The revenue collected on these gains realizations would have been $15.2 billion if the gains actually realized in 1979 had been taxed at the rates prevailing prior to the 1978 Act. Because the higher rates would have lowered realized gains, however, the simulated revenue under pre-1978 law is only $8.7 billion.

Table 4.7 shows that the increase in realized gains induced by the 1978 capital gains tax changes would have increased revenue by $6.5 billion at pre-1978 tax rates. The lower rates applied to 1979 gains, however, reduced revenue by $4.4 billion. The net effect on revenue from capital gains taxes derived by simulating the cross-section realizations equation is shown in the last column of Table 4.7. The changes in capital gains taxation in the 1978 Revenue Act are shown to have increased revenue from capital gains taxes by an estimated $2.1 billion.

One striking feature of the simulation results reported in Tables 4.5-4.7 is the proportionately greater increase in induced realizations, and in capital gains taxes paid, by taxpayers in the highest income groups. Table 4.7 shows that $1.6 billion of the $2.1 billion increase in revenue from capital gains taxes attributable to the 1978 Act is accounted for by taxpayers with AGI greater than $200,000. These upper income taxpayers paid 44 percent of taxes on long-term capital gains in 1979, but pay only 37 percent in the 1978 law simulation. In contrast, the simulations show no net revenue change for the group of taxpayers with AGI less than $50,000.

Tables 4.8-4.10 show the effects of a similar simulation of the marginal tax rate changes enacted in the 1981 Act. When fully phased in (1984), these provisions reduce all marginal tax

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Table 4.5

Simulated Net Long-Term Capital Gains,
Pre-1978 Law and 1979 Levels

AGI class 1/ ($thou)	Actual 1979 ($mil)	Simulated, pre-1978 law ($mil)	Tax rate on 1979 gains (%)	
			1979 law	Pre-1978 law
10 or less	4,425	3,263	5.1	7.3
10-15	2,404	1,597	6.4	9.5
15-20	3,331	2,399	7.3	10.7
20-30	6,661	4,665	10.5	15.3
30-50	9,435	6,584	13.6	19.8
50-100	9,964	6,172	20.2	28.9
100-200	8,237	5,357	22.9	31.3
200+	20,292	10,656	24.7	35.5
Total	64,750	40,694	17.8	25.4

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1/ The definition of AGI used for the classifier in Tables 4.5-4.10 is AGI under 1979 law.

Table 4.6

Simulated Revenue from Capital Gains Taxes,
1979 Levels 1/

AGI class ($thou)	Revenues based on actual 1979 gains ($mil)	Revenues based on 1979 gains taxed at pre-1978 rates ($mil)	Revenues based on estimated 1979 gains if pre-1978 rates prevailed ($mil)
10 or less	149	210	249
10-15	156	227	149
15-20	240	348	237
20-30	687	984	656
30-50	1,289	1,866	1,230
50-100	1,831	2,562	1,604
100-200	1,646	2,183	1,367
200+	4,765	6,784	3,209
Total	10,764	15,164	8,701

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1/ Includes only those returns with net capital gains.

Table 4.7

Simulated Effect of 1978 Capital Gains Cuts on Revenue from Capital Gains Taxes, 1979 Levels 1/

AGI class ($thou)	Change in gains, pre-1978 rates ($mil)	Change in rates, 1979 rates ($mil)	Total revenue change ($mil)
10 or less	-39	-61	-100
10-15	78	-71	7
15-20	111	-108	3
20-30	328	-297	31
30-50	636	-577	59
50-100	958	-731	227
100-200	816	-537	279
200+	3,575	-2,019	1,556
Total	6,463	-4,400	2,063

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1/ Data in table are based on simulations in Tables 4.5 and 4.6.

rates by roughly 25 percent; the top rate is reduced from 70 to 50 percent. The tax rates applied to net capital gains decline proportionately with the decline in tax rates applied to ordinary income; the maximum rate falls from 28 percent to 20 percent.

Table 4.8 shows that the tax rate changes enacted in 1981, when fully phased in, reduce the tax rate on all net capital gains from 17.8 percent to 14.4 percent at 1979 realizations levels. If the lower tax rate had been in effect permanently, the estimated realizations in 1979 would have been about $23.6 billion higher.

Tables 4.9 and 4.10 show the simulated long-run revenue effects if 1984 marginal tax rates had been in effect in 1979. The decline in tax rates, at the same level of realized gains, would have reduced revenue from $10.8 billion to $8.8 billion. However, the induced realizations resulting from the lower tax rates would have increased revenue from $8.8 billion to $12.4 billion. The last column of Table 4.10 shows that the reduction in marginal tax rates in 1981, including the cut in the top rate from 70 percent to 50 percent, resulted in an estimated net increase in revenue from capital gains taxes of $1.6 billion at 1979 levels.

The estimates presented in Tables 4.7 and 4.10 suggest that both the 1978 reduction in capital gains tax rates and the further lowering of marginal income tax rates in the 1981 Act increased revenue from capital gains taxes. The estimated revenue gain at 1979 levels of income was $2.1 billion from the 1978 changes and $1.6 billion from the 1981 changes. Although as capital gains tax rates are lowered, revenue from capital gains taxes must eventually fall, the simulation results imply that tax rates on capital gains may still be above their revenue-maximizing level.

The simulations shown are based on one equation that is representative of the findings of a number of studies on how realizations of net capital gains are affected by changes in tax rates on capital gains. These studies find that realizations are sensitive to tax rates and most, but not all, have estimated absolute values of elasticities greater than one at tax rates prevailing in the mid-1970s. Thus, simulating the equations estimated by other investigators is likely, in most cases, to lead to a qualitatively similar result -- revenue from capital gains taxes is higher at current tax rates than at the tax rates on capital gains in effect prior to the 1978 Act.

The next section presents alternative estimates of the revenue effect of the 1978 and 1981 reductions in capital gains tax rates, based on a time-series analysis of gains realizations and revenues in 1979-1982, compared to trends in earlier years. Then, the final section summarizes the available evidence on the revenue effects of the 1978 and 1981 capital gains tax change.

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Table 4.8

Simulated Net Long-Term Capital Gains under 1984 Law,
1979 Levels 1/

AGI class ($thou)	Actual 1979 ($mil)	Simulated, 1984 Law ($mil)	Tax rate on 1979 gains (%)	
			1979 law	1984 law
10 or less	4,425	7,088	5.1	3.8
10-15	2,404	3,154	6.4	5.2
15-20	3,331	4,200	7.3	5.7
20-30	6,661	8,602	10.5	8.4
30-50	9,435	11,161	13.6	11.7
50-100	9,964	12,810	20.2	17.1
100-200	8,237	10,821	22.9	19.1
200+	20,292	30,556	24.7	19.7
Total	64,750	88,391	17.8	14.4

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1/ The equation simulated is the same equation used in Table 4.5.

Table 4.9

Simulated Revenue from Capital Gains Taxes
Under 1984 Law, 1979 Levels 1/

AGI class ($thou)	Revenues based on actual 1979 gains ($mil)	Revenues based on 1979 gains taxed at 1984 rates ($mil)	Revenues based on estimated 1979 gains if 1984 rates prevailed ($mil)
10 or less	149	131	252
10-15	156	122	170
15-20	240	176	252
20-30	687	524	701
30-50	1,289	1,062	1,285
50-100	1,831	1,589	2,024
100-200	1,646	1,377	1,868
200+	4,765	3,778	5,817
Total	10,764	8,759	12,370

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1/ Includes only those returns with net capital gains.

Table 4.10

Simulated Effect of 1981 Tax Rate Cuts on Revenue from Capital Gains Taxes, 1979 Levels 1/

AGI class ($thou)	Change in gains 1984 rates ($mil)	Change in rates 1979 gains ($mil)	Total revenue change
10 or less	121	-18	103
10-15	48	-34	14
15-20	76	-64	12
20-30	177	-163	14
30-50	223	-227	-4
50-100	435	-242	193
100-200	491	-269	222
200+	2,039	-987	1,052
Total	3,611	-2,005	1,606

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1/ Data in table are based on simulations in Tables 4.8 and 4.9.

III. Evidence from Time-Series Analysis

A. Introduction

An alternative, and seemingly more straightforward, approach to investigating the effects of the 1978 and 1981 capital gains tax reductions on capital gains realizations and on Federal revenue from capital gains taxes is simply to observe what has happened to realizations and revenue since enactment of the 1978 and 1981 Acts. If realizations and revenue increased following the enactment of a capital gains tax reduction, one might infer that the capital gains tax cut increased, rather than decreased, Federal revenue.

The major difficulty with this approach is that one needs to know what would have happened to realizations of capital gains and Federal revenue from capital gains taxes if there had been no change in the tax law. Realizations and revenue both tend to grow over time even when there are no changes in tax policy. Moreover, this growth is uneven; capital gains realizations and tax revenue grow at varying rates, and sometimes decline, due to many factors unrelated to changes in the taxation of capital gains.

This section develops projections of what might have happened to capital gains realizations and Federal revenue from capital gains taxes if the 1978 and 1981 capital gains tax changes had not been enacted, using a simple equation to forecast the growth in realizations over time in the absence of any tax policy changes. Projected realizations under pre-1978 tax law, and Federal revenue given those realizations, are used to derive alternative estimates of how revenue from capital gains taxes changed as a result of the tax law changes enacted in 1978; similarly, projected realizations and revenue under 1979 law are used to estimate the effects of the 1981 Act.

B. Projecting Revenue from Capital Gains Taxes with a Time-Series Model

The effects of the 1978 and 1981 Acts on revenue from capital gains taxes cannot be assessed without baseline estimates of what realizations and revenue would have been without the changes in capital gains taxation. Table 4.11 presents baseline projections of capital gains realizations under pre-1978 law for the years 1979-1982, and under 1979 law for the years 1981-1982. The baseline estimates are calculated using a simple equation that relates changes in capital gains realizations over time to the changes in the capital gains tax rate in the current and previous years and to changes in three economic variables which are presumed to affect changes in realizations. Specifically, changes in realizations are calculated using the following equation (estimated over the years 1954-1982):

$$CG = \underset{(6.21)}{102.42}\ CRGNP + \underset{(1.92)}{11.774}\ CIGNP + \underset{(4.23)}{33.614}\ CSTK$$

$$- \underset{(6.44)}{1705.0}\ CTX1 + \underset{(2.06)}{814.28}\ CTX2 - \underset{(3.09)}{2445.7}$$

$$(R^2 = .884,\ D.W. = 1.987),$$

where t-statistics are parentheses, CG is the change in realized net capital gains in millions of dollars (for returns with positive net gains), CRGNP and CIGNP are the changes in the real and inflationary components of Gross National Product in billions of dollars, CSTK is the change in the value of household holdings of corporate stock in billions of dollars, and CTX1 and CTX2 are the changes in the tax rate on capital gains in the current and previous years.20/ This equation explains nearly 90 percent of the variation in year-to-year changes in capital gains realizations.

Table 4.11 shows projected capital gains realizations under pre-1978 law of $59.5 billion in 1979, $68.5 billion in 1980, $71.1 billion in 1981, and $73.7 billion in 1982.21/ The large growth in projected realizations in 1980, and the small growth in 1981 and 1982, reflect in part the large growth in stock values in 1980 and the relatively poor performance of the stock market in 1981 and early 1982. Under the assumption that the 1978 Act was passed but the 1981 Act was not, projected realizations were $77.8 billion in 1981 and $80.3 billion in 1982. In comparison, actual realizations were $73.4 billion in 1979, $74.6 billion in 1980, $80.9 billion in 1981, and $90.2 billion in 1982.

Projected realizations under 1979 law exceeded projected realizations under pre-1978 law by 23.4 percent in 1979, 8.9 percent in 1980, 9.3 percent in 1981, and 9.0 percent in 1982. This substantial increase in actual realizations in the years following 1978, relative to projected realizations, raises the possibility that revenue from capital gains taxes might have been higher than projected revenue at pre-1978 law capital gains tax rates. Similarly, actual realizations exceeded projected realizations under 1979 law by 4.1 percent in 1981 and by 12.3 percent in 1982, raising the possibility that the 1981 tax cut increased capital gains tax revenue.22/

Table 4.12 compares actual revenue from capital gains taxes to projected revenue at pre-1978 law tax rates for 1979-1982.23/ In 1979, actual revenue from capital gains taxes exceeded projected revenue by $0.9 billion. In contrast, actual revenue was only $11 million above projected revenue in 1980. These results imply a first-year increase in realizations in response to the capital gains tax reductions in the 1978 Act sufficiently large to result in a substantial revenue gain despite the

Table 4.11

Comparison of Actual and Projected Capital Gains, 1979-1982 1/

Year	Actual gains ($mil)	Projected gains, pre-1978 law ($mil)	Projected gains, 1979 law ($mil)
1979	73,443	59,530	73,443
1980	74,582	68,507	74,582
1981	80,938	71,132	77,767
1982	90,153	73,651	80,296

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1/ Figures are net long-term gains in excess of short-term losses plus short-term gains for all returns with positive net gains.

Table 4.12

Comparison of Actual and Projected Revenue
From Capital Gains Taxes, 1979-1982 1/

Year	Actual revenue ($mil)	Projected revenue		Effects of new tax laws on revenue	
		Pre-1978 law ($mil)	1979 law ($mil)	1978 Act ($mil)	1981 Act ($mil)
1979	11,669	10,817	11,669	852	0
1980	12,459	12,448	12,459	11	0
1981	12,684	12,926	12,811	-115	-127
1982	12,900	13,384	13,228	-156	-328

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1/ Includes only returns with positive net capital gains. Projected revenues are based on projected gains in Table 4.11.

2/ The effect of the 1978 Act on revenue is computed as projected revenue under 1979 law minus projected revenue under pre-1978 law. The effect of the 1981 Act on revenue is computed as actual revenue minus projected revenue under 1979 law.

reduction in capital gains tax rates. The induced realizations estimated for 1980, the second year after the tax reductions, are more modest, but are still large enough to offset the lower tax rates and produce a small net revenue gain. For 1981 and 1982, the increased realizations as a result of the 1978 tax reductions are not sufficient to offset fully the revenue effect of the lower rates, as actual revenues are estimated to be $0.1 and $0.2 billion below the revenues projected to occur under pre-1978 law.

It is important to recognize that these revenue estimates are based on a stochastic equation for projecting realizations. Although the equation fits the data well, its stochastic element implies that the estimates are subject to prediction error. One can compute a 95 percent confidence interval around the revenue estimate by comparing actual revenue with the revenue that would have been projected to occur if realizations had been at the upper and lower bounds of the confidence interval. For example, in 1979, a 95 percent confidence interval around the estimated revenue effect has a lower bound of a modest revenue gain of $66 million and an upper bound of a large revenue gain of $1.6 billion. For 1980 and later years, a 95 percent confidence interval around the estimated revenue effects of the 1978 Act includes revenue gains at the upper bound of projected realizations and revenue losses at the lower bound of projected realizations.

Table 4.12 also compares actual revenue for 1981 and 1982 to projected revenue if the 1978 Act had been passed but the 1981 Act had not. The estimates imply that, relative to the 1978 Act, the reductions in capital gains tax rates in the 1981 Act resulted in revenue reductions of $0.1 and $0.3 billion in 1981 and 1982. However, in evaluating the effects of the 1981 Act, it is important to remember that its passage resulted in a significant general reduction in income tax collections. It may therefore be more appropriate to evaluate its effects by looking at capital gains tax revenue as a share of total individual income tax collections. For example, in 1982, revenue from capital gains taxes represented 4.3 percent of total individual income tax receipts, as compared to a 4.0 percent share of revenue projected to occur under previous law.24/

C. An Alternative Comparison Taking into Account the Effect of Capital Gains Tax Changes on the Stock Market

The projections of capital gains tax revenue under pre-1978 law shown in Table 4.12, as well as the projected realizations shown in Table 4.11, do not account for any effect the change in capital gains taxes might have had on stock market values. In the equation used to derive projected capital gains, the value of corporate shares held by individuals in 1979-1982 is taken to be the actual observed value. Thus, no account is taken of the possibility that corporate share values might have grown at a slower rate if the 1978 capital gains tax reduction had not been enacted. If the value of corporate shares used in the simulation

were lowered so as to represent an estimate of corporate share values in the absence of the capital gains tax change, the estimate of baseline realizations derived from the equation would also be smaller, and thus the estimated increase in capital gains realizations due to the tax change would be larger than the estimates shown in Table 4.11.

As discussed in Chapter 3 of this report, a reduction in taxes on capital gains, relative to other forms of capital income, is likely to raise the market value of assets that generate taxable capital gain income. Corporate equity values are likely to be higher than they would have been if tax rates had been unchanged. Alternatively, one can presume that if the 1978 capital gains tax changes had not been enacted, corporate share values would have been somewhat lower than they were in 1979-1982.

In order to account for the effects of the capital gains tax reductions on the value of corporate stock owned by households, a simple equation was estimated that relates stock values to Gross National Product and to the present value of the tax rate on real capital gains. Specifically, the estimated equation is

$$\log HSTK = \underset{(4.33)}{.9004} \log RGNP - \underset{(4.23)}{.001098} RTX + \underset{(3.33)}{.3998} \log HSTK1 - \underset{(2.87)}{2.2613}$$

$$(R^2 = .928, \text{ D.W.} = 2.27),$$

where t-statistics are in parentheses, HSTK and HSTK1 are the values of corporate shares owned by households in the current and previous years, RGNP is real Gross National Product in 1972 dollars, and RTX is the present value of the tax rate on real capital gains when shares are assumed to be held 5 years and the discount rate is the BAA corporate bond rate (the calculation of this effective tax rate is similar to that described in detail in Chapter 2).

This equation shows that the value of corporate shares held by households is positively related to changes in real Gross National Product and inversely related to the present value of the capital gains tax rate. The tax rate variable incorporates the following three key aspects of the effects of capital gains taxes on stock holdings: (a) the statutory tax rate on capital gains; (b) the effect of inflation in increasing the effective tax rate on real capital gains; and (c) the lower present value of anticipated capital gains taxes due to the ability to postpone the payment of the tax until the stock is sold. During the 1970s, the effective tax rate on real capital gains was high both because of high statutory tax rates and high rates of inflation.

Table 4.13 summarizes the calculation of the effects of the 1978 and 1981 capital gains tax reductions on the value of stock holdings. Under pre-1978 law, the stock market is projected to be about 5 percent lower in 1979 and 1980, and about 4 percent lower in 1981 and 1982. The 1978 Act capital gains tax changes have a smaller effect in 1981 and 1982 because of the lower inflation rates in those years. The 1981 Act is projected to increase the value of stock holdings by 1 percent or less in 1981 and 1982.

Table 4.14 shows realized capital gains, taking into account the estimated effects of the capital gains tax rate reductions on stock values. In 1979, the stock market adjustment reduces projected realizations from $59.5 billion (see Table 4.11) to $58.0 billion, so that the effects of the tax cuts are $1.5 billion or about 11 percent greater than without the stock market adjustment. In 1980, 1981 and 1982, projected realizations under pre-1978 Act law are $66.7 billion, $69.6 billion and $72.2 billion, as compared to $68.5 billion, $71.1 billion and $73.7 billion without the stock market adjustment. Estimates of realizations (and thus of revenues) for 1981 and 1982 must be interpreted with considerable caution because realizations were affected by capital gains tax reductions under both the 1978 and 1981 Acts. Moreover, the forecast error becomes larger the further away from 1978 the projections are made.

Table 4.15 presents alternative comparisons of actual revenues from capital gains taxes and revenues projected at pre-1978 tax rates in 1979-1982 under the assumption that corporate share values held by individuals would have been lower if the 1978 capital gains tax reductions had not been enacted. The projected revenues in Table 4.15 are based on the equation for projecting realizations, but with the values of corporate shares taken as the values projected in Table 4.13. Thus, these estimates reflect the effects of the capital gains tax reductions on both estimated share values held by individuals and on the projected amount of realizations, given corporate share values and Gross National Product.

The inclusion of the effect of the tax reductions on share values increases the estimated changes in revenues from capital gain taxes which occur as a result of the 1978 capital gains tax reductions. Comparing Tables 4.15 and 4.12, the estimated revenue increase in 1979 is $1.1 billion, compared to an estimated increase of $0.9 billion in the absence of the stock market adjustment. In 1980, the estimated revenue increase is over $300 million compared to an estimated revenue increase of only $11 million when share values are taken as given. A similar computation for 1981 results in estimated revenue gain from the 1978 tax reductions of about $142 million with the stock market adjustment, compared to a loss of $115 million when stock prices are taken to be independent of the tax. In 1982, the estimated revenue gain is $38 million with the stock market adjustment, as

Table 4.13

Estimated Effects of Capital Gains Tax Rate Reductions on Value of Household Holdings of Corporate Stock, 1979-1982

Year	Actual value ($bil)	Projected values of holdings	
		Pre-1978 law ($bil)	1979 law ($bil)
1979	892	847	892
1980	1,188	1,135	1,188
1981	1,134	1,088	1,129
1982	1,275	1,231	1,261

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Table 4.14

Comparison of Actual and Projected Capital Gains, Taking into Account Estimated Effects of Capital Gains Tax Reductions on Stock Values, 1979-1982 1/

Year	Actual gains ($mil)	Projected gains, pre-1978 law ($mil)	Projected gains, 1979 law ($mil)
1979	73,443	58,021	73,443
1980	74,582	66,730	74,582
1981	80,938	69,550	77,583
1982	90,153	72,176	79,846

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1/ Figures are net long-term gains in excess of short-term losses plus net short-term gains for all returns with positive net gains.

Table 4.15

Comparison of Actual and Projected Revenue From Capital Gains Taxes, Taking into Account Estimated Effects of Capital Gains Tax Reductions on Stock Values, 1979-1982 1/

Year	Actual revenue ($mil)	Projected revenue		Effects of new tax laws on revenue	
		Pre-1978 law ($mil)	1979 law ($mil)	1978 Act ($mil)	1981 Act ($mil)
1979	11,669	10,544	11,669	1,125	0
1980	12,459	12,126	12,459	333	0
1981	12,684	12,639	12,781	142	-97
1982	12,900	13,116	13,154	38	-254

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1/ Includes only returns with positive net capital gains. Projected revenues are based on projected gains in Table 4.11.

2/ The effect of the 1978 Act on revenue is computed as projected revenue under 1979 law minus projected revenue under pre-1978 law. The effect of the 1981 Act on revenue is computed as actual revenue minus projected revenue under 1979 law.

compared to a loss of $156 million without the adjustment. The revenue losses estimated to have occurred following the 1981 Act are also reduced when the stock market adjustment is taken into account.

It must be emphasized that the effect of changes in the capital gains tax on stock market values is uncertain. Moreover, to the extent the increase in share values results from a shift in household portfolios from other income-producing assets to corporate shares, there are likely to be offsetting revenue losses not accounted for by these computations. These offsetting revenue losses will be relatively large to the extent that capital shifts from sources of income which are fully taxed, such as money market funds or taxable bonds, to sources of income which generate preferentially taxed capital gains.

Bearing in mind these qualifications, the illustrative calculations presented above show that the estimated change in revenue from capital gains taxes attributable to the 1978 capital gains tax reduction is roughly $200-$300 million larger over the period 1979-1982 when one takes into account estimates of the effect of the change in capital gains taxes on the valuation of corporate shares. In 1979, this adjustment converts a large estimated revenue gain into an even larger gain. In 1980 it changes a small revenue gain into a more substantial gain, and in 1980 and 1981 it converts relatively small revenue losses into relatively small revenue gains.

D. Summary and Evaluation

One cannot determine the effect of reductions in capital gains tax rates on capital gains realizations and Federal revenue from capital gains taxes simply by observing the growth in realizations and revenue in the following years. Rather, in order to make such an estimate, it is necessary to specify what would have happened to realizations and revenue from capital gains taxes if the tax law had been unchanged. The estimated revenue effect is very sensitive to the assumptions made in deriving this baseline projection of what would have happened to realizations and revenue in the absence of any tax policy changes.

The difficulty in using observed data for a few years following the tax change to infer long-run revenue effects is further increased by the problem of separating transitory and permanent effects of the tax change. One would expect that a reduction in capital gains tax rates would induce a one-time unlocking of accrued gains. Whether a higher level of annual realizations would persist over time cannot be determined without observations over a long period of time. These facts limit the inferences that can be drawn from the data.

Notwithstanding these qualifications, the data shown in this section clearly support the conclusion that capital gains

realizations increased as a result of the capital gains tax reductions in the 1978 Act. The data also support the tentative conclusion that the 1978 Act caused revenue from capital gains taxes to increase in the first year after the tax cut, and in the long run either increased or reduced only slightly capital gains tax revenue. Relative to the realizations projected to occur without the 1978 tax change, capital gains realizations increased by 23.4 percent in 1979, and by roughly 9 percent per year in 1980, 1981 and 1982, as a result of the 1978 Act. Federal revenue from capital gains taxes clearly increased in 1979, as actual 1979 revenue was nearly $1 billion larger than revenue projected under pre-1978 law. In 1980, Federal revenue from capital gains taxes was still about $10 million higher than projected revenue, while actual revenue was roughly $100-$150 million lower than projected revenue in 1981 and 1982. Furthermore, if one takes into account the effect of the capital gains tax reductions on the value of corporate shares held by households, the estimated gains in Federal revenue from capital gains taxes increase by about $200-$300 million, and a revenue increase is indicated in each year, although the gains are modest in 1981 and 1982.

The 1981 Act, which lowered capital gains tax rates as part of a general rate reduction, is estimated to have resulted in a revenue reduction in 1981 and 1982, whether or not the stock market effect is taken into account. However, since the decline in capital gains tax revenue was proportionately smaller than the overall reduction in tax revenue, capital gains taxes actually increased slightly as a percentage of total income tax collections.

IV. CONCLUSIONS

The available statistical evidence shows that the reduction in tax rates on capital gains in the 1978 Act caused a substantial increase in revenue from capital gains taxes in the first year after the tax cut, and in the long run either increased, or only slightly decreased, annual Federal revenue from capital gains taxes. The best point estimate from cross-section analysis of realizations behavior of individual taxpayers suggests a long run annual revenue increase of about $2.1 billion. The time-series analysis indicates a smaller increase in revenue in the first year after the tax reduction of between $0.9-$1.1 billion. This increase is substantially larger than the estimated second year revenue gain of between $10-$300 million. Revenue estimates in 1981 and 1982 indicate relatively small revenue changes which range from a gain of slightly less than $150 million to a revenue loss of slightly over $150 million. This pattern suggests that the extremely large increase in realizations in 1979 was in part temporary, but also suggests that the tax change led to a significant, though more modest, permanent increase in realizations that is sufficient or nearly sufficient to offset the effects on revenue of the lower tax rates on capital gains.

Cross-section econometric analysis of realizations behavior of individual taxpayers suggests that the further reduction in marginal tax rates in the 1981 Act also increased revenue from capital gains taxes. Simulation results imply that long run annual revenue from capital gains taxes would have been $1.6 billion higher in 1979 if the tax rate reductions enacted in the 1981 Act (fully phased in) had been in effect. The time-series analysis of realizations behavior following the 1981 Act, however, shows revenue in 1982 about $250-$330 million below projected levels following the 1981 Act.

Taken as a whole, the results suggest that any effort to raise substantial revenue by increasing tax rates on capital gains, given the current parameters of the law (i.e., a realizations-based tax with step-up in basis for gains transferred at death and carryover of basis for gains transferred by gift), is likely to be ineffective. Although at some point a reduction in capital gains tax rates will result in a long-run reduction in Federal revenue, the data suggest that revenue from capital gains taxes either increased or declined only slightly as a result of capital gains tax rate reductions in the 1978 and 1981 Acts.

Finally, it is important to recognize that changes in realized capital gains may occur for reasons other than increased turnover of assets or higher stock prices. If investors are altering their portfolios so as to hold more assets on which returns are in the form of price appreciation, such a portfolio shift would cause accrued gains, realized gains and revenue from capital gains taxes to increase. Net Federal revenue from such portfolio shifts, however, may be positive or negative, depending on whether taxable investors are shifting their wealth from untaxed or lightly taxed assets, such as owner-occupied housing, or from assets on which returns are received in the form of fully taxable income. Reported data on realized capital gains do not supply any information on the direction or magnitude of the revenue effects from these portfolio shifts.

FOOTNOTES TO CHAPTER 4

1/ In effect, in adjusting to a higher permanent level of capital gains realizations, there is an "over-adjustment" in the first year. For a more thorough discussion of why the long-run revenue effect may have the reverse sign of the short-run effect, as well as an argument that increased short-run realizations may be associated with reduced private saving, see Joseph E. Stiglitz, "Some Aspects of the Taxation of Capital Gains," Journal of Public Economics, July, 1983.

2/ For efforts using time-series data to estimate the effect of capital gains tax rates on realizations, see Mai Nyugen Woo, "A Time-Series Analysis of the Lock-in Effect of Capital Gains Taxation in the United States," unpublished doctoral dissertation, Georgetown University, December 1980; and Gerald E. Auten, "Capital Gains: An Evaluation of the 1978 and 1981 Tax Cuts," in Charls E. Walker and Mark Bloomfield, eds., New Directions in Federal Tax Policy for the 1980s, (Cambridge, Mass., Ballinger Publishing Company, 1983.) For evidence that transactions volume increased significantly following the 1978 Act, see Joel Slemrod, "Stock Transactions Volume and the 1978 Capital Gains Tax Reduction," Public Finance Quarterly, January, 1982.

3/ See Gerald E. Auten, Estimation of the Effects of Capital Gains Taxes on the Realization of Capital Gains, Final Report prepared for the U.S. Department of the Treasury, Office of Tax Analysis, March 15, 1982.

4/ See Martin S. Feldstein, Joel Slemrod, and Shlomo Yitzhaki, "The Effects of Taxation on the Selling of Corporate Stock and the Realization of Capital Gains," Quarterly Journal of Economics, June, 1980; Gerald E. Auten and Charles T. Clotfelter, "Permanent Versus Transitory Tax Effects and the Realization of Capital Gains," Quarterly Journal of Economics, November, 1982; and Joseph J. Minarik, "Capital Gains," in Henry Aaron and Joseph Pechman, eds., How Taxes Affect Economic Behavior (Washington, D.C., The Brookings Institution, 1981).

5/ For another discussion of some of the problems in interpreting the findings of cross-section studies of capital gains realizations, see James W. Wetzler, "Comments," in Aaron and Pechman, op. cit.

6/ See Martin S. Feldstein and Shlomo Yitzhaki, "The Effects of the Capital Gains Tax on the Selling and Switching of Common Stock," Journal of Public Economics, February, 1978; and Auten and Clotfelter, op. cit.

7/ See Feldstein, Slemrod, and Yitzhaki, op. cit.; and Auten and Clotfelter, op. cit.

8/ See Minarik, op. cit.; and Auten, 1982, op. cit.

9/ See Feldstein, Slemrod, and Yitzhaki, op. cit.; and Auten, 1982, op. cit.

10/ Studies such as these on capital gains and similar studies on the effects of charitable deductions make the implicit assumption that all other tax decisions are made independently of the variable under examination. This assumption may not be completely valid. For example, a taxpayer who sells stock at a profit and also gives cash to a charity would be better off giving the stock directly to the charity, thereby avoiding the capital gains tax as well as obtaining the charitable deduction. On the other hand, this assumption is necessary in order to make the analytical problem tractable. A complete model of all interacting tax decisions would simply be too complex.

11/ For evidence of the use of timing of capital gains as an income averaging device, see Minarik, op. cit.; Joseph J. Minarik, "Taxpayer Behavior Over Several Years: The Case of Realizations of Long-Term Capital Gains," Final Report prepared for the U.S. Department of the Treasury, Office of Tax Analysis, March 31, 1981; and Auten, 1982, op. cit.

12/ There is also a bunching of net gains at -$3,000, the maximum amount of short-term losses that can be deducted against other income in any year.

13/ See James Tobin, "Estimation of Relationships for Limited Dependent Variables," Econometrica, January, 1958.

14/ For details regarding these estimating equations, see Auten, 1982, op. cit.

15/ The equations are estimated using data from the 1963 Federal Reserve Board Survey of the Financial Characteristics of Consumers.

16/ One problem with interpreting this result is that many of the aged only have to file returns for years when gains are realized because of the filing threshold. As a result, it may appear that a larger fraction of the aged realize gains than is actually the case.

17/ See Feldstein, Slemrod, and Yitzhaki, op. cit., 1980; and Minarik, "Capital Gains," op. cit.; and Joseph J. Minarik, "The Effect of Taxation on the Selling of Corporate Stock and the Realization of Capital Gains: Comment, "Quarterly Journal of Economics, February, 1984.

18/ For a discussion of the weighting issue, see Joseph J. Minarik, "The Effect of Taxation on the Selling of Corporate Stock and the Realization of Capital Gains: Comment, "Quarterly Journal of Economics, February, 1984, and the reply by Feldstein, Slemrod, and Yitzhaki (FSY) in the same issue. Minarik argues that the use of unweighted regression procedures by FSY biased their estimates of the effects of tax rates because the sample they used was chosen by a method that made it more likely that a return with large capital gains would be included in the sample. FSY respond that the reduced tax rate effect found by Minarik is not due to sample selection bias, but to the fact that high income taxpayers are more sensitive to changes in tax rates. FSY argue that the use of weighted regression increases the influence of low-income households on the regression coefficients to a greater extent than is warranted by their share of stock ownership. The use of weighted Tobit regressions in the panel study allows for the greater sensitivity of high income taxpayers to tax rates since the tax rate effect is calculated using a multiplying factor that depends on the values of all of the independent variables for each taxpayer. For a discussion of this procedure, see John F. McDonald and R.A. Moffitt, " The Uses of Tobit Analysis," Review of Economics and Statistics, May, 1980.

19/ This equation was chosen because the simulations include estimates of the effects of both higher and lower capital gains tax rates. With the dependent variables used in the other equations in Table 4.3, negative values for predicted capital gains realizations can result when the effects of higher capital gains tax rates are simulated. In Equation 4.3, the logarithm in the dependent variable forces the predicted gains to be positive, since the logarithm of zero (and negative numbers) is undefined.

20/ The capital gains tax rate is calculated using a predicted amount of capital gain for taxpayers in income classes with $200,000 or more of Adjusted Gross Income in 1982 dollars (equivalent to about $56,000 in 1954 at the beginning of the sample period). This taxpayer group was most affected by the tax rate changes from the Tax Reform Act of 1969 through the 1981 Act, and in 1982 accounted for more than 41 percent of long-term capital gains. The calculated tax rates take into account the effects of the minimum tax, the alternative tax, and income tax surcharges as well as changes in income tax rates.

21/ The effects of the changes in capital gains tax rates were computed using the equation for realized capital gains to project realizations under pre-1978 law, 1979 law, and current law. In each case, the effects of the tax rate changes on realizations were assumed to be the difference between the predicted realizations before and after the specified tax change. In Table 4.11 (and Table 4.14 below), this difference is subtracted from actual realized capital gains to obtain the "projected gains" shown; this procedure was utilized to facilitate comparison with published figures on actual realizations of capital gains.

22/ Note that the 1981 tax cuts were not fully phased in until 1984. Since 1982 data were the latest available at the time of this report, the analysis of the effects of the 1981 Act are necessarily preliminary.

23/ Actual revenue from capital gains is computed using the Treasury Department Individual Tax Model by comparing actual tax liability for each sample return with positive net capital gains to tax liability if realized capital gains had been zero. Projected revenue is computed for each year by multiplying the average tax rate on capital gains by AGI class times the amount of projected gains. It is assumed that in the absence of the tax cuts under the 1978 and 1981 Acts, the distribution of capital gains would have remained the same as in the final year under the old tax law.

24/ These calculations are based on individual income tax receipts of $297.7 billion in 1982 and estimated receipts of $331.5 billion without the reduction in tax rates. The calculations do not take into account changes in tax provisions other than the overall reduction in tax rates.

Appendix

A BRIEF DESCRIPTION OF THE TREASURY GENERAL EQUILIBRIUM MODEL

I. Structure and Assumptions of the Model

The structure and assumptions of the Treasury General Equililbrium Model are summarized as follows. The population is represented by 12 household groups, which are classified according to income. The households differ in their initial endowments of labor skills and wealth. Households can accumulate wealth over time by saving a portion of their income. In any time period, households supply labor services and capital to business firms. The supply of labor services depends on the after-tax wage; the supply of saving (which determines the net additional capital services available to business firms) depends on real after-tax returns to suppliers of capital.

The income of a household is derived from the employment of its labor and capital services in the marketplace. Capital income comes either from the corporate sector in the form of dividends, interest, capital gains, and rent, or from the non-corporate sector as business income, interest and rent. Each source of income is assigned an inclusion rate in the personal income tax base. Personal income taxes are represented by a simplified tax rate schedule which consists of a negative lump sum tax and a fixed marginal tax rate applied to the personal income tax base. Higher income households face higher marginal tax rates.

There are 19 producer goods industries. Producers use fixed proportions of "intermediate goods" -- outputs of other industries -- in production but vary the amount of capital and labor services used in response to changes in relative prices. The production relationships differ among industries; at any given set of relative factor prices, some industries are relatively more labor intensive, while others are relatively more capital intensive.

The cost of the output of each industry depends on the costs of labor and capital. In turn, the costs of labor and capital depend on wages and interest rates gross of personal taxes and taxes applied to the use of factors of production by industry. In the model, the corporation income tax, state corporate taxes, and local property taxes are modeled as ad valorem taxes on each industry's use of capital. The social security tax (both the employee and employer portion) and workmen's compensation taxes are modeled as ad valorem taxes on each industry's use of labor.1/

Households allocate their income among 15 consumer goods and one investment good (saving). Saving in any period increases both the future supply of capital available to businesses and the future income of households who save. Consumers within each household income group receive different amounts of "utility" or satisfaction from the 15 consumer goods, future consumption (determined by saving) and leisure. Consumer preferences result in demands for each of the consumer goods that depend on total income and relative prices of consumer goods, which include sales and excise taxes. These consumer demands are converted through an input-output system into demands for the various producer goods.

The government collects taxes and uses the proceeds either to buy labor, capital, and producer goods to produce public services or to make transfer payments to households. The government maintains a constant share of total expenditures and transfers as a proportion of national income.

Over time, labor supply and technical change that increases labor productivity each grow at a constant rate of 1.4 percent. Policies that increase saving cause growth to accelerate because increases in saving rates at first cause the capital stock to grow faster than labor. Eventually, the faster growth of the capital stock depresses real before-tax returns to capital, thus lowering the saving rate and restoring the initial rates of growth of capital and output. However, this long run equilibrium growth path may not be reached for over 50 years. At this long run equilibrium, the saving rate and the capital-labor ratio are permanently higher, and national income and output are higher than they would have been along the initial growth path.

The relationships in the model result in a system of simultaneous equations which is solved for general equilibrium levels of outputs and prices. Households are both the ultimate suppliers (through their supplies of factor services) and demanders of goods and services. Household income depends on factor prices (wages and returns to capital) which determine prices of goods and services, which in turn determine household demands for goods and services. Similarly, household demands for goods and services determine demands for production goods, which in turn determine demands for labor and capital and thus wages and returns to capital. The entire system is in equilibrium at the set of prices that simultaneously equalize demands and supplies for all consumer goods, producer goods, and factors of production.

Taxes enter the model as wedges between the prices paid by buyers and the prices received by sellers. By altering relative prices, taxes affect the supplies of factors of production, the relative costs of different producer goods, and relative prices of final goods. As a result of the existing tax structure, labor and capital supplies are smaller, and the composition of output is different, than they would be were government expenditures

financed by a set of lump sum taxes that did not distort costs to buyers and returns to sellers.

In the model, the initial values of the outputs of each industry, the consumption levels of each consumer good, the rates of each type of tax on each industry and good, the tax rates and total taxes paid by each household group, and other values in the model are derived from published data sources. Where data collected from different sources are inconsistent because of different data collection procedures, they are adjusted to assure consistency. Behavioral parameters of the model, such as labor supply responses to changes in after-tax wages and the response of savers to changes in after-tax interest, and technological relationships, such as the production relationships for each industry, are selected on the basis of the best available econometric estimates. Other parameters of the model are then calibrated so as to replicate the "base case" equilibrium.

II. The Effects of Changing the Capital Gains Tax in the Model

As noted above, the various forms of capital income included in the personal income tax base are assigned an inclusion rate; eight separate categories of capital income are identified in the model. The only source of expected real capital gains in the model is corporate retained earnings. The capital gains tax is in part a tax on real corporate retained earnings, with a low inclusion rate because of deferral of tax until realization and the capital gains exclusion (50 percent prior to 1978, 60 percent after 1978), and in part a tax on inflationary gains from corporate shares and from real property held directly by households. Thus, the capital gains tax affects the inclusion rate on both corporate retained earnings and on capital income from certain types of real property. A decline in the percentage of capital gains included in the personal income tax base is modeled by computing the corresponding reduction in the inclusion rate on income from corporate shares and from real property. The model simulation assumes an inflation rate of 7 percent, which corresponds roughly to the inflation rate prevailing at the time of the 1978 capital gains tax reductions; thus the inflationary component of capital gains taxation is quite significant. Real capital gains attributed to income from corporations in different industries vary according to the share of corporate capital income accounted for by retained earnings.

Changes in the tax treatment of capital gains are assumed not to affect the inclusion rate on capital income from owner-occupied housing because rollover effectively excludes most capital gains on owner-occupied housing from tax. Capital gains tax changes are also assumed to have only a minor effect on the taxation of nominal appreciation of agricultural land because such land is seldom exchanged in a taxable manner.

The simulation of the effects of the 1978 capital gains tax reductions also accounted for the special provisions of the tax law that allow capital gains treatment for sales of timber and certain agricultural products and for royalties from coal and iron ore property. The revenue loss to the Treasury from all of these special provisions was estimated to be $135 million in 1978. To account for these special provisions, 20 percent of this amount was used as an estimate of the initial reduction in the capital costs of production in the mining and paper industries resulting from the reduction in the capital gains inclusion rate from 50 to 40 percent in 1978.

In the model, households hold a balanced portfolio of all financial assets. Therefore, a reduction in the inclusion rate on capital gains increases the after-tax return to saving. In the model, a 1 percent increase in the after-tax return is assumed to increase annual saving by 0.4 percent, the highest of the saving elasticity estimates reported by Boskin. As noted in the text, use of this parameter gives an upper-bound estimate of the effects of the capital gains tax reduction on saving and capital formation.

The reduction in the tax wedge between the prices paid by firms that use capital subject to personal capital gains taxes and the returns to households also reduces the cost of capital to those firms. Industries in which corporations have low debt-equity and dividend-payout ratios receive the largest initial benefit. Industries with many non-corporate enterprises where households pay tax on inflationary gains also receive benefits.

The reduction in the tax on the income from capital generally raises after-tax returns to savers, and also lowers before-tax returns which represent the cost of capital to capital-using industries. However, those industries where equity does not receive a significant benefit from a reduction in the capital gains tax may experience an increase in the cost of capital. For example, for sectors where capital income is initially taxed very lightly, such as real estate, the gap between before-tax and after-tax returns is narrowed only slightly. Since savers must earn the same after-tax returns in equilibrium in all industries, the rise in after-tax returns means that before-tax returns and costs of capital increase in lightly-taxed sectors. Thus the shifts in capital use toward the beneficiaries of capital gains tax cuts reallocates capital from some sectors of the economy, especially the housing sector.

The changes in the cost of capital induce changes in the capital-labor ratios used in the different production sectors. They also cause changes in the relative prices of final consumer goods; those goods that use inputs of industries where factor costs have been lowered become relatively less expensive. Consumer demands respond to these changes in relative prices,

causing consumer sectors with lower costs to expand, which in turn causes the industries that supply these sectors to expand. The changes in relative after-tax income among households also cause the pattern of demands for consumer goods to change.

Initially, the capital gains tax reduction increases the after-tax income of households with large amounts of capital -- primarily the highest income group. Over time, as these households save more in response to higher after-tax returns, the capital stock grows more rapidly. The increase in the capital stock raises labor productivity and before-tax wages. However, after-tax wages may decline depending on which tax instruments are used to recoup any lost government revenue. In the case where increased turnover of capital assets prevents revenue from capital gains taxes from declining, higher taxes on wage income are not necessary. Since the government share of national income remains constant, more rapid economic growth increases the growth of transfer payments, and thereby benefits the recipients of transfers, especially the lowest income groups.

In summary, the capital gains tax reduction is modeled as a reduction in the inclusion rate in the personal income tax base of income from certain types of capital holdings -- primarily corporate shares and real property holding, other than owner-occupied housing and agricultural land. The capital gains tax reduction directly reduces the cost of capital for those industries that benefit from special, industry-specific capital gains tax provisions. These tax changes alter after-tax returns and the costs of capital in different industries, and thereby result in a complicated set of changes in factor usage, prices of consumer goods, consumer demands, rates of saving and capital formation, and the growth of national income and its distribution among households at different income levels.

Two shortcomings of the model for analyzing the effects of capital gains taxation -- and the consequences of these shortcomings -- should be mentioned. First, the financial policy of all industries -- i.e., the debt-equity ratio and the dividend-payout ratio -- is assumed to be fixed even though, as noted in the text, there are likely to be some changes in the supplies of securities in response to a change in the capital gains tax. The major consequence of this simplification in the model is that the changes in the relative costs of capital among industries resulting from the cut in capital gains taxes are somewhat overstated. As a result, the shifts in resource allocation among industries predicted by the model may be too large. However, as the results described in the text indicate, these shifts in resource allocation are not large despite this overstatement.

Second, by assuming that all households hold a representative portfolio of financial assets, the model fails to account for differences among households in financial asset holdings. In

particular, the relatively greater propensity of high income households to hold tax-preferred assets is not taken into consideration.3/ As a result, the model fails to detect fully the extent to which reductions in capital gains taxes particularly benefit savers in the highest tax brackets, relative to increases in other saving incentives. Therefore, the model may underestimate the extent to which the benefits of reductions in capital gains taxes are distributed to the highest income class.

FOOTNOTES TO THE APPENDIX

1/ This treatment assumes that workers do not perceive future retirement benefits as being directly related to tax payments; it thus may overstate tax disincentives to work effort.

2/ See Michael J. Boskin, op. cit.

3/ For examples of more recent modeling efforts that attempt to capture the effects of taxation on portfolio choice, see Joel Slemrod, "A General Equilibrium Model of Taxation with Endogeneous Financial Behavior," in Martin S. Feldstein, ed., Simulation Methods in Tax Policy Analysis (University of Chicago Press, 1982); and Harvey Galper and Eric Toder, "Transfer Elements in the Taxation of Capital Income," in Marilyn Moon, ed., Economic Transfers in the United States (University of Chicago Press, 1984).