In Defense Of Investing In Individual Securities

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Several papers have shown that very low turnover of assets within the mutual fund is the key to high tax efficiency. In contrast, Constantinides (1984) prescribes a nearly 100% annual turnover because tax law provides the direct investor in securities with two valuable timing options. While a mutual fund investor can sell a fund that has lost money for tax purposes, the option to sell individual securities is more valuable than the option to sell an entire portfolio. Simulation using 35 years of data confirms Constantindes' predictions, with higher terminal wealth from recognizing losses each year.
Key words: *Index funds, Individual investors, Investment, Portfolios, Stocks*

Introduction

Over the past 20 years, the growth in the mutual fund industry, whether measured by the number of funds, number of accounts, or total assets under management, has been phenomenal.[a] While before-tax returns to investors in common stock funds have been impressive in most cases, a number of researchers have found that the after-tax returns are not nearly as high. These after-tax returns are especially disappointing when the effects of compounding are considered. Recently, a new category of mutual fund has burst upon the scene. These tax-managed mutual funds seek to minimize the amount of capital gains taxes paid by the individual owners of the funds. Several papers have shown that very low turnover of the assets within the mutual fund is the key to high tax efficiency.

Interestingly, these funds, and the papers underlying their popularity, seem to fly in the face of Constantinides's (1984) prescription of a nearly 100% annual turnover based on tax considerations! This paper seeks to reconcile these apparently conflicting viewpoints and explore the potential advantage to individual investors of directly investing in individual securities rather than a prepackaged portfolio (mutual fund).

Background and Literature Review

The traditional textbook reasons for an individual to invest in mutual funds are convenience (bookkeeping and relatively low transactions costs), diversification, and professional management (security selection). A plethora of studies have suggested that the primary advantage in reality is cost-efficient diversification while the anticipated gains from security selection are ephemeral at best. Historically, most studies of mutual fund performance have been performed on a pre-tax basis. Talmor (1985) points out that tax factors result in there being a clientele effect based on investors' tax status and preferences. Dickson and Shoven (1993) show that the after-tax performance of 150 mutual funds is not only substantially less than the before-tax performance, but that the relative performance rankings of the funds differ markedly when computed before-tax versus after-tax.

Clearly, a mutual fund portfolio manager's decisions to buy and sell securities affect an investor's taxes and after-tax terminal wealth. Jeffrey and Arnott (1993) argue that the typical mutual fund manager's trading gains are not enough to cover the tax consequences of the portfolio turnover. They strongly argue that mutual funds should be managed and evaluated on an after-tax basis. Fortin and Michelson (1996) examine the after-tax performance of mutual funds. They point out that "high before-tax returns in an aggressive mutual fund with high turnover could result in lower after-tax returns than a comparable low-turnover fund because of the gains realized and passed on to the investor." Garland (1997) details how drastically taxes reduce the typical stock mutual fund investor's terminal wealth. These studies conclude that indexed mutual funds, with their lower asset turnover and hence less frequent realization of capital gains and its resulting taxation is key to tax efficient mutual fund management. Dickson and Shoven (1994) investigate how the tax efficiency of a stock index mutual fund could be improved by a combination of accounting maneuvers to reduce realized capital gains and modest "harvesting" of capital losses to offset the remaining realized gains. Several mutual funds have been subsequently introduced which apply these guidelines.[b]

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Constantinides' work stands in stark contrast to these recent studies. Constantinides (1984) points out that tax law provides the direct investor in securities with two valuable timing options. The first option is to realize capital losses and to defer capital gains. The second option is to realize losses short term and gains long term when there is a different tax rate for short and long term gains and losses. He argues that investors should realize long-term gains, especially in stocks with high variance in returns. Then, the proceeds should be used to repurchase the stocks, some of which will generate losses. Such losses should be realized before they become long-term because short-term losses are potentially more valuable than long term gains. With the demarcation line between short-term and long-term being one year, this would result in short-term losses being realized annually and long-term gains being realized just after they become long-term (i.e., annually). Thus, annual turnover of assets would approach 100%.

While an investor can sell a mutual fund that has lost money for tax purposes, option pricing theory suggests that the option to sell individual securities is more valuable than the option to sell an entire portfolio. Direct investment provides the securities investor with a portfolio of timing options to sell individual securities in order to maximize tax benefits. The recent lowering of stock transactions costs made available through on-line brokerage firms makes these timing options even more valuable.

This paper expands upon the analysis of Garland (1997) by investigating the effects taxes have on an investor's after-tax terminal wealth. We compare the terminal wealth of a typical stock mutual fund investor with the terminal wealth an investor could have achieved by investing directly in common stocks and managing the portfolio so as to maximize after-tax terminal wealth.

The Individual Investor
The ease and low cost of obtaining a well-diversified portfolio of stocks by investors of moderate means undoubtedly is one of the primary reasons for the explosive growth in the mutual fund industry. Traditionally, it has been exceedingly costly for a typical individual investor to form a diversified portfolio through the purchase of individual securities. Statman (1987) suggests that an investor needs at least 30 stocks to form a well-diversified portfolio. Even with traditional discount brokers, the one-way commissions to purchase 30 stocks would be in excess of $1,000, making a well-diversified portfolio too costly for many investors. Now,

with Internet brokerage fees as low as $5, the total cost of $150 to acquire the 30 stocks becomes reasonable for many more investors.

One of the "dirty little secrets" of the mutual fund industry is that shareholders' realized returns for tax purposes are a function of other investors' behavior in the mutual fund. For example, the ASM Fund, which is a Dow Jones Index fund, has had turnover rates in excess of 1000% per year because of hot money coming from mutual fund supermarkets! This high turnover rate has not only caused the operating expenses of the fund to be extraordinarily high for an index fund but has resulted in large capital gains distributions to be incurred by the remaining buy-and-hold owners of the fund's shares.[c]

Normally, mutual funds do not pay income taxes. Instead, the taxable gains they have realized flow through to their shareholders who will pay the taxes. However, mutual funds cannot pass through any realized losses in excess of realized gains. Since individual taxpayers can use realized losses from investing to offset other investing losses and up to an additional $3,000 in other income each year, this is a costly shortcoming of investing in mutual funds. According to the January 4, 1999 issue of the *Wall Street Journal*, 2,360 stocks listed on the New York Stock Exchange sold for less at the end of 1998 than at the beginning of the year while only 1,850 stocks advanced during the record-breaking year.[d] Also, despite the Dow Jones Industrial Average (DJIA) finishing the year up 16%, 10 of the 30 stocks in the index were down. Thus, it is reasonable to assume that almost any well-diversified portfolio would have had some potential capital losses which could have been realized to reduce the individual's tax burden.

The Model and The Data
We assume that the investor is deferring present consumption in order to fund future consumption. In particular, we assume that the investor is planning on withdrawing the funds at some future time. The Investment Company Institute (1996) reports that this is the goal of over 80% of mutual fund holders. This means that the individual is concerned with the after-tax wealth resulting from the investment activity. Because the investor is also concerned with risk, the investor will attempt to hold a diversified portfolio. The best-known portfolio is undoubtedly the Dow Jones Industrial Average.

The data for this study consist of the annual rates of return for the stocks in the DJIA from December 31,

1962 to December 31, 1997. During this 35 year period, 15 of the 30 stocks in the DJIA left the average and were replaced. Therefore, 15 stocks were in the average for the entire 35 year period and another 30 were in the average for part of the 35 year period. Annual rates of return were computed by compounding the daily rates from the CRSP (Center for Research in Securities Prices) file. Since these returns include dividends, this compounding implies that dividends are reinvested in the shares paying them. Taxes are not computed on the reinvested dividends. However, the effect of this simplification is minimal on our conclusions since it applies to each of the strategies analyzed in this study, including the buy-and-hold strategy.

Transaction costs are ignored when buying and selling securities. Although transaction costs make strategies involving buying and selling less attractive, the costs of buying and selling once a year are not significant in this time of extreme competition among discount brokers and additional services provided in return for full service broker commissions. Also, under strategy A, transaction costs are incurred only on those stock sold to recognize losses, further reducing their impact. The transaction costs on reinvesting the dividends would be very small and would apply under each strategy, including the default buy-and-hold strategy.

Rates of return on 30 stocks multiplied by 35 years results in 1,050 observations. Because the replacement of each of the 15 stocks that left the DJIA did not occur at the end of the year, there are rates of return for two securities when a change is made. This results in an additional 15 observations, for a total of 1,065.

Out of the 1,065 rate of return observations, 325 are negative and 740 are positive. The largest annual loss of any of the Dow stocks was 72.2% and the largest annual gain was 187.5%. These 325 negative returns permit the strategy of recognizing losses to be implemented.

While this DJIA sample of stocks is not entirely representative of all stocks, Zivney and Wells (1998) show that it is very highly correlated over time to the broader market indexes. Investing in small capitalization stocks with no or lower dividends and greater dispersion in annual rates of return (hence greater opportunities to harvest losses for taxes) would make the case for individual investing with tax management even stronger. Constantinides (1984) reports that the potential benefits for tax management are much greater for high variance stocks. Thus, our results may be viewed as conservative

estimates of the advantage of tax harvesting.

With these data, we simulate the after-tax performance of four alternative portfolios over the period. With the first portfolio (buy and hold), we simulate an initially equally-weighted index fund based on the stocks in the DJIA. The index fund does not attempt to tax manage the portfolio. Except for transactions caused by changes in the stocks included in the DJIA this fund is strictly buy-and-hold.

Next, we examine the three tax-management policies outlined in Constantinides (1984) and Dammon, Dunn and Spatt (1989). These three policies are: (Strategy A) all capital losses are recognized at the end of each year while gains are deferred; (Strategy B) all losses are recognized at the end of each year while all gains are recognized long term by waiting one more day; and (Strategy C) all losses are recognized at the end of each year while all gains are recognized long term in even-numbered years and deferred in odd-numbered years. The efficacy of these policies will differ for the mutual fund and the individual's portfolio because of the different tax treatments noted above.

In our analysis the following tax environment is assumed. Consistent with our focus on the typical mutual fund investor, the tax rate for short-term (one year or less) gains and losses is 28%. The tax rate for long-term (more than one year) capital gains and losses is 20%. We follow the example of Constantinides (1984) and Dammon, Dunn, and Spatt (1989) and do not combine short and long realizations before figuring taxes. We also follow the example of Constantinides (1984) and Dammon, Dunn, and Spatt (1989) in ignoring wash sale prohibitions and in assuming that the limit on writing-off capital-losses is non-binding. An investor could avoid wash sales restrictions after a sale by reinvesting in a substitute stock with the same expected return and risk characteristics. For each of the stocks in the data base there are many substitutes available even if the investor is choosing a substitute on more detailed characteristics than expected return and risk. As a practical issue, using a substitute stock would have minimal effect on the return or the risk of the portfolio. The assumption that the limit on writing-off capital losses is non-binding is not as strong as it first appears because an investor could have other capital gains to offset and unused capital losses can be carried forward for use in future years (until the death of the investor).

An Illustration

To illustrate the mechanics of tax harvesting, consider the following four period example. The stock gains 35% in the first year and loses 10% in the second year. (This results in an annualized average gain of approximately 10% with a standard deviation of approximately 20%.) Realizing short-term tax losses at 28% and long-term gains at 20%, lead to the results in Table 1.

Table 1.
Example of Tax Harvesting with a Single Stock

Time	After tax harvesting	Before tax buy & hold	After tax buy & hold	Advantage to harvesting
Initial investment	1,000	1,000	1,000	0.00%
End of year 1	1,280	1,350	1,280	0.00%
End of year 2	1,188	1,215	1,172	1.58%
End of year 3	1,520	1,640	1,512	0.82%
End of year 4	1,411	1,476	1,381	3.00%

Paying the capital gains tax of $70 (20% of the $350 gain) after the first year gives the investor the opportunity to receive a tax refund in the following year if the stock in fact declines from its new after-tax basis of $1,280. Since the stock declines 10%, a tax refund of $36 (28% of the $128 loss) results in a total after-tax wealth with the harvesting strategy of $1,188 ($1,280 - $128 + $36). This is greater than the after-tax wealth from the buy-and-hold strategy of $1,172 ($1,215 – ($215 x 20%)). The difference is 1.58% of the initial investment of $1,000. Results for the third and fourth years follow from similar calculations.

If the individual investor were in the highest marginal tax bracket of 39.6% (often used by mutual fund organizations to illustrate the harmful impact of taxes), the advantage to the tax harvesting strategy is considerably higher. In this case, the decline in the second year would result in a tax refund of 39.6% of the $128 loss, or $50.69. This increases the advantage of tax harvesting to 3.07% after two years and 6.55% after four years. The results we report in this paper are conservative in that we use the 28% rate most representative of individual investors.

Results and Analysis

Figure 1 depicts the advantage of the alternative tax realization strategies over a buy-and-hold portfolio as a percentage of the original investment. Over the first 25 years of the 35 year period 1963-1997, all three alternative strategies outperformed the buy-and-hold benchmark. In the following sections we compare the performance of different investment strategies over the entire 35 year period 1963-1997. Then we examine their relative performance over 5 year subperiods. These results, and all the results presented in this paper, are consistent with the Association for Investment Management and Research (AIMR) Performance Presentation Standards. These Standards state that taxes on income and realized capital gains must be recognized in each period and subtracted from the results. In Table 2, we present the results for the 35 year holding period strategies discussed below.

Table 2.
Results of Alternative Tax Realization Strategies for 35 year Holding Period
($1,000 is invested in each of 30 stocks in the DJIA)

Ending Values			
Strategy A	Strategy B	Strategy C	Buy & Hold
$1,248,788	$975,867	$979,253	$1,219,679
Advantage over Buy & Hold			
$29,109	($243,812)	($240,426)	
2.39%	(20.00%)	(19.71%)	

Strategy A: All capital losses are recognized at the end of each year while gains are deferred
Strategy B: All losses are recognized at the end of each year while all gains are recognized long term by waiting one more day
Strategy C: All losses are recognized at the end of each year while all gains are recognized long term in even-numbered years and deferred in odd-numbered years.

The Buy and Hold (B&H) Portfolio
We simulate the after-tax performance of an equally-weighted index fund by investing $1,000 in each of the DJIA stocks on December 31, 1962. Thus, the total investment equals $30,000. The Investment Company Institute (1996) reports that the median total investment for individual investors in non-retirement-account

mutual funds is about $18,000. The B&H portfolio sells (and thus the investor pays taxes) only if a stock is removed from the DJIA. The fund reinvests the after-tax proceeds in the stock that replaced the one removed. If more than one stock is replaced on the same date the average of the after-tax proceeds is invested in the replacement securities. The stocks are sold and taxes are paid on December 31, 1997. The resulting after-tax liquidating value is $1,219,679.

The procedure used for handling changes in the stocks included in the DJIA is the same as in the buy-and-hold case. The stocks are sold and taxes are paid on December 31, 1997. The after-tax liquidating value is $1,248,788. Compared to the buy-and-hold benchmark, Strategy A earned an additional $29,109 (2.39%). This indicates that investing in individual securities and taking the losses outperforms investing in an index fund.
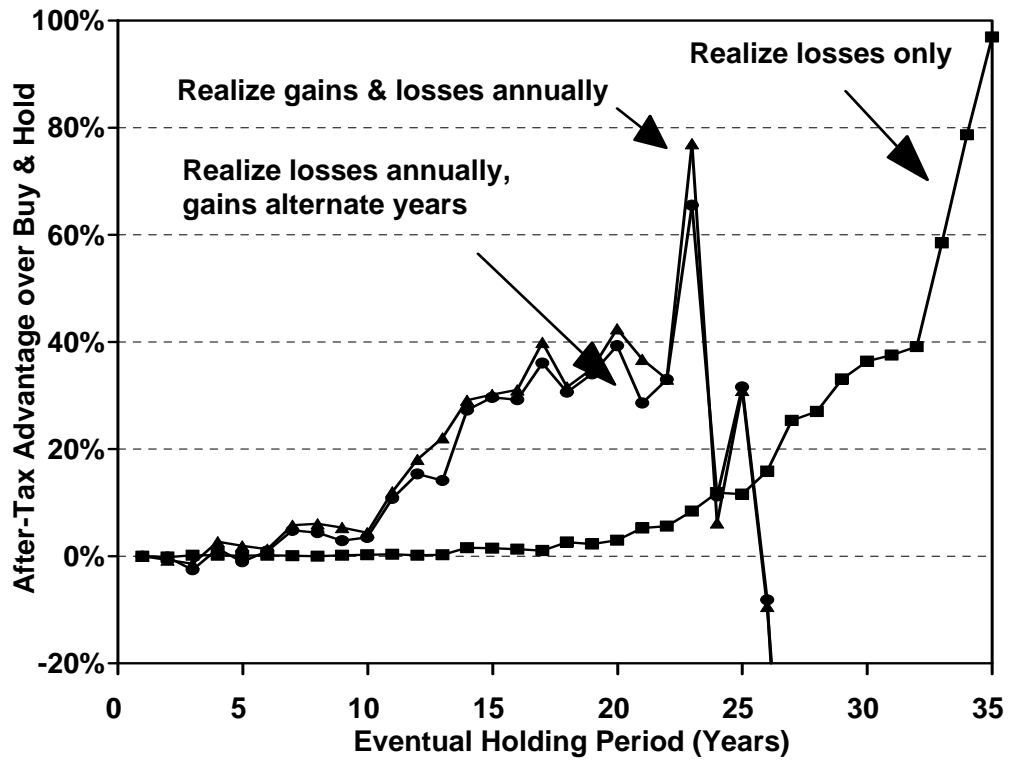
Strategy A
Next, we assume that instead of investing in the B&H portfolio the individual invests $1,000 in each of the 30 stocks for a total investment of $30,000. The investor's tax management strategy is to sell a stock in order to recognize a loss if the year-end value is less than the basis for taxes. These losses result in tax benefits that are reinvested (in the same stock) along with the proceeds from the sale. Losses could be short or long term, depending on when the stock was purchased.

Figure 1.
Advantage of Alternative Tax Realization Strategies over Buy & Hold as a Percentage of the Original Investment, After Taxes

Table 3.
Summary Statistics of Alternative Tax Realization Strategies with 5 year holding periods

	Advantage of Strategy		
	Strategy A over Buy & Hold	Strategy B over Buy & Hold	Strategy A over Strategy B
Average 5 year excess return	1.54%	1.56%	0.02%
Standard Deviation	1.50%	3.34%	2.66%
t-statistic	5.601	2.554	0.0426
Probability	0.0000	0.0047	0.4027
Number of Positive	31	21	16

Strategy A: All capital losses are recognized at the end of each year while gains are deferred
Strategy B: All losses are recognized at the end of each year while all gains are recognized long term by waiting one more day
Strategy C: All losses are recognized at the end of each year while all gains are recognized long term in even-numbered years and deferred in odd-numbered years.

Strategy B
Strategy B assumes that the investor puts $1,000 in each of the 30 stocks for a total investment of $30,000. The investor's tax management strategy is to sell the stocks that have losses at the end of the year and to sell the stocks that have gains after a year and one day. The investor recognizes the losses (all of which are short-term) and gains (all of which are long-term) and reinvests the after-tax proceeds in the same stocks. Taking the gains and reinvesting resets the clock in order to harvest the tax advantages of short-term losses that might occur in the following year. The procedure for handling changes in the stocks included in the DJIA is the same as in the previous strategies. The stocks are sold and taxes are paid on December 31, 1997. The after-tax liquidating value is $975,867. Compared to the buy-and-hold alternative, Strategy B earned $243,812 less (-20.00%). This poor performance compared to buy-and-hold occurs because the large amount of taxes paid on the annually realized gains offset the modest amount of tax refunds harvested near the end of this period. Since the observation period ends on an upswing, the value of the option to harvest losses in the future is not realized. Refer back to Figure 1 for more perspective on this point.

Strategy C
Strategy C also assumes the investor puts $1,000 in each of the 30 stocks for a total investment of $30,000. The investor's tax management strategy is to sell the stocks that have losses at the end of the year and to sell the stocks that have gains in the even numbered years. The losses could be long- or short-term and the gains will be long-term. The after-tax proceeds are reinvested in the same stocks. The procedure for handling changes in the stocks included in the DJIA is the same as above. The stocks are sold and taxes are paid on December 31, 1997. The after-tax liquidating value is $979,253. Compared to buy-and-hold, Strategy C earned $240,426 less (-19.71%). As with Strategy B, this relatively poor performance compared to buy-and-hold occurs because the taxes paid which reduce the amount available for reinvestment outweigh the potential for tax benefits from selling losers when the market is strongly up.

Five Year Holding Periods
Expected holding periods of less than 10 years are more realistic for individual investor accounts, particular because having such a horizon for a given investment does not imply that investors don't consider longer term investing but instead may simply be reallocating investments. Dickson and Shoven (1995) report that two-thirds of the redemptions from mutual funds had been invested in the fund for six years or less.

While Strategy A outperformed and Strategies B and C underperformed an investment in an index fund (buy-and-hold) over the 35 year period, different results could occur in other periods. Additionally, 5 year holding periods allow many more observations because 31 periods (1963-67, 1964-48, 1965-69, etc.) are analyzed. These 5 year holding periods provide insights into which strategy is better under alternative market conditions.

Therefore, an investor's ex ante expectations of future market conditions could influence the investor's tax strategy.

We reexamine the four different strategies and assume the $30,000 initial investments are held for five year periods starting in each year from 1963 (December 31, 1962) to 1993 (December 31, 1992). (Because Figure 1 shows that strategy C's performance over the 35 year holding period was close to strategy B's, it is not reported in the 5 year analysis.) Table 3 presents summary statistics of the various strategies for the 5 year holding periods.

Strategy A, recognizing the losses each year, outperforms the index fund (buy-and-hold) in each 5 year holding period. Strategy B, recognizing long term gains and short term losses each year, outperforms the index fund in 21 of the 31 periods. Strategies A and B have very similar average advantages over the buy-and-hold benchmark. Both advantages are statistically significant beyond the 0.0001 level. However Strategy B's advantage over the buy-and-hold benchmark has a much greater variation. As shown in Table 4, Strategy B does better in intervals beginning with down or choppy years and does not do as well when the first year of the interval is strongly up. In up-markets, the capital gains taxes paid in early years reduce the amount available for compounding in the latter years.

Strategy B, which recognizes capital gains in order to reestablish a short-term holding period, historically performs better in periods in which the average annualized return is 10% or less. Strategy A, which only harvests losses, outperforms both Strategy B and the buy-and-hold benchmark in periods with greater average returns. To the extent that future returns are lower than those experienced in the 1990's (and thus more in line with the historical norms), Strategy B appears to be a reasonable choice for a taxable investor.

In order to examine the significance of the relationships between the performance differentials and the average rate of return on the buy-and-hold portfolio, the following linear regression was run:

$$(Return_x - Return_{BH}) = a + b\ Return_{BH} \qquad (1)$$

where $Return_x$ is the annualized return of Strategy X over a five year period. The advantages of both Strategies A and B over the buy-and-hold benchmark were negatively related to the average return level (Table 5). The t-statistic of the slope coefficient was –1.84 for

Strategy A versus the average buy-and-hold return while it was –9.30 for Strategy B. The coefficient is significant at the 0.05 level for Strategy A and at the 0.001 level for Strategy B. The difference between Strategies B and A regressed against the average return for the buy-and-hold portfolio is also significant beyond the 0.001 level, with a t-statistic of –10.52. Thus, for both Strategies A and B, a higher average rate of return environment results in less advantage to a tax-loss harvesting strategy.

Summary and Conclusions

This paper examines the effects that taxes have on an investor's after-tax terminal wealth. We compare the terminal wealth of an investor in a hypothetical equally-weighted index fund based on the stocks in the DJIA to the terminal wealth an investor could have obtained by buying individual securities and selling based on tax considerations.

The study finds that holding individual securities and recognizing losses at the end of each year they occur (Strategy A) results in a higher after-tax terminal wealth than comes from holding the index fund (the buy-and-hold strategy). This result holds for both the 35 year period from December 31, 1962 to December 31, 1997 and for all the 5 year holding periods between these dates.

Table 5.

Regressions of Performance Differentials on Average Return of Buy-and-Hold Portfolio (N=31)

Regression	intercept	slope	t	R^2
$Return_A - Return_{BH}$	0.00497	-0.0176	-1.842*	0.105
$Return_B - Return_{BH}$	0.01341	-0.1079	-9.297 †	0.749
$Return_B - Return_A$	0.00844	-0.0903	-10.518 †	0.792

*Significant at .05 level using a one-tailed test
†Significant at .001 level using a one-tailed test

The two tax management strategies (B and C) which, in addition to recognizing losses, realize gains in order to reset the clock to take advantage of future losses underperformed the index fund in this 35 year period. Undoubtedly, the strong up-market in the latter years of this period influenced this finding, because both Strategies B and C outperformed the buy-and-hold benchmark over the first 25 years of this period.

Strategy B (selling every security each year - short-term for losses, long-term for gains) was also tested over the 31 five year holding periods. It appears successful compared with the buy-and-hold alternative in periods where markets performed no better than the long-term historical average but unsuccessful in strong up-market periods.

Table 4.
Results of Alternative Tax Realization Strategies for 5-year Holding Periods ($1000 is invested in each of the 30 stocks in the Dow Jones Industrial Average)

Period	Strategy A	Strategy B	Buy & Hold	Advantage over Buy & Hold	
				of A	of B
1963-67	$47,996.15	$48,534.74	$47,955.21	0.09%	1.21%
1964-68	$44,146.02	$44,669.40	$44,120.27	0.06%	1.24%
1965-69	$34,366.18	$35,537.06	$34,080.83	0.84%	4.27%
1966-70	$32,867.43	$33,436.85	$32,082.17	2.45%	4.22%
1967-71	$40,313.44	$40,754.17	$40,271.10	0.11%	1.20%
1968-72	$38,200.85	$38,566.22	$37,896.07	0.80%	1.77%
1969-73	$32,202.93	$32,896.37	$31,569.26	2.01%	4.20%
1970-74	$28,607.47	$30,392.55	$28,440.45	0.59%	6.86%
1971-75	$36,769.11	$38,916.63	$36,445.05	0.89%	6.78%
1972-76	$44,756.12	$45,954.10	$43,116.35	3.80%	6.58%
1973-77	$36,354.03	$37,176.62	$34,097.94	6.62%	9.03%
1974-78	$40,845.86	$41,322.05	$39,154.31	4.32%	5.54%
1975-79	$52,900.51	$53,260.98	$50,938.86	3.85%	4.56%
1976-80	$46,335.57	$46,488.04	$46,048.46	0.62%	0.95%
1977-81	$35,371.55	$35,757.94	$34,550.03	2.38%	3.50%
1978-82	$46,163.89	$46,268.73	$45,717.40	0.98%	1.21%
1979-83	$58,147.83	$57,578.15	$57,736.35	0.71%	-0.27%
1980-84	$52,549.51	$52,283.43	$52,179.67	0.71%	0.20%
1981-85	$58,797.69	$57,037.77	$57,849.07	1.64%	-1.40%
1982-86	$72,115.38	$68,928.96	$71,801.22	0.44%	-4.00%
1983-87	$61,514.83	$61,451.31	$61,142.36	0.61%	0.51%
1984-88	$57,232.87	$55,818.37	$56,322.65	1.62%	-0.90%
1985-89	$71,572.18	$68,852.16	$71,512.58	0.08%	-3.72%
1986-90	$54,003.97	$53,152.89	$53,265.46	1.39%	-0.21%
1987-91	$54,956.51	$54,313.07	$54,164.51	1.46%	0.27%
1988-92	$55,689.36	$55,141.80	$55,252.90	0.79%	-0.20%
1989-93	$54,537.84	$53,849.11	$53,341.31	2.24%	0.95%
1990-94	$46,125.10	$45,696.84	$44,649.34	3.31%	2.35%
1991-95	$66,118.74	$64,020.06	$65,819.15	0.46%	-2.73%

| 1992-96 | $63,642.62 | $61,368.83 | $62,907.00 | 1.17% | -2.45% |
| 1993-97 | $68,915.96 | $66,264.10 | $68,514.18 | 0.59% | -3.28% |

Strategy A: All capital losses are recognized at the end of each year while gains are deferred
Strategy B: All losses are recognized at the end of each year while all gains are recognized long term by waiting one more day
Strategy C: All losses are recognized at the end of each year while all gains are recognized long term in even-numbered years and deferred in odd-numbered years.

Our findings are consistent with those reported by Constantinides (1984) and in stark contrast to the widely-cited conclusions of, among others, Damon, Dunn, and Spatt (1989) and Dickson and Shoven (1993). The major difference in the methodologies of these previous studies has been that Damon et al. and Dickson and Shoven assume that the investor will never have to pay taxes on capital gains because the investor will hold the portfolio until their death. Our study, along with that of Constantinides, assumes that investors intend to withdraw their savings at some future point in time, thus having to realize capital gains. Our assumption is consistent with the behavior of the vast majority of mutual fund investors, according to research published by the Investment Company Institute.

Endnotes

a. *The Investment Company Institute reports that as of yearend 1999, 82.8 million Americans held $5.5 trillion in mutual fund shares. It also reports individuals were net sellers of direct holdings of stocks for the sixth straight year.*
b. *These include the Vanguard Tax-Managed Fund and the Schwab 1000 Fund*
c. *See Zivney and Wells (1998) for an analysis of a Dow Jones Index fund.*
d. *This is not at all unusual. The same article reported that in 1997 there were 3,110 advancing issues and 975 decliners, with 2,498 advanced and 1,256 declined in 1996.*

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