IMF WORKING PAPER

WP/89/100

INTERNATIONAL MONETARY FUND

Western Hemisphere Department

Implications of a Lower Capital Gains Tax Rate in the United States

Prepared by Krister Andersson*

Authorized for Distribution by Yusuke Horiguchi

December 13, 1989

Abstract

This paper reviews the literature on the revenue implications of a lower capital gains tax rate in the United States. The existing empirical research indicates that the timing of realizations is sensitive to tax changes but is inconclusive on the long-run revenue implications. No study claims that tax revenues would increase very much on a permanent basis. The paper concludes that other aspects of a lower capital gains tax rate deserves more attention, in particular its impact on resource allocation and tax arbitrage.

JEL Classification Numbers
320, 323

* The author would like to thank colleagues in the North American Division, Lans Bovenberg, and David Coe for helpful comments. The usual disclaimer applies.

Contents

Summary

This paper reviews the literature on the revenue implications of changes in capital gains taxation in the United States and briefly considers some implications of the capital gains tax for resource allocation. The background is the U.S. Administration's proposal to reduce the capital gains tax rate and the subsequent debate over whether this proposal would generate additional revenues. Under the proposal, the effective tax rate on qualified capital gains would be reduced to a maximum of 15 percent. The holding period to qualify for the exclusion would increase in steps from one year to three years.

Reducing the tax rate on capital gains would increase the pace at which investors realize capital gains in the short run. However, whether tax revenues would increase in the long run depends on whether the response of realizations is large enough to offset the revenue effect of the lower tax rate. The existing empirical research indicates that the timing of realizations (and thus tax revenue) is sensitive to tax changes (or the announcement of tax changes), but is inconclusive on the subject of whether there is likely to be a long-run increase in revenue; no study claims that tax revenues would increase by very much on a permanent basis. Concerning the Administration's specific proposal, while tax revenue may be positively affected in the short run, the phasing-in of a longer holding period to qualify for the lower capital gains tax rate is likely to result in lower tax revenues in the mid-1990s.

While the revenue implications of the Administration's proposal are clearly important, the proposal also has the potential for a significant impact on resource allocation. The current system for taxing capital gains in the United States distorts investor decisions in a number of ways. For example, capital gains taxes are levied on realizations rather than accruals and on nominal rather than real gains. In addition, different assets tend to face differing tax treatments; the current capital gains tax system is embedded in a structure that, for example, already grants preferential tax treatment to some assets, such as owner-occupied housing, and, moreover, that affects the source of financing as a result of the differential tax treatment of debt and equity.

Lowering the capital gains tax rate might serve to mitigate some of the adverse resource allocation effects of the current structure, but only at the expense of exacerbating others. For example, it might serve to mitigate distortions stemming from the taxation of nominal rather than real capital gains while at the same time creating an incentive for tax arbitrage out of more heavily taxed forms of capital. If the concern is with insulating the capital gains tax from the impact of infation, indexing the tax system might well be preferable to relying on ad hoc adjustments to tax rates. The paper concludes by arguing that these types of considerations, in addition to its revenue implications, are relevant when evaluating the Administration's proposal.

I. Introduction

A reduction of the tax rate on capital gains was proposed by the new U.S. Administration in its February 1989 budget plan 1/ and was then discussed in Congress as one of the possible measures to raise $5.3 billion in revenue as specified in the "Bipartisan Budget Agreement" of April 1989. 2/ No legislation was enacted during 1989 but the capital gains tax rate is likely to be discussed again in 1990. The question of how such a tax cut would affect government revenues has been the focus of much empirical research in the United States. This paper reviews that research and concludes that the revenue implications are not clear. Moreover, it is suggested that greater attention should be given to a range of efficiency considerations when reforming the capital gains tax. In this latter connection, the paper notes that the lock-in effect of a tax based on realizations, rather than on accruals, and the impact of inflation on the effective level of taxation need to be evaluated. In addition, any evaluation of a change in capital gains taxation should recognize that the existing tax system treats various capital assets differently.

The paper is organized as follows. Section 2 reviews how the taxation of capital gains differs from the taxation of other kinds of income. Section 3 describes the empirical studies of the revenue impact of a lower capital gains tax rate classified by the type of data used, namely, cross-sectional, time series, and panel data. Section 4 discusses some other considerations which may be important when the structure of the capital gains tax is under review. Section 5 provides some concluding observations.

II. Background

A number of features of the current tax system in the United States is worth noting as background to the current debate concerning the merits of reducing the capital gains tax rate. First, in contrast to other forms of income, in the United States capital gains are taxed when realized and not on an accrual basis. Tax rate fluctuations over time (either due to changes in the tax code or to individual circumstances) thus are an important consideration for the investor who is free to choose when to realize his gains. By holding on to an asset it is possible to defer taxation and lower the effective tax rate. 3/ Upon realization, capital gains taxes reduce the amount the investor can invest in another asset. This of course means that the investor is induced to sell an asset and reinvest the proceeds only if the alternative asset yields a rate of return which also compensates for the tax

---

1/ The White House (1989a).

2/ The White House (1989b).

3/ A capital gains tax rate which increases by the holding period would reduce the gains of deferral.

liability incurred. This effect of the capital gains tax is referred to as the 'lock-in'effect.

Second, there is no capital gains tax on an investor's unrealized gains at death. Should the heirs sell the assets, the capital gains tax is based on the difference between the selling price and the price at the time of inheritance. This provision reinforces the lock-in effect (especially for older individuals), encouraging individuals to hold appreciating assets. 1/ For example, when liquidating assets there will be an incentive for the elderly to cash in their bond holdings before realizing the value of their equity holdings. The tax therefore distorts economic decisions.

Third, taxes are levied on nominal rather than real capital gains. This implies that, all else equal, an increase in the rate of inflation will tend arbitrarily to increase the effective tax rate on capital gains. The Tax Reform Act of 1986 (TRA) did not index capital gains for inflation. A lower capital gains tax rate would mitigate the problem but all assets would receive the same relief irrespective of the extent to which the realized capital gain is overstated by inflation.

Fourth, taking a broader perspective, capital incomes from different sources are still treated differently for tax purposes, despite the fact that the TRA removed a large number of tax preferences. For example, the tax code retains preferential treatment of housing. Investment in housing receives a beneficial income tax treatment since mortgage interest payments are tax deductible despite the fact that imputed rental income is not included in the tax base. Furthermore, capital gains on sales of residences are excluded from taxation if the owner purchases a home of equal or greater value within two years. In addition, homeowners aged 55 and older may once in their lifetime exclude $125,000 of gains from taxation. In contrast, dividends, which are paid out of after-tax corporate profits, are taxed at the individual level as well, while retained earnings are taxed when realized as capital gains. An increase in the stock value due to retained earnings is therefore generally taxed more favorably than dividends but less favorably than capital gains on housing. 2/

1/ Reducing or eliminating the benefits from deferral with a deferral charge based on holding period would reduce the lock-in effects. For a description of a possible construction of such a charge, see Pechman (1977), p. 152.

2/ For a description of the tax treatment of housing, see Andersson (1989).

Fifth, the TRA eliminated the preferential treatment accorded long-term capital gains by eliminating the 60 percent exclusion. The tax rate increased from 20 percent to 28 percent. 1/ This reduced an incentive to convert ordinary income into capital gains. 2/ However, some income shifting is still likely due to the advantages of deferral.

Sixth, the current U.S. tax system is asymmetric in its treatment of capital gains and losses. It might be argued that capital losses should be deductible in full against other income. However, since the taxpayer can time his sales so as to take losses promptly while deferring capital gains for as long as possible, it has been considered necessary to have different tax treatment for losses and gains. While realized capital gains are fully taxed, only $3000 of capital losses in excess of realized capital gains are deductible against other income. Any capital losses in excess of $3,000 can be carried over to future years to offset capital gains or other income. Furthermore, the voluntary nature of realizations and possibilities of transferring income from one source to another has resulted in legislation against so called wash sales. 3/ While a flat rate capital gains tax with full deductibility of capital losses against other income would increase the incentive for risk-taking, 4/ a progressive capital gains tax adversely affects risk-taking. The limitation of the deductibility of capital losses reduces the present value of the tax savings and a preferential rate is required to make the tax neutral with respect to risk-taking.

Table 1 provides a summary of the treatment of capital gains under the individual income tax in the United States from 1978 until today. Table 2 shows an international comparison of individual taxation of capital gains.

1/ In the United States, realized long-term capital gains were originally taxed as ordinary income, but following the Revenue Act of 1921 they were subject to preferentially low rates. However, the provisions applying to such gains have changed substantially. The increase of the capital gains tax rate in the Tax Reform Act of 1986 was considered part of the deal for obtaining lower marginal tax rates, especially for high income earners.

2/ In 1985, individual taxpayers reported total long-term gains of $168.7 billion (after deduction of long-term losses and loss carryovers) while only $6.1 billion was reported in short-term gains. Source: Statistics of Income for 1985: Individual Income Tax Returns, table 1.4, U.S. Internal Revenue Service.

3/ The purpose of this legislation is to bar taxpayers other than corporations from selling stock or securities and promptly repurchasing substantially identical property. The time limit is 30 days.

4/ The variability of after-tax income is reduced (See Auten (1989), p. 69).

Table 1. Treatment of Capital Gains Under the Individual Income Tax

Period	Top Bracket Marginal Rate Ordinary Inc.	Long-Term Capital Gains		
		Inclusion Rate	Minimum and Maximum Tax Provisions	Holding Period
1978 1980	70 percent	Reduced to 40 percent (from 50 percent) starting October 31, 1978	Top rate of 25 percent starting in 1979	12 months
1981 1986	50 percent	40 percent (20 percent top rate after June 9, 1981)	Top rate under alternative minimum tax reduced to 20 percent in 1981	Reduced to six months for assets acquired after June 22, 1984
1987	38.5 percent for 1987, 28 percent subsequently 1/	Raised to 100 percent	N/A	Six months

Source: Y. Henderson (1989).

1/ While the top statutory rate is 28 percent, the effective rate at some income ranges can reach 33 percent due to the phasing out of the lowest tax rate and personal exemption for high-income taxpayers.

Table 2 suggests that the capital gains tax rate in the United States is in the middle range among the included countries. International comparisons, however, can be misleading when only specific statutory tax parameters are considered. The capital gains tax rate is only one component in capital income taxation and the overall picture of

Table 2. An International Comparison of Individual Taxation of Capital Gains on Portfolio Stock Investments in 1989

Country	Maximum Short-Term Capital Gain Tax Rate (Percent) 1/	Maximum Long-Term Capital Gain Tax Rate (Percent) 1/	Period to Quality for Long-Term Gain Treatment	Maximum Annual Net Worth Tax Rate (Percent)
United States 2/	33.0	33.0	One year	None
Australia 3/	50.3	50.3	One year	None
Belgium	Exempt	Exempt	None	None
Canada 4/	17.5	17.5	None	None
France 5/	16.0	16.0	None	None
Germany 6/	56.0	Exempt	Six months	0.5
Italy	Exempt	Exempt	None	None
Japan 7/	5.0	5.0	None	None
Netherlands	Exempt	Exempt	None	0.8
Sweden	45.0	18.0	Two years	3.0
United Kingdom 8/	40.0	40.0	None	None

Sources: C. Walker and M. Bloomfield, 1989, p. 1021; and national sources.

1/ State, provincial, and local taxes are not included. They can in some cases be substantial. Furthermore, in some countries exclusion rules might apply.

2/ The nominal tax rate for long- and short-term capital gains is 28 percent. The marginal rate, however, rises to 33 percent for joint returns between $74,850 and $155,370 and for single returns between $44,900 and $93,130 for calendar year 1989.

3/ Indexing is allowed on long-term capital gains.

4/ Canadian residents are allowed an annual capital gains exemption of Can$30,000 subject to a cumulative exemption of up to Can$500,000. In 1990, the life-time capital gains exemption is reduced to $100,000, except for owner/operators of farms and small business corporations who may continue to apply the $500,000 limit.

5/ Gains from proceeds of up to F 272,000 are exempt from taxation in a given taxable year.

6/ The first DM 1,000 of short-term capital gains is exempt from tax.

7/ Japan's tax reform plan, which takes effect in 1989, imposes a maximum tax of approximately 5 percent on the sale of securities. Capital gains are subject to a special deduction of ¥ 500,000 (approximately $3,000) on an annual basis.

8/ Only gains and losses accrued since 1982 till be taxed; gains since 1982 are indexed. Individuals are exempt on the first £5,000 of capital gains per year. Gains derived from the sale of main residence is exempt from tax.

corporate and personal taxes needs to be considered. 1/ Furthermore, different taxpayers in a country may face different exemptions or rates and some of the countries levy rather substantial state and local income taxes which are not shown in the table.

The Administration's proposal called for an exclusion from taxation of 45 percent of capital gains for all taxpayers. Taxpayers with incomes under $20,000 would be able to exclude all capital gains from taxation. For those in the 28 percent and 33 percent effective tax brackets, the remaining capital gains would be taxed at a maximum of 15 percent. To be eligible for the lower capital gains tax rate, assets would need to satisfy the following holding periods: more than 12 months for assets sold between 1989 and 1992; more than 24 months for assets sold in 1993 and 1994; and more than 36 months for assets sold in 1995 and thereafter. Moreover, collectibles and depreciable assets used in trade or business would not be included. Capital losses would be defined in the same way as under current law; however, long-term capital losses that do not offset long-term capital gains could offset only 50 percent of non-capital gains income.

Advocates of a lower capital gains tax rate argue that not only would a reduction of the tax rate raise revenue, but that it would also promote savings and investment, channel more resources to risky ventures, promote entrepreneurial activity, and mitigate the problem of taxation of nominal as opposed to real capital gains. Critics of the proposal argue that these goals could be met by more direct means and that a decrease in the capital gains tax would increase the complexity of the tax code, encourage tax shelter activity, and distort savings and investment decisions. Since capital gains are concentrated in the top income groups, many have argued against the cut for equity reasons. 2/ In 1985, the fraction of capital gains going to taxpayers with income exceeding $200,000 was 47 percent, 25.9 percent, or 13 percent, depending on which concept of income is used. 3/ However, if losses are excluded from the concept of AGI net of capital gains, the fraction increases from 25.9 percent for 34.1 percent. 4/ Slemrod et al. (op. cit.) report that in 1985, more than half of total net gains were realized by the 0.11 percent of taxpayers whose net gain during the year was greater than $200,000.

1/ An IMF working paper concluded that in the 1980s a U.S. saver faced a heavier tax burden than a Japanese saver while the tax burden on investments in Japan exceeded that in the United States. See Bovenberg, et al. (1989).

2/ Pechman (1989a) argued that a capital gains tax cut would be a bonanza for the rich and would undermine the tax reform achieved in 1986.

3/ Slemrod et al. (1989).

4/ Pechman (1989b).

In assessing the revenue implications of a lower capital gains tax rate it is important to keep in mind that corporate stock comprises only about 28 percent of all realized capital gains while 21 percent of gains stemmed from personal residences that are untaxed. 1/ The next section reviews some of the studies related to the revenue implications of a change in capital gains tax rate.

III. Empirical Studies of the Revenue Implications

When there is a change in the capital gains tax, two opposing effects come into play: the static revenue effect and the dynamic effect. The static revenue effect is the change in revenues caused by a change in the tax rate at a given level of realizations while the dynamic effect refers to the change in behavior as when to realize capital gains. When evaluating the revenue implications of a change in the capital gains tax rate, the empirical issue is to determine which of these two opposing effects will be strongest and whether the relative strength varies over time.

Empirical studies of changes in capital gains taxation have yielded inconclusive results for a number of reasons. Firstly, there is no clear theoretical model on which to base the studies, and time series and cross-sectional data yield different results. Secondly, it is difficult to translate the fact that capital gains are not independent of income into an empirically meaningful expression. Thirdly, capital gains are not homogenous. 2/ Even within one type of capital gains, e.g. gains from stocks, the change in value can be decomposed into three components, related to inflation, the change in real market valuation, and the change in value due to retained earnings. Moreover, a change in the capital gains tax rate could have a significant macroeconomic impact with the implication that variables typically held exogenous in empirical studies should in fact be viewed as endogenous. This would of course raise simultaneity problems.

The two basic methods used in empirical work on the revenue impact of changes in capital gains tax are cross-sectional studies and time series studies. A third method involves panel data as discussed below.

1. Cross-sectional studies

Cross-sectional studies compare the behavior of individual taxpayers or groups of taxpayers in the same year to determine how different tax rates affect realizations, while controlling total income, dividends, age, and family status. The different estimated behavior of different groups of individuals is then used to infer how individuals would react to a lower tax rate. These studies use individual tax forms

---

1/ Clark, B., and D. Paris (1984), p. 65.

2/ As pointed out earlier, neither is the tax treatment of capital gains arising from different sources.

as the source of data. This approach can draw on a large body of data so that multicollinearity is not a problem. However, the resulting studies are limited by the information provided on the tax form. Most importantly, a proxy (usually some measure of income) must be used as an explanatory variable for accrued gains since data are not available on either accrued capital gains or wealth.

Aside from the data problems just mentioned, cross-sectional studies on capital gains taxation face the major econometric problem that the marginal tax rate, the explanatory variable used to infer the impact of a change in the tax rate, is not independent of realized capital gains. The behavior which leads to low marginal tax rates may also lead to frequent realization of capital gains. For example, a taxpayer who holds stocks with high dividends and does not invest in tax shelters will have high income and a high marginal tax rate. He may also have a low rate of realizations. An individual who has a more risky portfolio comprising "growth stocks" and assets for tax shelters may have a lower marginal tax rate and at the same time he may realize more gains. In a cross-sectional study, the difference would be attributed to the different marginal tax rate. Another problem with cross-sectional studies is the difficulty in distinguishing transitory effects from permanent effects. In general, cross-sectional studies may tend to overestimate the effect of tax rates on realizations.

Feldstein, Slemrod and Yitzhaki (1980, 1984) and Minarik (1981, 1984) performed cross-sectional studies on a special sample of the 1973 tax returns called the Capital Assets Study. This sample gives information about asset sales but over-represents high-income earners. Feldstein et al. conducted two experiments on the basis of this sample, with the results indicating that a lowering of the capital gains tax rate from 45 percent (the top rate at that time) to 25 percent would raise revenue while the removal of the exclusion for long term capital gains would lead to a revenue loss.

Minarik obtained opposing results using an experiment that replicated the 1978 tax reform. In particular, he found that revenues moved in the same direction as tax rates. Minarik argued that the Feldstein et al. result was biased upward because it did not correct for the over-representation of high income earners. Feldstein et al. defended their results by pointing out that tax changes affect high income earners more. It is possible that both studies overestimate taxpayer response because of their failure to differentiate between permanent and transitory changes.

2. Time-series studies

The historical evidence from the revisions to the capital gains tax laws in the 1970s and 1980s gives no clear answer to the revenue implications of lowering the capital gains tax. There was a large increase in realizations in 1979 after the reduction of tax rates passed in 1978. There was also a large increase in 1986 before the increase in taxes in

1987. This suggests that the timing of realizations is affected by changes of the tax rate.

Time series studies consider the effect of different tax rates on realizations over time controlling for real income, wealth and the price level. Information from many different sources is aggregated into a representative taxpayer. Because this method looks at changes over time, it considers actual changes in the tax law and avoids the problem of individual behavior affecting the tax rate. By getting information from different sources, it is able to incorporate data about the economy and the corporate sector. Wealth is used to represent accrued capital gains.

However, changes in the sample over time create aggregation problems. Moreover, the number of observations is severely limited. Data typically are only available from 1954 and during that time there have only been a few capital gains tax changes. Furthermore, for a number of reasons, it is difficult to determine the timing with which tax changes actually affect investors' behavior. To begin with, it can take individuals some time to adjust their behavior to the new tax rate so there might be some lag before the new tax rates lead to changed behavior. The ability to carry forward previous losses also may result in a time lag. On the other hand, individuals may expect a change in the tax laws and change their behavior in advance. A final problem is the question of nonstationarity of the time series. If the time series used is nonstationary, standard statistical tests, such as t-ratios, will not be estimated correctly. 1/

Auten (1983) performed experiments examining the 1978 and 1981 tax reforms using time series data on all taxpayers from 1951-1980. He used an average marginal capital gains tax rate for taxpayers with over $50,000 of adjusted gross income (this group is 10% or less of all taxpayers but they represent a large share of capital gains). His experiments suggest both a direct and an indirect effect. The indirect effect refers to the effect of the tax change on asset prices, and it was estimated to account for 10 percent of the response of realizations to a change in the capital gains rate. Taking into account both of these effects, the tax reductions of 1978 were shown to increase revenue and the tax reform of 1981 to lose revenue.

The time series study performed in 1985 by the Treasury Department 2/ used data from 1954 to 1982. In this study, the tax rates were based on those for individuals with real income of $200,000 or more. They used two variables to proxy accrued gains: the value of corporate stock and personal income. The study looked at explained changes from

---

1/ Auerbach (1988). A series is stationary if its stochastic properties are invariant with respect to time. Many time series are nonstationary. For example, GNP is nonstationary because of its growth trend.

2/ Office of the Secretary of the Treasury (1985).

year to year instead of each year's level. They found that the 1978 reform increased revenue but that the 1981 reform lost revenue.

The Congressional Budget Office (CBO) 1/ used the same time series data as the Treasury Department but extended the sample period through 1983. A constructed average of the capital gains tax rate for all income groups was used as the capital gains rate. Instead of looking at changes of realizations (like the Treasury Department), CBO looked at levels of realizations of net long term gains in excess of short-term losses. They found that revenues would move in the same direction as tax changes.

In a 1988 study, 2/ the CBO used aggregate time series data and a weighted average marginal tax rate with weights based on predicted capital gains realizations to avoid simultaneity. Salient conclusions of the study included: capital gains taxes cannot be raised too high without decreasing revenues; the 1986 tax reform increased revenues while the reduction of the top marginal rate to 15 percent would reduce them; and very high income individuals have a much higher realization response than other income groups. The study also found the revenue maximizing capital gains tax rate to be between 26 percent and 32 percent; however, the standard errors on these estimates were so high that rates between 17 percent and 100 percent could not be statistically ruled out.

The Treasury Department (June 1988) 3/ estimated a similar equation to the CBO study but defined the dependent variable (realized capital gains) and the tax rate variables differently. The Treasury study tried to explain net short- and long-term gains whereas the CBO study only considered long-term gains. The tax rate used by the Treasury study is the average marginal tax rate of a sample of taxpayers who had more than $200,000 in adjusted gross income. The study found that the 1978 and the 1981 tax reforms produced large revenue gains. The long run elasticity was estimated to between minus 0.62 and minus 1.55.

Auerbach (1988) 4/ concludes in his study that tax considerations influence heavily the investor's decisions about when to realize capital gains but there is little convincing evidence of a strong permanent effect. Furthermore, the changes in individual capital gains tax payments are a poor indicator of the efficiency or incidence of the policy and other changes of the tax treatment of capital gains may be better suited to achieve efficiency objectives.

An examination of the econometric problems connected with time series studies of the effects of capital gains reductions was carried out at the U.S. Treasury by J. Jones, 5/ using times series data for

---

1/ Congressional Budget Office (1986).
2/ Congressional Budget Office (1988).
3/ Darby et al. (1988).
4/ Auerbach, op. cit.
5/ Jones, J.D. (1989).

1948-1985. His dependent variable is total realized nominal capital gains and the tax rate is that of upper income taxpayers. Two basic measures of wealth were used: one is equity holdings and the other tradable wealth. The results were sensitive to the time period, and the measure of wealth. The elasticities he found were minus 1.2 for the short run elasticity and minus .9 for long-run elasticity. 1/ The long-run elasticity found in his study is greater than those of most studies. Jones concludes that the lack of robustness in his estimates suggests that time-series data should not be used. Instead he suggests panel studies.

3. Panel studies

Using panel studies allows researchers to capture the heterogeneity of responses to tax changes while also allowing examination of the dynamic nature of the problem. The researcher is also able to use average income as a proxy for permanent income and wealth. Finally the existence of lagged values for relevant variables provides useful instruments for regressions.

Auten and Clotfelter (1982) carried out a study using data from a seven year panel study of taxpayers which includes all tax returns filed by a sample of taxpayers over the period from 1967-1973. The main purpose of their study was to distinguish between permanent and transitory responses. The data base contains a small sample of high income earners who are affected by capital gains tax changes and are responsive to such tax changes. The study found a very high transitory response and a permanent response yielding increased revenues. The 1978 and 1981 Tax Reform Acts were both replicated and were found to raise revenue.

The Treasury Department in 1985 analyzed the result of the 1978 capital gains tax reduction using a panel of cross sectional data, based on a sample of individuals from 1971-75. 2/ It found that both the transitory and permanent responses are large. The results suggest that revenues would increase with a tax decrease (and decrease with a tax increase). Both the 1978 and the 1981 acts would raise revenue according to this study.

In a study combining cross-sectional and time series data, Lindsey (1986) divided taxpayers into six adjusted gross income classes and examined data for the years 1965-1982. He found that realizations were very sensitive to tax rates and that the revenue maximizing rate lies between 14 and 20 percent. In another study, 3/ Lindsey found that the 1986 tax reform reduced tax revenues from capital gains.

1/ An elasticity above 1 in absolute value would lead to an increase in revenues when the tax rate is lowered.

2/ Office of the Secretary of the Treasury (September 1985), op. cit.

3/ L. Lindsey (1987).

Gillingham et al. carried out a panel study on the effects of lowering the capital gains tax. 1/ They use several years of taxpayer data from the Internal Revenue Service Statistics of Income. They pooled cross-sectional data from independent observations of a larger group. The time span of the data reflected the Revenue Act of 1978 and the Economic Recovery Tax Act of 1981. In this data set, high-income earners are heavily over-represented. 2/ Gillingham et al. divided capital income into five sources: interest, dividends, business income, and short- and long-term capital gains. Since both gains and losses are considered, the problem that capital gains realizations may be clustered at zero is avoided. 3/ The empirical results do not show evidence of income shifting from high to low taxed sources.

The paper does not attempt to simulate any specific tax proposal. It instead simulates the effect of a one percent increase in each taxpayers marginal tax rate on long-term gains. It is assumed that the taxpayer remains in the same tax bracket and that his inframarginal rates are unaffected. The results are point estimates of the elasticity of realizations that indicate that a simulation study of any capital gains tax reduction should show revenue increases.

Auten et al. 4/ use data from a panel of federal income tax returns for 12,000 taxpayers over the period 1979-83. This set includes detailed information on individuals for the period during which tax changes took place. The panel was stratified to over-represent high-income taxpayers. When reviewing previous studies, the authors point out that a substantial part of the past variance in estimated realization elasticities may have been due to the simultaneity between marginal tax rates and capital gains realization and the failure to correct for sample-selection bias. Elasticities estimated by a number of specifications are reported but they do not lend themselves to an unambiguous conclusion. The authors observe that the panel they used probably did not track individuals for a sufficiently long period to permit definitive results, and that without further knowledge about the effects of capital gains tax policies on GNP, interest rates, dividend payouts, and assets values, predictions about revenue consequences must be viewed as tenuous.

1/ Gillingham et al. (1989).

2/ Thus, there would be a sample selectivity bias on the estimated regression parameters. They correct for this by using weights that reflect the probability to be put into the data set based on income level.

3/ To avoid the problem of endogeneity of the last dollar marginal tax rate, this study uses an instrumental variables approach. It entails deriving an exogenous measure of annual income, then calculating marginal tax rates and virtual income corresponding to the alternative income level. These are used as instruments for the observed values in the behavioral equation.

4/ Auten et al. (1989).

4. A summary of the empirical studies

Table 3 summarizes some of the empirical studies reviewed in this paper. From the table it is obvious that there does not exist conclusive empirical evidence that a reduction in the capital gains tax rate would raise tax revenue in the long run. To be sure, several studies have demonstrated that realizations will increase if the tax rate is lowered, but these results are far from establishing that a reduction in the capital gains tax rate leads to a permanent increase of tax revenues. 1/

1/ A simple calculation demonstrates how much the frequency of realizing capital gains has to increase in order for the revenues to increase (see Auerbach, 1989). Assume that assets appreciate annually at a rate of 10 percent, one fourth of all assets are held until death and therefore never sold and that the remaining assets are sold once every ten years. Under these conditions the annual ratio of realized gains to assets would be 4.7 percent. Doubling this ratio, as suggested by the Treasury Department's estimates, would require that all assets be sold and all capital gains be realized every year. The calculation may be unrealistic but it suggests that some of the revenue impact is likely to be transitory rather than permanent.

Table 3. Capital Gains Realization Elasticities

Studies	Data Type	Capital Gains Type	Derived Elasticity
	I. Individual Tax-Return Studies		
Feldstein, Slemrod, and Yitzhaki (1980)	Cross-section high-income sample, 1973	Corporate stocks	-3.75
Minarik (1981)	Cross-section high-income sample, 1973	Corporate stocks	-.44 to -.79
Auten and Clotfelter (1982)	Panel data middle-income sample, 1967 to 1973	All capital assets	Short run: -.91 to -3.46 Long run: -.36 to -1.45
U.S. Treasury (1985)	Panel data 1971 to 1975	All capital assets	Long run: -1.16 to -2.2
U.S. Treasury (1985)	Panel data 1971 to 1975	Corporate real estate other assets	Long run: -2.07 Long run: -.71 Long run: -.43
	II. Aggregate Time-Series Studies		
U.S. Treasury (1985)	Time series 1954 to 1985, all taxpayers	All capital assets	Short run: -1.3 Long run: -.8
Lindsey (1987)	Pooled cross-section and time series 1965 to 1982	All capital assets	Short run: -2.14 Long run: -1.37
Darby, Gillingham, and Greenlees (1988)	Time series 1954 to 1985, all taxpayers	All capital assets	Long run: -.62 to -1.55
Congressional Budget Office (1988)	Time series 1954 to 1985, all taxpayers	All capital assets	Long run: -.79 to -.99
Auerbach (1988)	Time series 1954 to 1986, all taxpayers	All capital assets	Long run: -.06 to -1.08

Source: Department of the Treasury, Office of Tax Analysis, March 1989.

5. Estimates of the possible revenue impact of the Administration's proposal

The Administration's proposal for capital gains is more complex than a simple reduction in the capital gains tax rate. As already noted, the proposal also envisages a stepped phasing in of a longer holding period to qualify for the preferential capital gains. This is likely to result in an uneven revenue impact over the phasing-in period. Table 4 presents the Treasury Department evaluation of the Revenue impact of the proposal.

Table 4. Revenue Effects of The President's Capital Gains Proposal, Fiscal Years 1989-1999

(Billions of dollars)

Year	Revenue Implications				
	Tax Rate Reduction	Increased Realizations	Phased-In Three-Year Holding Period	Other Factors 1/	Total Revenue Effect
1989	-1.6	2.4	--	-0.1	0.7
1990	-11.9	17.1	--	-0.4	4.8
1991	-17.6	21.8	--	-0.7	4.9
1992	-19.1	21.5	0.4	0.7	3.5
1993	-20.2	22.3	1.0	-0.9	2.2
1994	-21.0	22.3	-7.4	-0.7	-6.8
1995	-21.5	22.9	-2.3	-1.1	-2.0
1996	-22.0	23.4	-11.7	-1.0	-11.3
1997	-22.5	23.9	-0.1	-1.1	0.2
1998	-23.0	23.9	1.5	-0.6	1.8
1999	-23.5	24.5	1.5	-0.7	1.8

Source: Department of the Treasury (1989b).

1/ Include effects of delaying gains until the effective date, the effect of conversion of ordinary income to capital gain income, the effect of excluding depreciable assets and collectibles, and the effect of 100 percent exclusion for certain low income taxpayers.

These estimates indicate that the revenue effect of the President's proposal will be positive not only in the short run but also in the long-run (after the phase-in of the three-year holding period requirement has been completed). In particular, the long-run revenue impact is estimated to be in the range of $1 billion to $2 billion annually. This estimate, however, is predicated on a significant response by taxpayers to the new tax regime, an assumption which is questioned by many researchers. Furthermore, the phasing-in requirement could lead to substantial revenue losses in the medium term as taxpayers choose to postpone realization. The efficiency losses due to the lock-in effects could be rather substantial though such effects would be temporary.

The revenue impact of capital gains tax rate reductions depends on the net effects of two large but offsetting factors (the loss in revenue from the rate cut and the gain in revenue from increased realizations), and therefore tends to be very sensitive to assumptions concerning those two underlying factors. In that connection, the Joint Committee on Taxation (JCT), by assuming a slightly different projected increase in the realization rate, estimates a revenue loss of $67 billion over the period 1989-99 1/ compared with the Treasury Department's estimated revenue loss of $0.2 billion.

Some alternative proposals have been put forward. In particular, the House Ways and Means Committee proposed a 60 percent exclusion for capital gains. The top tax rate for capital gains would therefore be 19.6 percent. The Joint Committee on Taxation (JCT) has issued a report on the distribution of the tax benefit of a 60 percent exclusion for capital gains and of indexing the basis for capital assets for inflation. The report finds that the indexation proposal is significantly less regressive than the capital gains exclusion (see Table 5). Both proposals are highly regressive but since less wealthy individuals tend to purchase assets where a higher portion of the gains are inflationary, indexation is more favorable than exclusion for this group.

1/ Ross D. and R. Peachman (1989).

Table 5. Percentage Distribution of the Aggregate Tax Change of a Capital Gains Exclusion and a Proposal to Index the Cost Basis of Certain Capital Assets

Income Class 1/ (Thousands of Dollars)	Capital Gains Exclusion 2/ (Percent)	Indexation of the Cost Basis 3/ (Percent)
Less than 10	0.2	0.3
10 - 20	0.5	1.2
20 - 30	1.4	2.6
30 - 40	1.4	2.6
40 - 50	1.9	4.6
50 - 75	6.3	11.7
75 - 100	6.3	10.5
100 - 200	13.9	20.7
Over 200	68.1	45.9
Total	100.0	100.0

Source: Hoerner (1989), et al.

1/ Adjusted gross income plus excluded capital gains.
2/ Assumes the 60 percent exclusion that was in effect for 1985.
3/ Indexation of the cost basis for capital gains only, for inflation occurring from the time the property was acquired or 1914, whichever is later.

IV. Some Other Considerations When Reforming the Capital Gains Tax Rate

The focus of this paper has been on the revenue implications of changes in capital gains tax rates. The revenue implications are, however, but one aspect, albeit important, of the impact of capital gains taxation. This section briefly reviews some of the other aspects of that impact, with particular attention being devoted to the implications of the various features of the tax system noted earlier for the efficiency of resource allocation.

Lowering the capital gains tax rate would mitigate the lock-in effects associated with capital gains taxation, and would ameliorate the arbitrary changes in the tax burden arising from interactions between the nominal tax base and changes in inflation. However, substantial lock-in effects would likely remain due partly to other provisions of

the tax, including the step-up provision at death. 1/ In addition, a single tax rate is unlikely to correct for the complex interaction between inflation and effective tax rates that arise in a general equilibrium context.

Levying the tax on an accrual rather than on a realization basis would address the lock-in problem. Moreover, to the extent that taxing nominal rather than real capital gains may be the source of some of the lock-in effects--specifically, investors currently have an incentive to defer realizations whether gains are real or nominal--placing the tax on an accrual basis will mitigate some of the problem arising from the use of a nominal base for capital gains taxation. However, the lack of a market value for all assets and the existence of liquidity constraints would make implementing such a reform difficult. 2/ In addition, this reform would not resolve the main issue arising from taking nominal gains, namely that of how to insulate effective tax rates against changes in inflation. All OECD countries tax capital gains when they are realized rather than as they accrue.

The problem of taxing inflationary gains can be addressed by indexing the tax base. 3/ The United Kingdom and Australia index capital gains. However, if the system continued to be based on realizations, deferral problems arising from the fact that the investor can implicitly earn interest on his tax liabilities by postponement would still remain. 4/ Moreover, other forms of capital income might also have to be indexed to avoid creating new incentives to shift capital income from other sources to capital gains. Some increased tax arbitrage would be possible if only capital gains are indexed. For example, nominal interest could be deducted to finance an investment yielding capital gains income. However, if capital gains were indexed the likelihood of other income to be indexed may increase.

Proposals to index capital gains and place the tax base on a realization basis are broadly consistent with that approach to tax reform which emphasizes the elimination of the preferential tax treatment of various assets. Moreover, since they directly address some of the problems arising from the current tax treatment of capital gains, such reform proposals would appear to be preferable to resorting to a cut in

---

1/ This specific provision could be eliminated either by requiring realization at death or by assuming the heirs acquired the relevant assets at the same cost basis as the original owner.

2/ An alternative would be to continue to base the tax on realizations, but to have the tax rate increase over time reflecting the value of the deferral. However, under that scheme the problem of the tax being based on nominal gains would remain since the inflationary component varies across assets and over time.

3/ It should be noted that the choice of index would likely prove controversial.

4/ For a discussion of this issue, see Pechman (1987).

the capital gains tax rate. However, one of the stated reasons for introducing a lower capital gains tax rate is that it would stimulate entrepreneurial activity and investment patterns that favor innovations and long-term growth. Since the fraction of realized capital gains out of venture capital to the overall level of capital gains is very small, other more direct methods of eliminating some of the tax burden for these projects in conjunction with the elimination of tax preferences might be considered as an alternative. 1/

In this connection, one of the effects of resorting to a cut in the capital gains tax rate is that that would tend to create additional incentives to transform relatively highly taxed income into lower taxed capital gains with revenue, allocative, and equity implications. Specifically, a lower tax burden on capital gains than on dividends would tend to encourage firms to alter their financial policies in favor of reducing dividends and increasing retained earnings. Furthermore, there might be an increased incentive for corporate restructuring or share repurchases. 2/

V. Conclusion

Reducing the tax rate on capital gains would increase realizations. Moreover, it is likely that some gains will be realized which otherwise would have been transferred at death with adverse tax revenue implications. However, whether long-run tax revenues would increase depends on whether the long-run (dynamic) response of realizations is large enough to offset the direct (static) revenue effect of the lower tax rate. Existing empirical research indicates that the timing of realizations is sensitive to tax changes (or the announcement of tax changes 3/) but is inconclusive on the subject of whether there is likely to be a long-run increase in revenue, although no study claims that tax revenues would, on a permanent basis, increase by very much. In this connection, the Administration estimates that their proposal would result in a revenue increase of $4.9 billion in fiscal 1991 but that the phasing in of a longer qualifying holding period may substantially decrease revenues during the transition years.

1/ This argument presumes that entrepreneurial activity deserves preferential treatment.

2/ Instead of paying out dividends, a firm could pay out its retained earnings by acquiring another company. When another company buys the stocks in a cash transaction, the capital gains are realized and capital gains taxes may have to be paid. However, with a lower capital gains tax rate, the stock owners may be more inclined to accept an offer leading to corporate restructuring.

3/ A temporary revenue effect could also be achieved by announcing an increase in the capital gains tax rate to take place some time in the future.

While the revenue implications of the Administration's proposal are clearly important, that proposal also has the potential for a significant impact on resource allocation. In this connection, it was pointed out above that in the United States the current system for taxing capital gains has a number of features which alter investor incentives and, further, different assets tend to face differing tax treatments. For example, concerning the former, capital gains taxes are levied on realizations rather than accruals and on nominal rather than real gains. The first tends to lower the effective tax rate while the second serves to increase the tax burden--in times of high inflation, the tax may even result in negative real rates of return. Concerning the latter, the point is that the current capital gains tax system is embedded in a structure which, for example, already grants preferential tax treatment to some assets such as owner-occupied housing and which moreover affects the source of financing as a result of treating debt and equity differentially.

Against that complex background, lowering the capital gains tax rate might serve to mitigate some of the adverse resource allocation effects of the current structure but only at the expense of exacerbating others. For example, it might serve to ameliorate the fact that nominal rather than real capital gains are subject to taxation while at the same time creating an incentive for tax arbitrage out of more heavily taxed forms of capital income. Underlying this result is the more general observation that direct rather than indirect solutions to sources of resource misallocation may be preferable--for example, if the concern is with insulating the capital gains tax from the impact of inflation, indexing the tax system might well be preferable to relying on ad hoc adjustments to tax rates. These types of considerations, in addition to its revenue implications, should be kept in mind when evaluating the Administration's proposal.

References

Andersson, K., 1989, "Investment in Housing: A Portfolio Approach to the Possible Effects of Changes in Tax Policy Concerning Housing," mimeo, IMF.

Auerbach, A.J., 1988, "Capital Gains Taxation in the United States: Realizations, Revenue and Rhetoric," Brookings Papers on Economic Activity 2, pp. 595-631.

Auerbach, A., 1989, "The Effects of Reducing the Capital Gains Tax," Tax Notes, May 22, p. 1011.

Auten, G.E. and C.T. Clotfelter, 1982, "Permanent Versus Transitory Tax Effects and the Realization of Capital Gains," Quarterly Journal of Economics, Vol. 97 (November), pp. 613-632.

Auten, G.E., 1983, "Capital Gains: An Evaluation of the 1978 and 1981 Tax Cuts," in C.E. Walker and M.A. Bloomfield, Editors., New Directions in Federal Tax Policy for the 1980s (Cambridge, Mass., Ballinger).

Auten, G.E., L.E. Burman, W.C. Randolph, 1989, "Estimation and Interpretation of Capital Gains Realization Behavior: Evidence from Panel Data," Department of the Treasury, OTA Paper 67, May.

Auten, G., 1989, "Structural Issues with Respect to the Taxation of Capital Gains," National Tax Association--Tax Institute of America, Proceedings of the Eighty-First Annual Conference, 1988, Des Moines, Iowa.

Bovenberg, L., K. Andersson, K. Aramaki, and S. Chand, 1989, "Tax Incentives and International Capital Flows: The Case of the United States and Japan," IMF Working Paper, WP/89/5.

Clark, B. and D. Paris, 1984, "Sales of Capital Assets, 1981 and 1982," in Statistics of Income Bulletin, Winter 1984.

Congressional Budget Office, 1986, "Effects of the 1981 Tax Act on the Distribution of Income and Taxes Paid", Staff Working Paper, August.

Congressional Budget Office, 1988, How Capital Gains Tax Rates Affect Revenues, The Historical Evidence, March.

Darby M., R. Gillingham, and J. Greenlees, 1988, "The Direct Revenue Effects of Capital Gains Taxation: A Reconsideration of the Time-Series Evidence," U.S. Department of the Treasury, Office of Economic Policy, Research Paper 8801.

Department of the Treasury, 1989a, Office of Tax Analysis, Statement of Dennis E. Ross, Acting Assistant Secretary (Tax Policy), Department of the Treasury, before the Committee on Finance, United States Senate, March 14, 1989.

Department of the Treasury, 1989b, General Explanations of the President's Budget Proposals Affecting Receipts, February 1989.

Feldstein, M., J. Slemrod, and S. Yitzhaki, 1980, "The Effects of Taxation on the Selling of Corporate Stock and the Realization of Capital Gains," Quarterly Journal of Economics, Vol. 94 (June), pp. 777-791.

Feldstein, M., J. Slemrod, and S. Yitzhaki, 1984, "The Effects of Taxation on the Selling of Corporate Stock and the Realization of Capital Gains," Quarterly Journal of Economics, Vol. 99 (February), pp. 114-117.

Gillingham, R., J.S. Greenlees, and K.D. Ziesschang, 1989, "New Estimates of Capital Gains Realization Behavior: Evidence from Pooled Cross-Section Data," Department of the Treasury, OTA Paper 66, May.

Henderson, Y., 1989, "Capital Gains Rates and Revenues," New England Economic Review, Federal Reserve Bank of Boston, January/February 1989.

Hoerner, J.A., and L. Davenport, 1989, "Capital Gains Indexation Proposal Less Regressive Than 60 Percent Exclusion, Joint Committee Says," Tax Notes, September 11, pp. 1186-1187.

Jones, J.D., 1989, "An Analysis of Aggregate Time Series Capital Gains Equations," Department of the Treasury, OTA Paper 65, May.

Lindsey, L., 1986, "Capital Gains Tax Rates, Realization and Revenues. NBER Working Paper 1983, April.

Lindsey, L., 1987, "Capital Gains Taxes Under the Tax Reform Act of 1986: Revenue Estimates Under Various Assumptions," National Tax Journal, September.

Minarik, J.J., 1981, "Capital Gains", in H.J. Aaron and J.A. Pechman, Editors, How Taxes Affect Economic Behavior (Washington, D.C., Brookings Institution).

Minarik, J.J., 1984, "The Effects of Taxation on the Selling of Corporate Stock and the Realization of Capital Gains: Comment" Quarterly Journal of Economics, Vol. 99 (February), pp. 93-110.

Office of the Secretary of the Treasury, 1985, Office of Tax Analysis, Report to Congress on the Capital Gains Tax Reductions of 1978 (September), pp. 157-185.

Pechman, J., 1977, Comprehensive Income Taxation, Brookings Institution.

Pechman, J., 1987, Federal Tax Policy, (Brookings Institution: Washington D.C.).

Pechman, J., 1989a, "A Capital Gains Tax Cut Doesn't Make Sense", Statement before the House Ways and Means Committee, April 13, 1989.

Pechman, J., 1989b, Letter to the Editor, Wall Street Journal, August 3, 1989.

Ross, D. and R. Pearlman, 1989, Testimony of Acting Assistant Secretary (Tax Policy) Dennis E. Ross and Joint Committee on Taxation Chief of Staff Director Ronald A. Pearlman before the Senate Finance Committee, March 14, 1989, Tax Notes, July 10, 1989, p. 145.

Slemrod, J., L. Kalambokidis, and W. Shobe, 1989 "Who Realizes Capital Gains," Tax Notes, October 23, pp. 494-495.

Walker, G. and M. Bloomfield, 1989, "The Case for the Restoration of a Capital Gains Tax Differential," Tax Notes, May 22.

White House, 1989a, "Building a Better America," February 9, 1989.

White House, 1989b, "Bipartisan Budget Agreement Between the President and the Joint Leadership of Congress," April 14, 1989.