THE HOLDING PERIOD DISTINCTION
OF THE CAPITAL GAINS TAX

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ABSTRACT

United States tax law distinguishes between short-term and long-term

capital gains. By taxing long-term gains at a lower rate the law creates

an incentive for investors to postpone the realization of short-term gains.

This study examines the lock-in effect induced by the differential tax

treatment of long- and short-term gains. Analysis of data on corporate

stock transactions from 1973 suggests that the lock-in effect is large and,

thus, causes investors to alter their investment portfolios. The existence

of such an effect is inefficient and results in a reduction in capital

market efficiency.

The inefficiency might be justified if there were convincing reasons

which supported the existence of the holding period distinction. It is

commonly argued, for instance, that eliminating the distinction would

encourage short-term speculation at the expense of long-term commitment

to capital. It is also claimed that this would result in a loss of revenue

to the government. This study relies on IRS data and simulations using

the NBER-TAXSIM file to examine the validity of these arguments. The

results of this study suggest that the holding period distinction is not

very effective in deterring speculation and does not increase government

revenues; in fact, it may decrease them.

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Under current United States tax law, all capital asset sales are not

created equal. The law distinguishes between short-term and long-term

transactions. Although the relevant holding period has changed over time, this

distinction has existed since 1921.[1] Currently, short-term gains are taxed as

ordinary income while only 40% of long-term gains are so taxed. Similarly, up

to $3,000 of short-term losses may be deducted from income while only 50% of

long-term losses (up to $3,000) may be deducted.[2]

This differential tax treatment creates incentives for investors not to

realize short-term gains. Fredland et al.(1968) use aggregate data to suggest

that investors do respond to these incentives; investors are locked-in to short-

term gains. In the first section of this paper, their analysis is discussed and

retested using more recent IRS data. Additional evidence is presented by

looking at investor behavior using data on individual corporate stock transac-

tions for 1973. The pattern of short-term gain realizations over time supports

the hypothesis that an important lock-in effect exists.

The existence of such an effect is inefficient and results in a

loss of capital market efficiency. Investors respond to the differential tax

treatment by holding portfolios they would not otherwise hold. The inefficiency

might be justified if there were compelling reasons which support the holding

period distinction. In sections 2 and 3, the arguments commonly presented in

favor of the distinction are analyzed. IRS data and the NBER-TAXSIM program are

used to show that these arguments are of questionable merit because they tend to

concentrate on short-term gains while they ignore short-term losses.

1. The Lock-in Effect

The theoretical motivation for the lock-in effect caused by the differential tax treatment of capital gains is relatively easy to show. Following the analysis of Holt and Shelton (1962), assume that an investor is risk neutral. He owns a short-term asset, B, worth, W_O which he bought at $W_O(1-c)$. He must decide whether to realize the gain immediately and reinvest it in another asset, A, or to wait until the short-term gain becomes a long-term gain and then realize it. Assets A and B have expected returns Ea_2 and Eb_2 respectively. The investor's short-term tax rate, 2τ, is twice that of his long-term rate.[3] Also, assume that investment A will be taxed as a long-term gain when it is realized. The investor, thus faces the decision:

(1) $\max [E \{ (1 + b_2 - \tau b_2 - \tau c) \} \ , \ E \{ (1-2\tau c)(1+a_2 (1-\tau)) \}]$

It follows that the investor will sell if:

(2) $Ea_2 - Eb_2 > Ea_2 (2\tau c) + \dfrac{\tau c}{1-\tau}$

To induce the investor to switch, the expected return on asset A must exceed that on asset B by a difference that is an increasing function of both τ and c; as the investor's tax rate or as his accrued gain on asset B increases, the investor becomes increasingly locked-in to asset B. If c=.2 and τ=.2, the expected return on asset A must exceed that on asset B by at least 5%. This is a large difference for such a short period of time (less than one year).

An analysis of a risk averse investor with a quadratic utility function yields similar results.[4]

Fredland et al.(1968) present convincing evidence that investors are locked-in to short-term gains. They demonstrate that realizations of capital gains on corporate stock in 1962 increased significantly when the holding period on those gains reached six months. Table 1 presents the amount of capital gains realized in 1973 on corporate stock by holding period and AGI. The gross gain realized on all returns decreases monotonically for holding periods from under one month to five-six months, and then increases dramatically at six-seven and seven-eight months when, presumably, investors realize the gains (now long-term) they had postponed realizing earlier. This behavior is characteristic of all income classes, although it is most pronounced for those taxpayers with AGI's greater than $100,000. We would expect this behavior to be more pronounced if it were possible to separate those investors with a net gain from those with a net loss for the year. These results are qualitatively similar to those obtained by Fredland et al, and support the hypothesis that investors are locked-in to short-term gains. This effect increases as the time the asset has been held approaches the long-term short-term transition.

Table 1

Gross Gains on Corporate Stock Transactions
By AGI and Length of Period Held, 1973
(in millions of dollars)

AGI

Holding Period (months)	All Returns	Under 10,000	10,000– 50,000	50,000– 100,000	Over 100,000
Under 1	163.5	3.1	80.2	34.8	33.0
1–2	114.9	16.2	47.0	22.4	16.8
2–3	106.6	1.9	55.5	17.8	14.5
3–4	75.6	2.7	38.8	13.2	12.1
4–5	67.9	.5	39.9	14.9	9.6
5–6	44.9	1.0	23.4	9.3	7.8
6–7	153.4	2.9	61.6	39.2	45.5
7–8	132.7	54.6	23.7	15.4	23.4
8–9	99.4	20.9	31.8	19.8	25.1
9–10	96.2	1.8	44.4	22.4	24.7
10–11	53.1	1.7	15.9	14.7	16.6
11–12	60.6	1.0	12.9	16.3	21.7

The preceding analysis has shown that there is a lock-in effect associated with short-term gain-taking behavior. It was asserted that this effect increases as the time the asset has been held nears the short-term long-term transition. The dollar amount of short-term gains realized decreases as the transition time nears. The size of each short-term gain realized as a percentage of purchase price, however, should not decrease monotonically with time. To see this, assume that the investor has bought an asset at a price p_0. Let p_i be the price of that asset at time i. Although some of the investments the investor makes will turn out to be losers, ignore these for the moment and consider only the gainers. In this situation, the distribution of gains (or to normalize for all investments, gain as a percentage of purchase price, $gain/p_0$) would be expected to change over time. As shown in Figure 1, the longer an asset is held, the greater will be the variance of percentage gains. The average percentage gain (conditional on the sale being a gain) will also increase as a function of time. Over a relatively short period of time, such as six months, this increase will be approximately linear.

If an investor has a short-term gain, he will decide to realize it as a short-term gain rather than as a long-term gain if he expects to attain a greater utility by doing so. Assume, again, that an investor is risk neutral and holds asset B worth \$1+g, which he bought at \$1. He must decide whether to realize the asset now and reinvest it in A, or to hold asset B until it becomes a long-term asset. Assets A and B have expected returns $a_2(I-i)$ and $b_2(I-i)$ where a_2 and b_2 are yearly rates of return, i is the length of time the investor

$$\frac{\text{Gain}}{P_0}$$

$$\overline{\frac{\text{Gain}}{P_0}}$$

0

Time

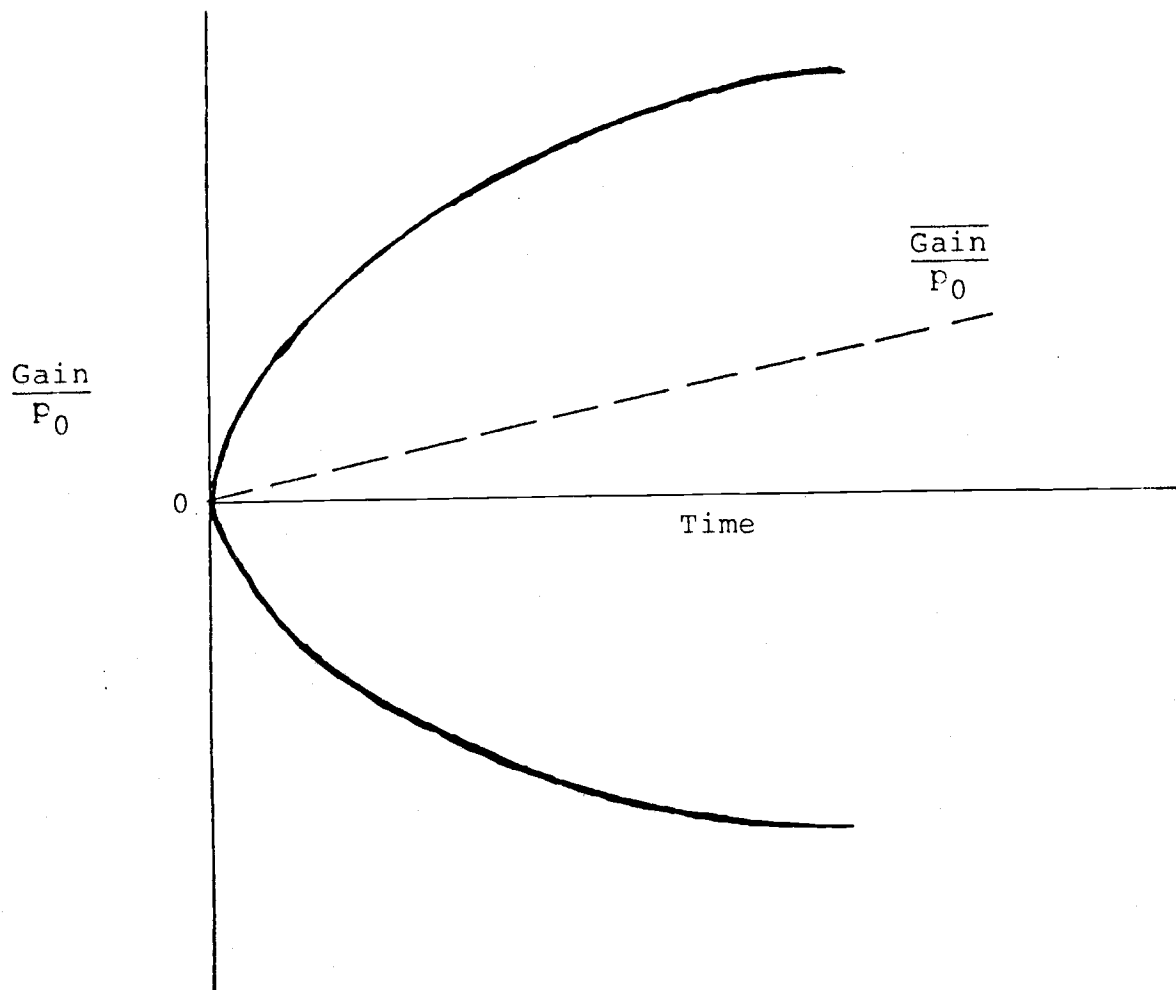Figure 1

has held asset B and I-i is the length of time until asset B becomes a long-term asset. Assume, last, that the investor's short-term rate is twice his long-term rate τ. The investor will realize short only if:

$$(3) \quad (1 + g(1-2\tau))(1 + (I-i)a_2(1-\tau))$$
$$> (1 +g)(1+b_2(I-i))(1-\tau) + \tau$$

Multiplying through and rearranging terms yields:

$$(4) \quad g\ [a_2(1-2\tau)(1-\tau) - b_2(1-\tau) - \frac{\tau}{I-i}\ ]$$
$$> b_2(1-\tau) - a_2(1-\tau)$$

If the term in brackets on the left hand side of (4) is positive, then the left hand side is negative and the investor will realize his gain short-term regardless of the size of his accrued gain g. This will occur when i is small, τ is small and the expected return on asset A is much larger than that on asset B. It is, however, not likely to occur frequently. For an investor with a long-term tax rate of .1 and b_2 equal to 0, a_2 must exceed .31 or a return of 31% per year in order to induce a realization.

If the term in brackets in (4) is negative and the right hand side is negative, the investor will switch if:

$$(5) \quad g < \frac{a_2(1-\tau) - b_2(1-\tau)}{\frac{\tau}{I-i} + b_2(1-\tau) - a_2(1-2\tau)(1-\tau)}$$

In this more likely situation, the size of the accrued gain that will be realized is a decreasing function of time, i, and of the tax rate τ. As the time the asset has been held increases, there is less time for the superior expected return on asset A to offset the tax loss of realizing a gain short-term.

Two opposing forces, therefore, affect the size of the average short-term gain we expect to see realized. Price variance over time increases the average short-term gain in an investor's portfolio while the differential tax treatment decreases the average short-term gain that an investor can afford to realize over time. The actual distribution of realized short-term gains will be determined by a superposition of these two forces.

The IRS 1973 Sales of Capital Assets File provides data to analyze this distribution. It contains detailed information on the capital gains and losses reported on a stratified random sample of approximately 100,000 tax returns. The sample contains information on the nature of the assets sold including the purchase prices, the sale prices, and the dates the assets were purchased and sold, in addition to the usual information on each tax return.

The following analysis considers realizations of corporate stock. Approximately 30,000 taxpayers in the sample participated in over 257,000 sales of corporate stock. Because the sample was too large to estimate economically, every tenth taxpayer in the entire sample is included in the sample estimated here. All transactions are deleted for which the sum of purchase price and gain does not equal the sale price. Also, those transactions which do not report a date of purchase or sale are not included.

With these data, we can study the effect of time and the tax rate (x's) on the size of each short-term gain (y) realized. The theory presented above yields an intractible specification for y so two approximate specifications are used. In the first, the dependent variable is the logarithm of the sale price divided by the purchase price of the stock (or, equivalently, ln (1+gain/cost). This gives equal weight to large and small sales. Thus, an investor will have the same incentive to realize stock worth $20,000 which he bought at $10,000 as stock worth $200,000 which he bought at $100,000. This specification also lessens the importance of those few "penny stocks" which may have been bought for $100 and sold for $10,000. Using gain/cost magnifies their importance and yields nonsensical results. Letting ln (sale/cost) = a + bx, 100.b may be interpreted as the change in gain realized as a percentage of the sale price caused by a unit change in x.

The ratio of gain to sale price is also used as a dependent variable. This specification has the same "corrective" qualities as the other, but the interpretation of the estimated coefficients is less clear. Letting gain/sale = c + dx, 100.d may be interpreted as the change in gain realized as a percentage of the sale price divided by the ratio of sale price to cost with a unit change in x.

The way in which the ratio of gain to sale price (and ln(1+gain/cost)) varies with respect to the length of time an asset has been held will depend on the relative importance of the two effects described above. If investors pay little attention to the tax rate differences in determining the size of each realized short-term gain, then the effect of price variance will dominate, the ratio of gain to sale price should increase linearly with the length of time held. To the extent that investors are locked-in, the ratio will be subject to a downward pressure over the length of time an asset has been held.

Two different specifications are used for the length of time the asset was held. The first uses five dummy variables for months held. These dummies are all zero for stocks held less than one month. The second uses months held and the square of months held where months held is the number of days held divided by thirty. If the lock-in effect is small, the coefficient on the square of months held will be small. If the effect is large, the coefficient will be significantly negative.

The previous analysis also predicts that the ratio of gain to sale price will vary inversely with the difference in tax rates on short- and long-term gains. Because of the various opportunities to offset gains with losses, the choice of the relevant tax rate is a difficult one.[5] The tax variable used here is the difference between the "first dollar" marginal tax rates on short-term and long-term capital gains. As described in Feldstein et al. (1980), the "first dollar" capital gains tax rate is the rate that would apply to the first dollar of corporate stock capital gain that an individual realizes. This rate has the statistical advantage of being exogenous.

Several other variables other than the tax rate and time held should affect the size of gains realized.

The larger an investor's portfolio, the more likely it is that he will be able to postpone realizing large short-term gains by realizing other similar assets. As in Feldstein et al.(1980), dividends received in 1973 are used to represent the value of stock in an investor's portfolio. The logarithm of these dividends is used as the independent variable so that it will not be dominated by the largest portfolios.

The more active an investor is, the more likely he is to consider taxes when making an investment decision. The size of a gain is, therefore, likely to be smaller for the more active investor. The logarithm of the number of corporate stock transactions the investor undertook in 1973 is used as a measure of investment activity.

The logarithm of AGI net of capital gains is also entered into the equations. Its likely effect, however, is ambiguous. A lower income investor may have to realize short-term gains in order to finance consumption while a wealthier investor may afford to wait; the ratio of gain to sale price would decrease with income. On the other hand, high income investors may speculate more in short-term transactions and, so, be more likely to have large short-term gains.

Older taxpayers might realize smaller short-term gains because they expect to bequeath their holdings when they die and so escape the capital gains tax completely. Alternatively, older taxpayers are more likely to be liquidity constrained and, so, might realize larger short-term gains. The tax return data do not include age, but they do distinguish those returns which have one or two individuals who are at least 65 years old. A dummy variable is included in the equation and given a value of one when a tax return has at least one taxpayer of age 65 or older.

The equations are estimated using ordinary least squares[6,7] and the results are shown in Table 2. The coefficients on the month dummies in equations 1 and 3 show that the average $\frac{Gain}{Sale}$ and $\ln \frac{Sale}{Cost}$ increase for the first three to four months. From this point, however, the downward pressure exerted by the holding period distinction begins to dominate the upward pressure

of time and the average gain realized decreases up to a holding period of six months. This result strongly supports the hypothesis that investors are locked-in to short-term capital gains.

Replacing the month dummies with month held and the square of the month held does not change the other estimates significantly and fits the data about as well as before. The large and significantly negative coefficient on the square of months held strongly supports the existence of a lock-in effect. The holding period at which the average gain realized begins to decrease is slightly longer than $3\frac{1}{2}$ months.[8]

The tax variable has a significantly negative effect on gain-taking behavior. Equation (3) in Table 2 predicts that an investor who faces a 25% differential will realize gains that are about 12% smaller (25*.00725 divided by .146) than those realized by an investor who faces the same tax rate on both long-and short-term gains.

Higher dividends and transactions both decrease the size of gains an investor realizes, but the magnitudes of the estimates are small and, in general, insignificant.

Higher income significantly increases the size of realized short-term gains. This suggests that investors with high incomes speculate more in the short-term than those investors with small incomes. The magnitude of the effect, however, is small. An investor whose AGI is $500,000 will realize short-term gains that are only one percent larger as a percentage of cost than an investor whose AGI is $10,000.

Table 2

Regression Results for Short-term Gain Realizations of Corporate Stock

	$100 \cdot \dfrac{Gain}{Sale}$		$\ln(\dfrac{Sale}{Cost})$	
	(1)	(2)	(3)	(4)
Tax Rate Difference (Short - Long Rate)	-.0510 (.0186)	-.0496 (.0186)	-.000725 (.000303)	-.000796 (.000303)
Month Dummies:				
1-2 months	3.93 (.810)		.0476 (.0132)	
2-3 months	5.81 (.869)		.0710 (.0141)	
3-4 months	7.87 (.962)		.112 (.0156)	
4-5 months	5.63 (1.04)		.0725 (.0169)	
5-6 months	4.22 (1.08)		.0512 (.0176)	
ln (AGI)	.157 (.0693)	.166 (.0692)	.00243 (.00113)	.00258 (.00113)
ln (Dividends)	-.237 (.118)	-.228 (.117)	-.00150 (.00191)	-.00138 (.00191)
ln (Transactions)	-.300 (.272)	-.271 (.271)	-.00616 (.00442)	-.00586 (.00441)
Age	-2.14 (.770)	-2.23 (.769)	-.0332 (.0125)	-.0344 (.0125)
Month		4.48 (.578)		.0566 (.00940)
(Month)^2		-.604 (.578)		-.00752 (.00940)
Constant	11.5 (1.29)	9.69 (1.34)	.126 (.0209)	.103 (.0219)
Sample	1678	1678	1678	1678
Mean	12.36	12.36	.146	.146
S.D.	11.96	11.96	.192	.192
R^2	.0756	.0738	.0537	.0499

Age, however, has a significantly negative effect on the size of the short-term gains. This may indicate that the expected opportunity to avoid paying any capital gains tax overrides the greater financial need of some of the elderly. It may also indicate that older taxpayers who can afford to invest in the stock market have less financial need than others, and, so, can postpone realizing gains.

Additional evidence in support of the lock-in effect is obtained by analyzing realizations of capital gains held eight months or less. Seven dummy variables for months held are used. These dummies are all zero for stocks held less than one month. The five other variables used in the six month regressions are used here as are those same five variables multiplied by a dummy variable which is one if the realized gain is long-term and zero otherwise. This speci-fication assumes that investors have different incentives for realizing short-term gains from those for realizing long-term gains. Table 3 presents the esti-mates and standard errors for the month dummies. The gains which are short-term have the same pattern as before - first increasing with time and then decreasing as the holding period reaches six months. The size of the average gain realized increases tremendously as those gains become long-term. A gain realized after being held six to seven months is 73.7% larger than a gain realized after being held five to six months.

This suggests that investors rarely realize large gains short-term. Instead, the holding period distinction induces them to wait until the gain has become eligible for long-term treatment.

TABLE 3

Regression Results for Gain Realizations of Corporate Stock
Held for Eight Months or Less

	$100 \cdot \dfrac{\text{Gain}}{\text{Sale}}$	$100 \cdot \ln(\dfrac{\text{Sale}}{\text{Cost}})$
Month Dummies:		
1-2 months	3.47 (.89)	3.62 (2.02)
2-3 months	5.37 (.96)	6.28 (2.19)
3-4 months	7.55 (1.06)	10.56 (2.40)
4-5 months	5.30 (1.15)	6.32 (2.62)
5-6 months	3.70 (1.20)	3.85 (2.72)
6-7 months	22.73 (3.02)	77.55 (6.84)
7-8 months	17.61 (3.03)	61.83 (6.88)

2. The Arguments for the Distinction

The previous section has presented evidence that supports the exist-
ence of a lock-in effect on short-term capital gains. Such an effect causes an
investor to hold a portfolio different from the one he would hold in the absence
of the holding period distinction. An investor will tend to hold his larger
short-term gains rather than subject them to unfavorable tax treatment. He may
also obtain assets for the sole purpose of creating short-term losses. The
distinction, therefore, introduces inefficiency to capital markets and induces
an excess burden. Despite the excess burden, several arguments are proffered in
favor of differentiating between short- and long-term transactions. The most
pervasive of these argues that a distinction is necessary to distinguish short-
term speculative investment from long-term investment and its implicit commit-
ment to capital.[9] In addition to discouraging speculation, the distinction has
been justified by arguing that there is no reason why assets held for a short
period of time (in most such arguments, one year) should be taxed any different-
ly than ordinary income. Last, the distinction is said to increase revenue.[10]

Discussion of the first argument requires a definition of speculation.
"To the extent that the distinction between speculation and investment can be
made, the difference between the two is related to the length of time an
investor expects to hold an asset."[11] This somewhat amorphous distinction is
rendered more so by the existence of investments which are planned to be long-
term but which may be liquidated quickly if market conditions change, and those
investments which may be held much longer than expected. Moreover, there is no
a priori reason to believe that speculators who switch securities regularly
provide a less useful function than those investors who do not.

Ignore the ambiguity of the definition and assume, as David does, that speculative traders conduct a large part of their business in assets held for less than six months. Assume, furthermore, that a typical speculator makes 100 corporate stock transactions in a given year, 65 of which become gains very quickly while 35 become losses. If the speculator is clever, which he should be if he is a speculator, he will realize the 35 losses immediately as short-term losses. Because a capital loss is effectively a tax credit, it always pays to realize a loss whether it is short-term or long-term and then buy back the same or some comparable stock.[12] It seems likely that of the 65 gains, the speculator will be reasonably confident that some of them will still be gains after he has held them long enough to obtain long-term treatment. The short-term losses will offset a large portion of the short-term gains and the speculator will pay little or no tax at the short-term rate. If the need arises, the speculator is also more likely to create short-term losses through tax straddles. To the extent that he can offset his short-term gains with short-term losses, the holding period distinction is less of a deterrent to the speculator than it is to other investors.

If the speculator should have a bad year and suffer through more loss than gain transactions, he will have a net capital loss for the year. The favorable treatment of short-term loss will allow him to deduct $3,000 of his short-term loss from income. If, instead, all transactions were treated as long-term transactions, he would have to use $6,000 of his loss to deduct $3,000 from income. In this case, the holding period distinction actually encourages speculation.

Although no aggregate data are available which distinguish speculators from other investors, we may look at those investors with AGI's greater than $100,000 who have net capital gains greater than $10,000. Those "clever" speculators who do exist should fall into this category. In 1973, 50,000 such investors realized some 300 million dollars in short-term gains and almost 535 million dollars in short-term losses. Clearly, many of these 50,000 investors must have had a net short-term loss and were able to avoid paying short-term tax rates.[13] At the same time, the 4.6 million investors who had net capital gains realized 1.1 billion dollars in short-term gains and 1.2 billion dollars in short-term losses. The 50,000 wealthy investors, therefore, realized 44% of all short-term losses realized by net gainers, but only 30% of the short-term gains.

Although the data are not as detailed in other years as in 1973, the experience of wealthy investors (and, arguably, speculators) is similar. In 1975, about 62% of returns with sales of short-term capital assets and AGI's greater then $100,000 had a short-term capital loss. In 1977 and 1978, the percentages were 61% and 68%, respectively, even though the holding period required for long-term treatment, increased to 9 and then 12 months. Among those taxpayers who did have net short-term gains, there were undoubtedly some who had a net long-term loss with which they were able to offset part or all of their net short-term gain.

The data used to analyze short-term gain realizations in Section 1 provide additional evidence that speculators are not deterred by the holding period distinction. Of the approximately 30,000 taxpayers in the original sample, 2,499 took part in more than 20 corporate stock transactions at least one of which was a short-term sale. Most speculators in the sample are likely to fall into this category. Among these "active" traders 75% had a net short-

term <u>loss</u> for the year. Another 7% had a net short-term gain completely offset by a net long-term loss. Only 17% of these traders paid a tax on short-term gains. The results are similar for those returns with more than 50 transactions. This evidence suggests that the holding period distinction does little to deter speculation.

The tendency of speculators to end the tax year with a short-term loss is characteristic of the population as a whole. From 1973 to 1978 more taxpayers finished the year with a net short-term capital loss than with a net short-term capital gain. The percentage of returns with a net short-term loss tended to increase with AGI. The differences in the dollar amounts of short-term losses and gains were even greater. These are presented in Table 4. During those same years, the number of returns with a net capital gain was at least twice as large as the number of returns with a net capital loss. Thus, much of short-term capital loss was used to offset long-term capital gain. This loss may just as well be long-term loss.

The previous paragraph points out a weakness in the argument that short-term realizations of capital assets should be treated as ordinary income. To the extent that investors offset long-term gains with short-term losses, the holding period distinction is meaningless; the effective tax rate on short-term gains is the long-term rate. The analyses in Section 1 have shown that investors realize large gains soon after they become long-term. Yet gains that are held for 6 months and one day are not fundamentally different from those held 5 months and 29 days. It is also arbitrary, and perhaps hypocritical, to treat a short-term loss more favorably than a long-term loss when the long-term investment required a greater "commitment to capital." Furthermore, those

Table 4

Net Short-term Loss and Gain, 1973-1978

Year	Number of Returns with Net Short-Term Loss	Net Short-Term Loss ($000)	Number of Returns with Net Short-Term Gain	Net Short-Term Gain ($000)
1973	1,012,581	5,520,436	519,829	865,988
1974	1,025,017	6,210,409	428,411	789,787
1975	847,655	4,844,086	632,404	1,112,390
1976	887,619	5,849,951	671,233	1,216,971
1977	1,093,148	7,283,661	738,727	2,107,475
1978	1,122,432	7,080,715	1,023,904	2,910,576

investors who end the year with a net capital loss will find that their short-term losses are treated more favorably than their long-term losses. And, it is those investors in the higher tax brackets who take greater advantage of the existence of the distinction. Those who support the holding period distinction, therefore, on equity grounds support a distinction which is meaningless in many cases and which causes a different kind of inequity.

3. Revenue Effects

A further argument offered in support of the differential tax treatment of capital gains is the revenue argument. It has been claimed that removal of the holding period distinction will result in undue revenue losses. The analysis in this section will show that this is untrue; in fact, the distinction decreases the present value of revenues for some tax years.

There is no question that the existence of the distinction does increase revenues from those taxpayers with a net short-term gain and an overall net capital gain. Fredland et al. devoted much of their paper to determining the amount of revenue that would be generated by lengthening the holding period from 6 to 12 months. What they and most others seem to ignore is the existence of large short-term losses. The holding period distinction, by treating short-term losses more favorably than long-term losses increases loss carryover and the amount of capital losses that can be deducted from ordinary income. Both of these factors decrease government revenues.

To see this, assume an investor incurs a net loss of $3,000 over the year. Under current law, the $3,000 short-term loss is deducted from income and the $3,000 long-term loss is carried over to the next year when it can offset a long-term gain of $3,000. For an investor with a marginal tax rate of 50% on ordinary income, this is worth $600 (40% of gain taxable * 50% tax rate * $3,000). If no holding period distinction existed and all realizations were treated as long-term transactions, the investor would have a net capital loss of $6,000 (3,000 + 3,000). He would have to use all $6,000 to deduct $3,000 from ordinary income (since only 50% of long-term losses are deductible from income); the investor in this case would have no loss carryover to use for the next year.

The NBER-TAXSIM program was used to estimate the relative magnitude of the revenue effects associated with the holding period distinction. This program applies actual United States tax laws to a weighted random sample of over 25,000 tax returns in the specified year. The effect of any change in the tax laws can be estimated by altering the appropriate code in the TAXSIM program. In the simulations that follow, no attempt is made to adjust for any changes in behavior that would be likely to occur. The simulations, therefore, estimate the effect of removing the holding period distinction under the assumption that taxpayers would have undertaken the same realizations as they actually did. A discussion of the implications of this assumption follows the presentations of the estimates.

Simulations are presented for both 1976 and 1977. In 1976, the holding period distinction came after six months and the loss limit was $1,000 of adjusted gross income. In 1977, the corresponding figures were 9 months and $2,000. In 1976, Standard and Poor's index of common stock prices increased by almost 20% while in 1977, the index dipped slightly by about 4%.

Table 5 shows the estimated revenues generated by the actual laws (old-tax) and those that would have been generated if the holding period distinction had been removed (newtax) for 1976 and 1977. The distinction between long and short-term transactions increased tax revenues by an estimated $81.2 million in 1976 and $105.9 million in 1977. A simulation for 1975 data, which will not be presented here, yielded an estimated revenue increase of $68.1 million. The increase in the length of the holding period to nine months and concomitant increase in unprotected short-term gains is probably responsible for the larger size of the 1977 estimate.

TABLE 5

Average Tax Paid in Dollars Under Existing Law and Without
a Holding Period Distinction, 1976 and 1977

	1976		1977	
AGI	Existing Law	No Distinction	Existing Law	No Distinction
Under 10,000	206	206	281	281
10 - 15,000	1,202	1,201	1,402	1,402
15 - 20,000	2,075	2,075	2,196	2,196
20 - 25,000	3,025	3,024	3,160	3,160
25 - 30,000	4,262	4,261	4,331	4,331
30 - 50,000	6,855	6,852	7,104	7,103
50 - 100,000	17,680	17,660	17,880	17,850
100 - 200,000	48,750	48,620	46,700	46,560
200 - 500,000	125,100	124,800	118,000	117,600
500 - 1,000,000	344,100	342,900	308,700	308,100
1,000,000 +	1,204,000	1,202,000	1,248,000	1,248,000
Total Tax for Population	1.665×10^{11}	1.664×10^{11}	1.553×10^{11}	1.532×10^{11}
Total Tax Difference	81,180,000		105,890,000	
Existing Law - No Distinction				

The estimates also show that the holding period distinction has a minimal effect on the average tax paid by taxpayers who earn less than $50,000 per year; the maximum difference between oldtax and newtax being only .04% for 1977 taxpayers in the $30-50,000 bracket of AGI. The incidence of the high tax rate on short-term gains falls increasingly on wealthier taxpayers. Because fewer than half the taxpayers have a net short-term gain over the average year, a very few wealthy taxpayers pay for the increased tax revenue generated by the existence of the holding period distinction.

Table 6 presents estimates of the loss carryover that investors actually took in 1976 and 1977 (columns 1 and 2) and of the loss carryover they would have taken if no holding period distinction had existed (column 3). Column 4 gives the difference between the combined sum of actual short- and long-term loss carryover and the long-term loss carryover that would have resulted had there been no distinction. The difference for all returns was over $500 million in 1976 and almost $1 billion in 1977. The investors who gain the most, in terms of added carryover, are, again, the wealthy. The increase is roughly proportional to AGI. The net result of the revenue effects of the holding period distinction, however, is still to tax wealthy investors more than less wealthy investors. The increased taxes paid on short-term gains by some wealthy investors exceed the savings obtained via the differentiation of losses.

The results of Tables 5 and 6 indicate that removing the holding period distinction would not have decreased tax revenues, but would actually have increased the present values of tax revenues in 1976 and 1977. In 1976, the holding period distinction increased revenue through the taxation of

Table 6

Average Loss Carryover Under Existing Law and
With No Distinction, 1976 and 1977

1976

| | Existing Law | | No Distinction | |
| | Short-Term | Long-Term | New | Short+Long-New |
AGI	Carryover	Carryover	Carryover	Carryover
Under 10,000	35.50	71.80	104.60	2.70
10-15,000'	30.26	42.34	68.72	3.87
15-20,000	37.79	71.7	101.1	8.39
20-25,000	17.27	94.01	105.7	6.08
25-30,000	117.6	130.8	230.7	17.7
30-50,000	116.2	770.6	865.3	21.5
50-100,000	436.3	1,603	1,992	47.3
100-200,000	1,219	3,751	4,904	66
200-500,000	4,244	5,414	9,577	81
500,000 -1,000,000	9,753	29,940	39,590	106
over 1,000,000	4,764	90,090	94,760	94
Total for Pop.	4.23922×10^9	1.12731×10^{10}	1.49982×10^{10}	5.14×10^8

1977

Under 10,000	39.1	41.4	73.0	7.5
10-15,000'	34.76	124.19	151.62	7.3
15-20,000	203.6	139.0	327.6	15
20-25,000	9.36	98.07	102.1	5.33
25-30,000	23.76	44.56	57.81	10.51
30-50,000	211.6	350.4	527.1	34.9
50-100,000	1,186	1,259	2,369	76
100-200,000	1,692	2,802	4,365	129
200-500,000	2,322	5,628	7,811	139
500,000 -1,000,000	2,982	14,070	16,910	142
over 1,000,000	47,630	68,960	116,400	190
Total for Pop.	7.752×10^9	1.03212×10^{10}	1.70914×10^{10}	9.82×10^8

short-term gains by $81.2 million; at the same time, it created $514 million in extra loss carryover. Assuming that these extra losses will be used to offset long-term gains, the application of investors' marginal tax rates on long-term gains yields an approximate value for the added loss carryover of $83.6 million.14 While the size of this estimate must be discounted by some yearly rate of time preference, several factors require that the estimate be inflated. The marginal tax rates which were applied were those of married taxpayers filing jointly - the lowest rates applicable. Because all returns are included in the sample, this underestimates the true rates. Taxpayers who have a net capital loss are also likely to be below their permanent incomes and are subject to a lower marginal rate than usual. Loss carryovers, furthermore, certainly offset short-term as well as long-term gains and are, thus, more valuable than is assumed in the simulation. It would seem that the value of $83.6 million is a minimum value and is likely to be an underestimate. This suggests that in 1976, the holding period distinction did not increase the present value of government revenues and probably decreased them.

In 1977, both the holding period and the amount of losses deductible from income increased. This and the decrease in stock prices over the year caused the net revenue effect of the distinction to become a negative one. The distinction increased revenue by $105.9 million while the $982 in extra carry-over of losses cost the government an estimated $142.5 million. The government lost, therefore, at least $40 million in 1977 because of the holding period distinction.

The behavioral responses of investors to the removal of the holding period distinction are likely to increase the tax collected even further. First, removal of the distinction should result in a very small increase in realized gains over the year. To see this, assume a holding period of 12 months is required for long term treatment. Investor A has a stock which he bought at a price, p_0, and is worth p_6 after six months and p_{12} after 12 months. With the holding period distinction, investor A realizes his gain after 12 months and pays a tax on $p_{12} - p_0$. Without the distinction, investor A sells his stock to investor B and pays a tax on $p_6 - p_0$. If, six months later, investor B sells her stock, she pays a tax on $p_{12} - p_6$. In both cases, the treasury receives taxes paid on $p_{12} - p_0$. The present value of the basis, however, will be at least as large without the distinction than with it. The tax paid on the first transaction ($p_6 - p_0$) may be paid in an earlier tax year than the taxes paid on the other two transactions. To the extent that the holding period distinction slows the rate of turnover of assets, the present value of the bases and taxes paid decreases.

Realized losses in a given year are likely to decrease slightly. The value of the tax offset obtained from realizing a loss is smaller for long-term than for short-term losses. The removal of the distinction causes all losses to be long-term. Because the incentive is smaller to realize a long-term loss than a short-term loss fewer loss realizations should be observed. Furthermore, the need to engage in tax straddles which create artificial short-term capital losses to offset short-term capital gains will be greatly reduced. This should also decrease the number of losses realized in a given year. Both the slight decrease in losses realized and slight increase in gains realized will tend to increase revenue if the holding period distinction is removed. This strengthens

the argument that the distinction does not increase government revenues, but, may actually decrease them.

4. Conclusion

This paper has studied the holding period distinction of the capital gains tax. The analyses of the first section of the this paper used both aggregate and micro data to show that the distinction is a great deterrent to the realization of short-term capital gains. Investors are induced to hold such gains longer than they would in the absence of the distinction.

An examination of the arguments commonly presented to justify the distinction and concomitant inefficiency shows them to be of questionable merit. The holding period distinction does little to discourage speculation and does not increase government revenue.

Notes

[1] See Minarik (1981) for a history of the capital gains tax and the relevant holding period. From 1942 to 1976, that holding period was six months. In 1977, it was increased to nine months and, in 1978, to the current one year.

[2] These rates are clouded by the existence of the maximum tax and minimum tax. See Minarik (1981) and David (1968) for the exact treatment of capital gains.

[3] Currently, the short-term rate is 2.5 times the long-term rate. Before 1978, the short rate was twice the long rate and this relationship is chosen for simplicity's sake. This does not alter the results.

[4] Available on request. For a different treatment of the lock-in effect induced by the holding period distinction, see David (1968), pp. 128-40.

[5] See Minarik (1981) for a discussion of this problem.

[6] Instead of ordinary least squares, Minarik (1981) weighted his regression with the sample weights. Although this introduces heteroscedasticity, it eliminates the bias that is introduced by sampling according to AGI's. Because of this, returns with larger capital gains are more likely to be sampled. The estimates obtained using a weighted regression on the data used in this paper, however, are almost the same as the OLS estimates.

[7] Regressions were also run to check for heteroscedasticity over time that is suggested by Figure 1. The square root of months held was used as a weight. The estimates and their standard errors, also, are almost the same as those obtained using OLS.

[8] Stewart Myers suggested that the results might depend on the performance of the stock market over the period during which a stock was held. To test for

Notes

this, dummies were included for the month a stock was purchased. Again, the estimates are almost the same as the OLS estimates.

9 See David (1968), p. 28, Fredland et al. (1968), p. 474, U.S. Legislative History - 1976, p. 2,907.

10 See David (1968), p. 29 and Fredland et al. (1968).

11 Fredland et al. (1968), p. 474. Also see David (1968), pp. 28-29.

12 See Constantinides (1980). To be more precise, the value of the tax credit must exceed the transaction costs. These costs are likely to be small for speculators.

13 See 1973 Sales of Capital Assets, p. 68.

14 The marginal long-term rates applied were:

AGI	Rate
under 10	.1
10-15	.125
15-20	.14
20-25	.16
25-30	.18
30-50	.23
over 50	.25

15 See David (1968), p. 139.