

After-Tax Returns on Stocks Versus Bonds for the High Tax Bracket Investor

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The notion that stocks outperform bonds over the long run is a widely accepted principle of basic investing, though perhaps not as applicable to a high tax bracket investor as it would be to a tax exempt portfolio. Ibbotson Associates reports that between 1925 and 2004, the annualized compounded return on stocks (represented by the S&P 500) was 10.4% compared to the return on government bonds at 5.4%.¹ The gross return on equities was nearly double the gross return on bonds. *Stocks for the Long Run*, written by Wharton professor Jeremy Siegel,² also concluded that stocks have proven to be better investments than bonds over the long run. It is difficult for a non-taxable investor such as a pension, endowment—or even for the average American's 401(k) account—to argue with Siegel's conclusion. However, does this advice apply to the wealthy family that pays taxes on investment income and capital gains at the highest rates? The article shows the annualized after-tax portfolio return to be 6.72% and the difference between the returns on equities and bonds to be only 58 basis points. And, in the most extreme scenarios, equities may have equaled or underperformed bonds on an after-tax basis.

REASONING BEHIND THE MODEL

How wealthy investors have been shown the same capital markets assumptions as non-taxable pools of capital has remained a puzzle over the years. As the stock market bubble grew

in the late 1990's, so too did the gap between investor expectations and ultimate reality after they paid the tax bill. Conversely, municipal bonds have been largely viewed by investors as a conservative, low return investment.

In 2004 the Institute for Private Investors Family Performance Tracking Survey³ revealed that wealthy investors maintained an exposure to municipal bonds of 9% of total assets. (In this discussion, we use high grade long municipal bonds represented by the Bond Buyer Index⁴ when referencing "bonds.") When investors were polled, the most common answer given was that the rate one could earn on a municipal bond was inferior to the return one could earn on long equities or similar derivative instruments. Another study released by Northern Trust⁵ in 2006 showed similar results, with polled investors reporting an average of 11% allocated to bonds. In addition, the Northern Trust survey found that over two thirds of the respondents were attitudinally oriented towards preserving their wealth over growing it further.

That begs the question, "Are the commonly used studies of historical asset class returns useful to the high tax bracket investor?" Or put more simply, "Have stocks outperformed bonds over the long run for the high tax bracket investor?" In 2006, Ibbotson released a study on after-tax returns titled, "Stocks, Bonds, and Bills after Taxes".⁶ The study concluded that stocks experienced an 8.2% after-tax return compared to an after-tax return on government bonds of 3.5%. There

were two problems with the Ibbotson study, limiting its usefulness to the high tax bracket investor. The study applied a tax rate based upon a 2005 income of \$100,000, which only computed taxes at the middle tax bracket of 28% versus the top tax bracket at 35%. The other problem was that there were no adjustments made for the terminal value (post liquidation) of the portfolio. Hence, the after-tax returns were overstated because the embedded capital gain in the portfolio had not been taxed. However, a post liquidation analysis is only of interest for evaluating a portfolio whose basis would not benefit from a step-up at death, and in this scenario the resulting annualized return would be 8 basis points higher. Failing to find a study that answered the question with respect to the top tax bracket investors, we chose to undertake this study.

We modeled a portfolio that began in 1961 and saw identical returns to the S&P 500 Index.⁷ The portfolio experienced 20% annual turnover, on which it paid long term capital gains tax at the highest rate. The model portfolio also received annual dividends, based on the dividend yield of the Index, on which it paid taxes at the highest rate. After growing for 44 years until 2004, each year mirroring the Index, less capital gain taxes, and receiving dividends, it annualized 6.72% (*Exhibit 1*) after liquidation.

We found a notable difference between reported returns on equities versus the return on investment after taxes. For the 44 years covered in our model, the annualized after-tax ROI for the S&P 500 was 6.72%, while the tax free portfolio saw a return of 10.62% (*Exhibit 2*). Why are the numbers so low? From 1960 to 1980, ordinary income taxes ranged from 71% to 91%. Add an average 6% state income tax rate and an investor effectively lost the majority of his return to taxes as most of the return in those two decades stemmed from dividends rather than capital gains.

One takeaway from the study was the effect annual turnover had on the portfolio. The model assumed 20%, but when adjusted from 0% to 100%, we saw a decrease in annualized performance from 7.86% to 6.14%. This says a lot about the investment strategy of an investor in the highest tax bracket and the effects of low turnover investing versus a strategy with high turnover.

During the same time period studied, the Long Term Municipal Bond Buyer Index had a straight line average return of 6.14%, compared to 6.72% with the S&P 500 Index, with much less volatility.

Many behavioral finance studies suggest that equities may not produce higher returns than bonds, if investors do not maintain their holding period for full investment

cycles. Our findings on after-tax returns combined with existing knowledge of the effects of behavioral finance and inflation suggests that the traditional stock versus bond debate deserves to be revisited. An investor must determine what additional premium over bonds they require to compensate them for the risk. Furthermore, ultra high net worth investors must consider the impact capital gains and dividend tax will have on their taxable portfolios.

It would be wise for taxable investors to invest with tax adjusted investment assumptions. Failure to do so will cause the investors to overstate their investment return expectations and possibly overweight their equity allocations due to this misconception. Only investors educated on the tax-adjusted impact of a given strategy can make educated decisions as to return expectations and asset allocation. Our hope is that the presentation of this model will motivate investors to make more informed decisions.

Basic Model Description⁸

On January 1, 1961, an investor in the highest tax bracket invested \$100 into a portfolio of stocks representing the S&P 500 Index. The dividend yield that year was 3.41% paid quarterly of 0.8525%. The Index rose 23.13%, and its assumed straight line growth over the year would have priced it at \$105.78, \$111.56, \$117.34, and \$123.13 at the end of each quarter. Dividend yield of 0.8525% on each of those exhibits gives \$0.90, \$0.95, \$1.00, and \$1.05 totaling \$3.90. The dividend tax in 1960 was 91% and state tax, which can be adjusted in the model, was assumed to be an additional 6% so the \$3.90 after taxes would be only \$0.12.

During the year, there was a 20% portfolio turnover resulting in capital gains tax of \$4.63 on market appreciation of \$23.13. This was taxed at 25% federal and 6% state so at year end, \$1.43 was owed in taxes. Combining the \$100 original portfolio value plus the \$23.13 in gains, less \$1.43 for taxes and adding \$0.12 more in dividends, the total portfolio at the end of the year is \$121.81.

The retained dividends and turnover after taxes in the portfolio will then be reinvested which will add to the original \$100 principal. The \$4.63 in turnover, less taxes of \$1.43, nets \$3.19 (rounded) plus \$0.12 in dividends. This means that the principal to begin the next year will be $\$100 + \$3.19 + \$0.12 = \103.31 . The 20% turnover in the following year will now have to pay capital gains tax on any amount over that exhibit. Since we are only

EXHIBIT 1

Annualized After-Tax Portfolio Returns (1961-2004)

Year Start	S&P 500	S&P Perf.	Div Yield	Ord Inc Tax	Cap Gains Tax	Portfolio Value	Portfolio Performance	Qtr Port Dollar Change	Div Dollar Yield	Net Div after tax	Principal	Gains tax after TO	Retained Capital Gains
1961	58.11	23.13%	3.41%	0.91	0.25	\$100.00	21.81%	\$5.78	\$3.90	\$0.10	\$100.00	\$1.43	\$21.81
1962	71.55	-11.81%	2.85%	0.91	0.25	\$121.81	-11.94%	-\$3.60	\$3.22	\$0.10	\$103.31	\$0.26	-\$14.54
1963	63.1	18.99%	3.40%	0.91	0.25	\$107.27	17.64%	\$5.07	\$4.08	\$0.12	\$103.97	\$1.46	\$18.93
1964	75.02	12.97%	3.13%	0.91	0.25	\$126.19	11.34%	\$4.09	\$4.27	\$0.13	\$107.35	\$2.18	\$14.31
1965	84.75	9.06%	3.05%	0.91	0.25	\$140.50	7.35%	\$3.18	\$4.53	\$0.14	\$112.33	\$2.54	\$10.33
1966	92.43	-13.09%	3.06%	0.7	0.25	\$150.84	-12.95%	-\$4.94	\$4.24	\$1.02	\$118.11	\$0.80	-\$19.63
1967	80.33	20.09%	3.59%	0.7	0.25	\$131.30	19.33%	\$6.60	\$5.31	\$1.27	\$120.92	\$2.28	\$25.38
1968	96.47	7.66%	3.09%	0.7	0.25	\$156.68	6.80%	\$3.00	\$5.07	\$1.22	\$127.27	\$2.57	\$10.65
1969	103.86	-11.36%	2.93%	0.75	0.269	\$167.33	-11.40%	-\$4.75	\$4.55	\$0.87	\$134.20	\$0.93	-\$19.07
1970	92.06	0.10%	3.52%	0.77	0.275	\$148.26	0.18%	\$0.04	\$5.22	\$0.89	\$136.96	\$0.77	\$0.27
1971	92.15	10.79%	3.46%	0.7	0.323	\$148.52	10.37%	\$4.01	\$5.49	\$1.32	\$139.37	\$1.93	\$15.41
1972	102.09	15.63%	3.10%	0.7	0.343	\$163.93	14.20%	\$6.41	\$5.58	\$1.34	\$143.79	\$3.69	\$23.28
1973	118.05	-17.37%	2.70%	0.7	0.365	\$187.21	-16.97%	-\$8.13	\$4.51	\$1.08	\$150.60	\$0.35	-\$31.78
1974	97.55	-29.72%	3.70%	0.7	0.365	\$159.43	-29.00%	-\$11.55	\$4.68	\$1.12	\$152.15	\$0.00	-\$45.07
1975	68.56	31.55%	5.43%	0.7	0.365	\$110.36	33.11%	\$8.70	\$7.17	\$1.72	\$144.69	\$0.00	\$36.54
1976	90.19	19.15%	4.14%	0.7	0.365	\$148.91	20.28%	\$7.03	\$6.81	\$1.63	\$146.51	\$0.00	\$28.76
1977	107.46	-11.50%	3.93%	0.7	0.399	\$176.67	-10.63%	-\$5.08	\$6.44	\$1.55	\$153.85	\$0.00	-\$18.77
1978	95.1	1.06%	5.11%	0.7	0.399	\$157.90	2.30%	\$0.42	\$8.12	\$1.95	\$155.90	\$0.00	\$3.63
1979	96.11	12.31%	5.39%	0.7	0.399	\$182.21	12.81%	\$4.97	\$9.38	\$2.25	\$158.58	\$1.44	\$20.69
1980	107.94	25.77%	5.53%	0.7	0.28	\$182.21	24.88%	\$11.74	\$11.70	\$2.81	\$163.96	\$4.43	\$45.34
1981	135.76	-9.73%	4.74%	0.7	0.28	\$227.55	-9.56%	-\$5.54	\$10.13	\$2.43	\$175.37	\$2.04	-\$21.75
1982	122.55	14.76%	5.57%	0.7	0.237	\$205.80	14.65%	\$7.59	\$12.52	\$3.00	\$181.77	\$3.23	\$30.15
1983	140.64	17.27%	4.93%	0.5	0.2	\$235.95	17.82%	\$10.19	\$12.89	\$5.67	\$192.42	\$4.38	\$42.04
1984	164.93	1.40%	4.32%	0.5	0.2	\$277.99	1.98%	\$0.97	\$12.11	\$5.33	\$210.57	\$3.71	\$5.52
1985	167.24	26.33%	4.68%	0.5	0.2	\$283.50	26.32%	\$18.66	\$15.45	\$6.80	\$226.45	\$6.85	\$74.61
1986	211.28	14.62%	3.88%	0.5	0.2	\$358.11	14.19%	\$13.09	\$15.16	\$6.67	\$252.74	\$6.20	\$50.83
1987	242.17	2.03%	3.38%	0.5	0.2	\$408.94	1.82%	\$2.07	\$14.00	\$6.16	\$282.76	\$6.99	\$7.46
1988	247.08	12.40%	3.71%	0.385	0.28	\$416.39	12.02%	\$12.91	\$16.65	\$9.24	\$308.82	\$10.83	\$50.05
1989	277.72	27.25%	3.68%	0.28	0.28	\$466.44	26.38%	\$31.78	\$20.09	\$13.26	\$339.07	\$17.30	\$123.06
1990	353.4	-6.56%	3.32%	0.28	0.28	\$589.50	-6.36%	-\$9.67	\$18.77	\$12.39	\$385.92	\$11.21	-\$37.49
1991	330.22	26.31%	3.74%	0.28	0.28	\$552.01	25.77%	\$36.30	\$24.04	\$15.87	\$420.08	\$18.85	\$142.24
1992	417.09	4.46%	3.11%	0.28	0.28	\$694.25	4.10%	\$7.75	\$22.19	\$14.65	\$472.53	\$17.18	\$28.46
1993	435.71	7.06%	2.90%	0.31	0.28	\$722.70	6.68%	\$12.75	\$21.88	\$13.79	\$520.53	\$17.21	\$47.56
1994	466.45	-1.54%	2.72%	0.396	0.28	\$770.26	-1.76%	-\$2.96	\$20.75	\$11.29	\$567.74	\$12.97	-\$13.53
1995	459.27	34.11%	2.91%	0.396	0.292	\$756.73	32.21%	\$64.53	\$26.72	\$14.53	\$604.19	\$28.91	\$243.75
1996	615.93	20.26%	2.30%	0.396	0.292	\$1,000.48	17.94%	\$50.68	\$25.93	\$14.10	\$671.95	\$37.40	\$179.44
1997	740.74	31.01%	2.01%	0.396	0.292	\$1,179.91	27.59%	\$91.47	\$28.31	\$15.40	\$754.90	\$55.68	\$325.59
1998	970.43	26.67%	1.60%	0.396	0.2	\$1,505.51	24.11%	\$100.37	\$28.10	\$15.29	\$872.80	\$53.78	\$363.01
1999	1229.23	19.53%	1.32%	0.396	0.2	\$1,868.51	17.01%	\$91.21	\$27.67	\$15.05	\$1,041.15	\$61.99	\$317.91
2000	1469.25	-10.14%	1.14%	0.396	0.2	\$2,186.42	-11.30%	-\$55.42	\$23.35	\$12.70	\$1,232.66	\$38.07	-\$247.05
2001	1320.28	-13.04%	1.23%	0.396	0.2	\$1,939.37	-13.32%	-\$63.23	\$21.91	\$11.92	\$1,353.70	\$17.30	-\$382.31
2002	1148.09	-23.37%	1.37%	0.396	0.2	\$1,681.05	-22.73%	-\$98.20	\$19.67	\$10.70	\$1,414.87	\$0.00	-\$361.11
2003	879.82	26.38%	1.83%	0.396	0.2	\$1,298.95	27.08%	\$85.66	\$27.69	\$15.06	\$1,400.24	\$5.97	\$351.75
2004	1111.91	8.99%	1.61%	0.15	0.15	\$1,650.70	9.47%	\$37.12	\$28.07	\$22.18	\$1,457.61	\$14.35	\$156.30
2005	1211.92			0.15	0.15	\$1,807.00					\$1,533.75		

In 2003 dividend taxation assessed at 15% rate rather than ordinary income tax rate

Annual Return 6.80%
Return after Liquidation 6.72%

For illustrative purposes only. Past performance is no guarantee of future results.

EXHIBIT 2

Annualized Untaxed Portfolio Returns (1961-2004)

Year Start	S&P 500	S&P Perf.	Div Yield	Ord Inc Tax	Cap Gains Tax	Portfolio Value	Portfolio Performance	Qtr Port Dollar Change	Div Dollar Yield	Net Div after tax	Principal	Gains tax after TO	Retained Capital Gains
1961	58.11	23.13%	3.41%	0.91	0.25	\$100.00	27.03%	\$5.78	\$3.90	\$3.90	\$100.00	\$0.00	\$27.03
1962	71.55	-11.81%	2.85%	0.91	0.25	\$127.03	-9.17%	-\$3.75	\$5.35	\$3.35	\$108.53	\$0.00	-\$11.85
1963	63.1	18.89%	3.40%	0.91	0.25	\$115.38	22.69%	\$5.45	\$4.39	\$4.39	\$112.58	\$0.00	\$26.18
1964	75.02	12.97%	3.13%	0.91	0.25	\$141.56	16.35%	\$4.59	\$4.79	\$4.79	\$121.89	\$0.00	\$23.15
1965	84.75	9.06%	3.05%	0.91	0.25	\$164.72	12.28%	\$3.73	\$5.31	\$5.31	\$134.29	\$0.00	\$20.23
1966	92.43	-13.09%	3.06%	0.7	0.25	\$184.95	-10.28%	-\$6.05	\$5.20	\$5.20	\$148.67	\$0.00	-\$19.02
1967	80.33	20.09%	3.59%	0.7	0.25	\$165.94	24.13%	\$8.33	\$6.71	\$6.71	\$156.28	\$0.00	\$40.05
1968	96.47	7.66%	3.09%	0.7	0.25	\$205.98	10.90%	\$3.94	\$6.67	\$6.67	\$171.58	\$0.00	\$22.45
1969	103.86	-11.36%	2.93%	0.75	0.269	\$228.43	-8.64%	-\$6.49	\$6.22	\$6.22	\$188.29	\$0.00	-\$19.74
1970	92.06	0.10%	3.52%	0.77	0.275	\$208.69	3.62%	\$0.05	\$7.35	\$7.35	\$197.34	\$0.00	\$7.55
1971	92.15	10.79%	3.46%	0.7	0.323	\$246.56	14.48%	\$5.83	\$7.99	\$7.99	\$207.00	\$0.00	\$31.31
1972	102.09	15.63%	3.10%	0.7	0.343	\$216.25	19.04%	\$9.68	\$8.42	\$8.42	\$221.50	\$0.00	\$47.13
1973	118.05	-17.37%	2.70%	0.7	0.365	\$294.69	-14.96%	-\$12.79	\$7.09	\$7.09	\$242.88	\$0.00	-\$44.08
1974	97.55	-29.72%	3.70%	0.7	0.365	\$250.61	-26.71%	-\$18.62	\$7.55	\$7.55	\$250.10	\$0.00	-\$66.93
1975	68.56	31.55%	5.43%	0.7	0.365	\$183.68	38.05%	\$14.49	\$11.94	\$11.94	\$242.86	\$0.00	\$69.89
1976	90.19	19.15%	4.14%	0.7	0.365	\$253.57	23.78%	\$12.14	\$11.75	\$11.75	\$254.55	\$0.00	\$60.31
1977	107.46	-11.50%	3.93%	0.7	0.399	\$313.88	-7.85%	-\$9.03	\$11.45	\$11.45	\$275.82	\$0.00	-\$24.65
1978	95.1	1.06%	5.11%	0.7	0.399	\$289.23	6.21%	\$0.77	\$14.88	\$14.88	\$287.66	\$0.00	\$17.95
1979	96.11	12.31%	5.39%	0.7	0.39	\$307.18	18.11%	\$9.45	\$17.83	\$17.83	\$303.47	\$0.00	\$55.64
1980	107.94	25.77%	5.53%	0.7	0.28	\$362.82	32.19%	\$23.38	\$23.30	\$23.30	\$329.60	\$0.00	\$116.81
1981	135.76	-9.73%	4.74%	0.7	0.28	\$479.62	-5.28%	-\$11.67	\$21.35	\$21.35	\$378.24	\$0.00	-\$25.32
1982	122.55	14.76%	5.57%	0.7	0.237	\$549.31	20.85%	\$16.77	\$27.64	\$27.64	\$410.54	\$0.00	\$94.70
1983	140.64	17.27%	4.93%	0.5	0.2	\$654.00	22.73%	\$23.70	\$29.99	\$29.99	\$460.34	\$0.00	\$124.81
1984	164.93	1.40%	4.32%	0.5	0.2	\$673.81	5.76%	\$2.36	\$29.36	\$29.36	\$527.03	\$0.00	\$38.80
1985	167.24	26.33%	4.68%	0.5	0.2	\$712.61	31.78%	\$46.91	\$38.84	\$38.84	\$587.63	\$0.00	\$226.49
1986	211.28	14.62%	3.88%	0.5	0.2	\$939.11	18.85%	\$34.33	\$39.77	\$39.77	\$689.00	\$0.00	\$177.07
1987	242.17	2.03%	3.38%	0.5	0.2	\$1,116.18	5.45%	\$5.66	\$38.20	\$38.20	\$806.25	\$0.00	\$60.84
1988	247.08	12.40%	3.71%	0.385	0.28	\$1,177.01	16.40%	\$36.49	\$47.05	\$47.05	\$910.96	\$0.00	\$193.01
1989	277.72	27.25%	3.68%	0.28	0.28	\$1,370.02	31.56%	\$93.33	\$59.00	\$59.00	\$1,040.42	\$0.00	\$432.34
1990	353.4	-6.56%	3.32%	0.28	0.28	\$1,802.36	-3.38%	-\$29.55	\$57.39	\$57.39	\$1,240.01	\$0.00	-\$60.83
1991	330.22	26.31%	3.74%	0.28	0.28	\$1,741.53	30.66%	\$114.53	\$75.84	\$75.84	\$1,386.22	\$0.00	\$533.98
1992	417.09	4.46%	3.11%	0.28	0.28	\$2,275.51	7.66%	\$25.40	\$72.74	\$72.74	\$1,624.75	\$0.00	\$174.33
1993	435.71	7.06%	2.90%	0.31	0.28	\$2,449.84	10.08%	\$43.21	\$74.18	\$74.18	\$1,847.96	\$0.00	\$247.02
1994	466.45	-1.54%	2.72%	0.396	0.28	\$2,696.86	1.15%	-\$10.38	\$72.65	\$72.65	\$2,077.09	\$0.00	\$31.14
1995	459.27	34.11%	2.91%	0.396	0.292	\$2,727.99	37.64%	\$232.63	\$96.31	\$96.31	\$2,265.39	\$0.00	\$1,026.84
1996	615.93	20.26%	2.30%	0.396	0.292	\$3,754.84	22.85%	\$190.22	\$97.30	\$97.30	\$2,640.32	\$0.00	\$858.17
1997	740.74	31.01%	2.01%	0.396	0.292	\$4,613.00	33.41%	\$357.60	\$110.69	\$110.69	\$3,112.70	\$0.00	\$1,541.10
1998	970.43	26.67%	1.60%	0.396	0.2	\$6,154.10	28.54%	\$410.30	\$114.88	\$114.88	\$3,809.53	\$0.00	\$1,756.09
1999	1229.23	19.53%	1.32%	0.396	0.2	\$7,910.19	21.01%	\$386.14	\$117.16	\$117.16	\$4,721.57	\$0.00	\$1,661.70
2000	1469.25	-10.14%	1.14%	0.396	0.2	\$9,571.90	-9.07%	-\$242.63	\$102.20	\$102.20	\$5,785.36	\$0.00	-\$868.31
2001	1320.28	-13.04%	1.23%	0.396	0.2	\$8,703.59	-11.91%	-\$283.78	\$98.33	\$98.33	\$6,450.77	\$0.00	-\$1,036.79
2002	1148.09	-23.37%	1.37%	0.396	0.2	\$7,666.80	-22.20%	-\$447.87	\$89.70	\$89.70	\$6,772.64	\$0.00	-\$1,701.78
2003	879.82	26.38%	1.83%	0.396	0.2	\$5,965.02	28.51%	\$393.38	\$127.16	\$127.16	\$6,682.87	\$0.00	\$1,700.69
2004	1111.91	8.99%	1.61%	0.15	0.15	\$7,665.71	10.69%	\$172.37	\$130.36	\$130.36	\$6,981.16	\$0.00	\$819.64
2005	1211.92			0.15	0.15	\$8,485.55					\$7,386.33		

Taxes? n 20% Port. Turnover 6% State Tax

: In 2003 dividend taxation assessed at 15% rate rather than ordinary income tax rate

Annual Return 10.62%
Return after Liquidation 10.62%

For illustrative purposes only. Past performance is no guarantee of future results.

EXHIBIT 3

After Tax Returns Using Varied State Tax and Portfolio Turnover Ranges

State Tax	Portfolio Turnover										
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
6.72%	8.22%	7.52%	7.27%	7.13%	7.04%	6.97%	6.92%	6.88%	6.84%	6.80%	6.77%
0%	8.16%	7.44%	7.18%	7.04%	6.94%	6.87%	6.82%	6.77%	6.74%	6.70%	6.67%
1%	8.10%	7.36%	7.09%	6.95%	6.85%	6.77%	6.72%	6.67%	6.63%	6.59%	6.56%
2%	8.04%	7.27%	7.00%	6.85%	6.75%	6.68%	6.62%	6.57%	6.53%	6.49%	6.46%
3%	7.98%	7.19%	6.91%	6.76%	6.65%	6.58%	6.52%	6.47%	6.43%	6.39%	6.35%
4%	7.92%	7.11%	6.81%	6.67%	6.56%	6.49%	6.42%	6.37%	6.32%	6.28%	6.25%
5%	7.86%	7.02%	6.72%	6.57%	6.46%	6.38%	6.32%	6.27%	6.22%	6.18%	6.14%
6%	7.80%	6.94%	6.63%	6.48%	6.36%	6.28%	6.22%	6.16%	6.12%	6.08%	6.04%
7%	7.74%	6.85%	6.53%	6.38%	6.26%	6.18%	6.12%	6.06%	6.01%	5.97%	5.93%
8%											

Hypothetical State Tax Rates ranging from 0% to 8% and the annualized rate of return in relation to Portfolio Turnover ranging from 0% to 100%. The percentages used in the study are shown in yellow, a state tax rate of 6% and a portfolio turnover of 20%.

turning over 20% of the portfolio, the actual exhibit to be used will be $\$103.31 \times 20\% = \20.67 .

Portfolio Turnover

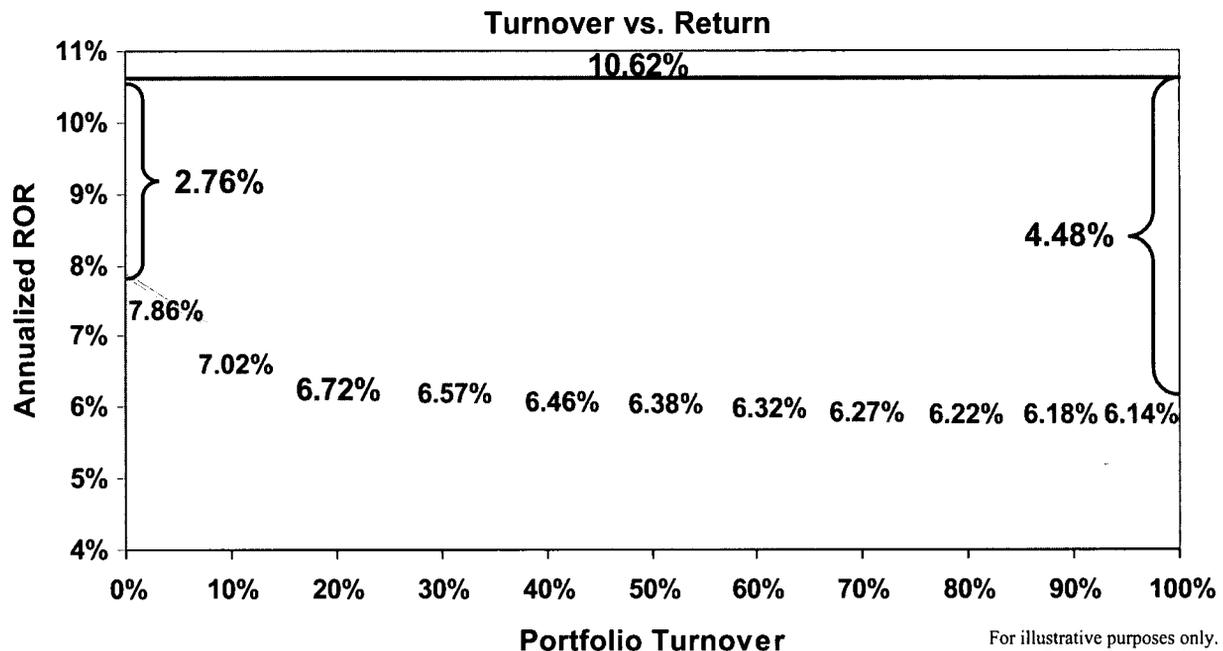
Portfolio turnover results in significant cost to the investor. We observed several possible ranges of portfolio turnover from 0–100% (*Exhibit 3*). Dr. Siegel estimates that the annual turnover rate on the S&P 500 since its inception is 5%.⁹ Other studies estimate that the average turnover in an equity mutual fund is as high as 100%. We chose to use 20% as an assumed turnover rate, which we are confident reflects a reliable observation of large cap core portfolios. Our model allows for a turnover variance ranging from 0% to 100% to fit management styles. The difference in after-tax returns is notable. When the portfolio experienced 0% turnover, the terminal after-tax annualized rate of return for the period was 7.86%. On the other side of the spectrum, when the portfolio experienced 100% turnover, the rate of return dropped to 6.14%, equal to the average yield of the muni bond.

Municipal Bonds

One of the most compelling observations in our study was that the fully taxed S&P 500 Index portfolio posted an annual return after liquidation during the observed period of 6.72%, while the straight line average return on the bond buyer municipal bond index was 6.14%.¹⁰ The volatility (standard deviation) of the S&P 500 Index portfolio is assumed to be 14.3%,¹¹ compared to that of the municipal bond, at 4.2%.¹² The investor should then be compensated for the additional risk, and over the period studied, that premium amounted to only 58 basis points. Surely, when viewing the terminal value of the equity portfolio, the incremental return equities earned over bonds was quite low.

WHAT DOES THIS MEAN FOR HIGH NET WORTH INVESTORS?

Our findings should prove invaluable to taxable investors when making long-range estate planning decisions as well as estimating their expected total portfolio value. This information will also be useful in the asset allocation decisions with regard to expected



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returns. The same investor, who takes the additional risk of holding equities when the earned premium is 3.35% like an untaxed portfolio, may choose differently when after taxes, the premium is reduced to 0.58%. This article should also throw more light on the subject by cautioning high tax bracket investors from aligning themselves with the practices of non-taxable investors such as pension funds and endowments.

One obvious conclusion from this study could be that taxes matter a great deal to the ultra-high net worth investor. Along the same line, the observed equity premium earned by taxable investors is much smaller than their non-taxable peers. While untaxed equities in our study earned 3.35% excess return above the average on a 30 year U.S. treasury bond, the fully taxed portfolio net return was only 58 basis points over the average muni bond for the same period.

As the historical rates cannot be assumed to represent those of the future, we examine several possible scenarios by asking some questions:

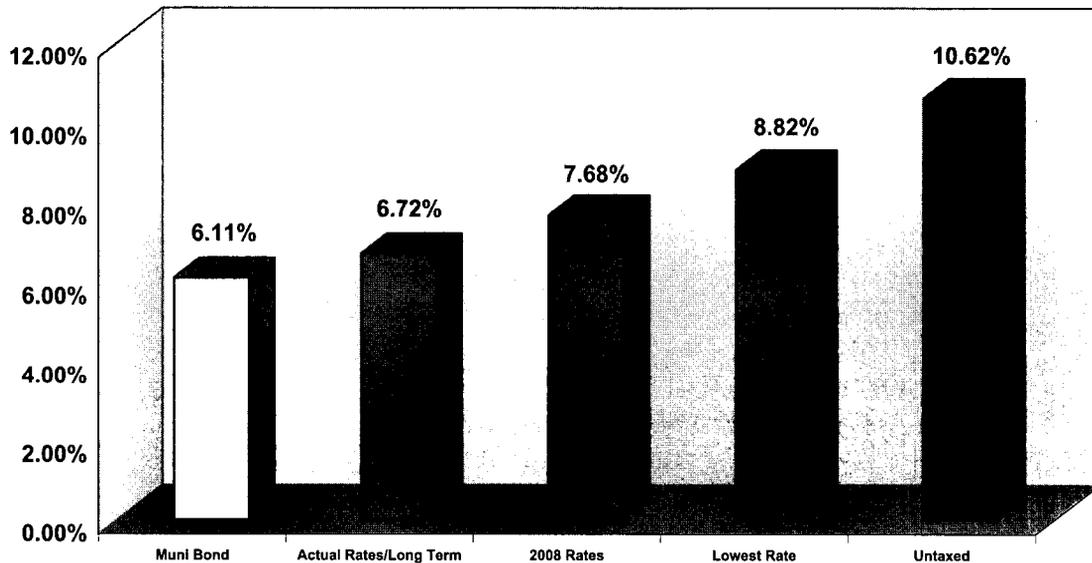
- What happens to the returns if the 15% dividend and Capital Gains rate of today, were present during the whole period of 1961 to 2004? The after-tax annualized rate of return rises to 8.82%.

- What if the rates to be expected in 2008, after the sunset provisions, were applied over the entire period studied (capital gains tax of 20% and dividends taxed as ordinary income at 39.6%)? The average after-tax return of the portfolio becomes 7.68%; nearly 28% of the returns are lost compared to the 10.62% of an untaxed portfolio.

We cannot predict with certainty what tax bracket our portfolios will experience over the future. It is reasonable to observe that many industrialized nations still maintain high taxation practices. As we write this article, the highest income tax rates in the world are levied in Australia, Austria, Belgium, Denmark, France, Israel, Netherlands, and Norway. These countries maintain top income tax brackets of around 50% or higher. Many have stated that the tax rates from the 60s, 70s, and 80s should be dismissed as a practice unlikely to recur in our lifetime. Such a dismissal may be premature.

What tax rate is prudent to use for long-term projections into the future? Predicting the future tax rates lies outside the domain of the authors, but we can make reasonable assumptions for planning purposes. The tax rates that took effect in 1994¹³ seem to provide an adequate benchmark or middle ground. The 39.6% rate in

After-Tax Rates of Return under Different Tax Scenarios (1961 - 2004)



Notes:

Muni Bond – Bond Buyer GO 20-Year Bond Municipal Bond Index (straight-line weekly average from 1961–2004).

Actual Rates – Tax rates observed over the period studied, collected from the United States Internal Revenue Service.

2008 Rates – Rates after the sunset provisions where Capital Gains will be taxed at 20% and Dividends taxed as earned income at 39.6% used throughout the entire period.

Lowest Rates – The current tax rates, Capital Gains taxed at 15% and Dividends taxed at 15% throughout the entire period.

Untaxed – A portfolio where Capital Gains and Dividends were not taxed at either the federal or state level.

1994 closely approximates the average of the longest running tax rate (70%) and the lowest observed tax rate (15%). Applying the 1994 rates to the period produced a net ROI of 7.23%, we observed.

We conclude that there is indeed a larger margin of error on expected portfolio returns due to the erratic nature of the top tax bracket. Our study vindicates the view that a dominant allocation to Municipal Bonds may be prudent at times. As investors, we must ask ourselves, “How much more must we earn in equities versus Municipal Bonds after-tax to justify the risk?” Each one of us will respond differently. In 1982, when we observed an earnings yield of 14% on the S&P 500, equities, could be argued, were worth the added risk. But in 2000, when the yield on a Municipal Bond of 6% was nearly double the earnings yield on the S&P 500 of 3%, it became much more difficult to dismiss completely or underweigh Munis in our Asset Allocation.

The impact of this reality holds major implications for families who will experience the top tax rates. If one of their infant grandchildren happens to be the beneficiary of a trust with a 40-year time horizon, the following stark differences will dictate the end portfolio value. If the trust today is \$10 million, and it earns pretax historical return (observed in this study) over the 40 years, it grows to approximately \$567 million. If, however, the trust must pay its own taxes and liquidate at the end of the term, the ending portfolio value shrinks to \$135 million. We believe that a difference of \$432 million would be considered significant to a grantor, trustee, or beneficiary of such a trust.¹⁴

Gross Rates of Return

The exhibits reported in this study are gross of expenses such as transaction costs or investment advisory fees. In 1975, Jack Bogle presented the idea of creating

an index fund that tracked the S&P 500 Index.¹⁵ In his presentation to the Vanguard board, Bogle presented supporting historical data. In his account of The First Index Fund, Bogle writes: "I projected the costs of managing an index fund to be 0.3% per year in operating expenses and 0.2% per year in transaction costs." This clearly indicates that Bogle expected the costs of actually owning the index to be approximately 0.5%. If we were to apply Bogle's expense calculations to the after-tax returns presented here, the net return on equities would be remarkably close to the rate of return on Munis, a difference of 8 basis points.

CONCLUSION

From our study, we have observed:

- The after-tax returns on the S&P 500 index and those of municipal bonds¹⁶ were similar over time for the high tax bracket investor.
- The high tax bracket investor gained little to no risk premium for investing in equities.
- Portfolio turnover has major implications on after-tax returns over time.
- Indexing was not an effective vehicle for producing excess return over bonds.
- Taxes must be taken into account during planning, asset allocation, manager selection, and monitoring of investments.

In total, the study presents some clear implications for equity investing. While equities did not produce a substantial excess return over the last 44 years, today's low tax rates increase the margin of opportunity for doing so. Our recommendation is that investors develop an understanding of the impact of taxation's effect on equity returns and to incorporate this thinking into asset allocation and risk management of portfolios as the taxation landscape changes.

ENDNOTES

¹Ibbotson Associates, 2004. *Stocks, Bonds, and Bills after Taxes 1925–2005*. Chicago, IL: Ibbotson Associates.

²Siegel, Jeremy J. 2002. *Stocks for the Long Run*. 3rd Edition, New York: McGraw-Hill.

³Institute for Private Investors, 2005. *Family Performance Tracking*. New York, NY: Institute for Private Investors.

⁴Bond Buyer GO 20-Year Bond Municipal Bond Index.

⁵Northern Trust, 2006, *Wealth in America 2006: Executive Summary Findings*. Chicago, IL: Northern Trust.

⁶Ibbotson Associates, 2006. *Stocks, Bonds, and Bills after Taxes 1925–2005*. Chicago, IL: Ibbotson Associates.

⁷S&P500 earnings and dividends: pages.stern.nyu.edu/~adamodar and Citigroup U.S. Investment Strategy Group.

⁸A more detailed representation of the model appears as an endnote.

⁹Turnover rate on the S&P 500 is estimated to be between 4–5% since the inception of the index. Jeremy Siegel referenced this point in his 2006 paper titled, "Long-Term Returns on the Original S&P500 Companies".

¹⁰Bond Buyer GO 20-Year Bond Municipal Bond Index (straight-line weekly average from 1961–2004).

¹¹S&P500 earnings and dividends: www.pages.stern.nyu.edu/~adamodar.

¹²Lehman Brothers Municipal Index.

¹³Citizens for Tax Justice, May 2004 and www.home.att.net/~resurgence/taxtimeline.htm.

¹⁴ $\$10\text{mm} \star (1.1062)^{40} = \566.69mm .

$\$10\text{mm} \star (1.0672)^{40} = \134.84mm .

¹⁵The Mutual Fund Industry in 2003: Back to the Future Remarks by John C. Bogle Founder and Former Chairman, The Vanguard Group Before the Harvard Club of Boston, the Harvard Business School Association of Boston, and the Boston Security Analysts Society Boston, Massachusetts January 14, 2003.

¹⁶Municipal bonds may be subject to state and local taxes, and/or the alternative minimum tax. Smith Barney does not provide tax or legal advice.

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S&P500 earnings and dividends, pages.stern.nyu.edu/~adamodar and Citigroup U.S. Investment Strategy Group.

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The Mutual Fund Industry in 2003: Back to the Future. *Remarks* by John C. Bogle, Founder and Former Chairman, The Vanguard Group before the Harvard Club of Boston, the Harvard Business School Association of Boston, and the Boston Security Analysts Society Boston, Massachusetts, January 14, 2003.

Basic Model Description

On January 1, 1961, an investor in the highest tax bracket invested \$100 into a portfolio of stocks representing the S&P 500 Index. The dividend yield that year was 3.41% paid quarterly of 0.8525%. The Index rose 23.13%, and its assumed straight line growth over the year would have priced it at \$105.78, \$111.56, \$117.34, and \$123.13 at the end of each quarter. Dividend yield of 0.8525% on each of those exhibits give \$0.90, \$0.95, \$1.00, and \$1.05 totaling \$3.90. The dividend tax in 1960 was 91% and state tax which can be adjusted in the model was assumed to be an additional 6% so the \$3.90 after taxes would be only \$0.12.

During the year, there was a 20% portfolio turnover resulting in capital gains tax of \$4.63 on market appreciation of \$23.13. This was taxed at 25% federal and 6% state so at year end, \$1.43 was owed in taxes. Combining the \$100 original portfolio value plus the \$23.13 in gains, less \$1.43 for taxes and adding \$0.12 more in dividends, the total portfolio at the end of the year is \$121.81

The retained dividends and turnover after taxes in the portfolio will then be reinvested which will add to the original \$100 principal. The \$4.63 in turnover, less taxes of \$1.43, nets \$3.19 (rounded) plus \$0.12 in dividends. This means that the principal to begin the next year will be \$100 + \$3.19 + \$0.12 = \$103.31. The 20% turnover in the following year will now have to pay capital gains tax on any amount over that exhibit. Since we are only turning over 20% of the

portfolio, the actual exhibit to be used will be $\$103.31 \times 20\% = \20.67

The Next Three Years Summarized

1962

Portfolio to start year—\$121.81 * 11.81% S&P Performance = \$107.42
 $\$107.42 @ 20\% \text{ turnover} = \21.48
 Cost Basis on those shares = $\$103.31 \times 20\% = \20.67
 Taxed on $(\$21.48 - \$20.67) = \$0.82 @ 31\% = \0.25
 Quarterly Dividends of \$0.84, \$0.82, \$0.79, \$0.76 = \$3.21
 taxed @ 97% = \$0.10
 Year End Portfolio Value = $\$107.42 - \$0.25 + \$0.10 = \107.27
 Principal Step-up of $(\$0.82 - \$0.25) = \$0.57 + \$0.10 = \$103.98$ (rounded)

1963

Portfolio to start year—\$107.27 * 18.89% S&P Performance = \$127.53
 $\$107.42 @ 20\% \text{ turnover} = \25.51
 Cost Basis on those shares = $\$103.98 \times 20\% = \20.80
 Taxed on $(\$25.51 - \$20.80) = \$4.71 @ 31\% = \1.46
 Quarterly Dividends of \$0.95, \$1.00, \$1.04, \$1.08 = \$4.08
 taxed @ 97% = \$0.12
 Year End Portfolio Value = $\$127.53 - \$1.46 + \$0.12 = \126.19
 Principal after step-up = $(\$4.71 - \$1.46) = \$3.25 + \$0.12 + 103.98 = \$107.35$

1964

Portfolio to start year—\$126.19 * 12.97% S&P Performance = \$142.56
 $\$142.56 @ 20\% \text{ turnover} = \28.51
 Cost Basis on those shares = $\$107.35 \times 20\% = \21.47
 Taxed on $(\$28.51 - \$21.47) = \$7.04 @ 31\% = \2.18
 Quarterly Dividends of \$1.02, \$1.05, \$1.08, \$1.12 = \$4.27
 taxed @ 97% = \$0.13
 Year End Portfolio Value = $\$142.56 - \$2.18 + \$0.13 = \140.51
 Principal after step-up = $(\$7.04 - \$2.18) = \$4.86 + \$0.13 + 107.35 = \$112.34$ (rounded)

Special Case of 1974

After a significant downturn of the market in both 1973 and 1974, the principal which had been stepped-up over the past several years was actually greater than the final value of the portfolio. In this case, no capital gains taxes were taken out of the portfolio because there was actually a loss. Furthermore,

there needed to be a tax credit given for the \$3.65 in losses realized in this year. This credit was given in the following year on the growth, as stated by the tax code; however it took a total of five years to use up all of the tax credit because the portfolio dipped so low. This decreases total return for the investor because the credit is given in the dollar value of the tax loss, not growing with the market until an equal tax gain is realized. The current value of the tax credit can be seen in the hidden "O" column in the model.

1974

Portfolio to start year—\$155.43 * - 29.72% S&P Performance = \$109.24 \$109.24 @ 20% turnover = \$21.85

Cost Basis on those shares = \$152.15 * 20% = \$30.43

Taxed on (\$21.85 - \$30.43) = -\$8.58 @ 42.5% = \$3.65 ← actually a credit

Quarterly Dividends of \$1.33, \$1.22, \$1.12, \$1.01 = \$4.68 taxed @ 76% = \$1.12

Year End Portfolio Value = \$109.24 - *3.65*(not included) + \$1.12 = \$110.36

Principal after step-up = (\$-8.58 - *3.65*(not included)) = -\$8.58 + \$1.12 + 152.15 = \$144.69

As you can see, the tax credit was not included as usual in the above calculation because of the loss. Notice the lowering of the principal because after the turnover, the investor did not have as much money to reinvest in the portfolio, hence the "step-down".

In 1975, there were not enough gains to use up all of the tax credit and only \$0.04 was taken away from \$3.65:

1975

Portfolio to start year—\$110.36 * 31.55% S&P Performance = \$145.18 \$145.18 @ 20% turnover = \$29.04

Cost Basis on those shares = \$144.69 * 20% = \$28.94

Taxed on (\$29.04 - \$28.94) = \$0.10 @ 42.5% = \$0.04

Quarterly Dividends totaling \$7.17 taxed @ 76% = \$1.72

Year End Portfolio Value = \$145.18 - *\$0.04*(not included) + \$1.72 = \$146.91

Principal after step-up = (\$0.10 - *\$0.04*(not included)) = \$.10 + \$1.72 + 144.69 = \$146.51

The \$0.04 was taken out of the \$3.65 credit, with a \$3.61 credit remainder to be used in upcoming years. Because of the credit, the capital gains tax in that year was 0%

Just to further show how the tax credit is being used, the following years are shown to display how the tax credit is completely eliminated and the balance between the gains tax and the credit is owed in 1979.

1976

Portfolio to start year—\$146.91 * 19.15% S&P Performance = \$175.04 \$175.04 @ 20% turnover = \$35.01

Cost Basis on those shares = \$146.51 * 20% = \$29.30

Taxed on (\$35.01 - \$29.30) = \$5.71 @ 42.5% = \$2.43

Quarterly Dividends totaling \$6.81 taxed @ 76% = \$1.63

Year End Portfolio Value = \$175.04 - *\$2.43*(not included) + \$1.63 = \$176.67

Principal after step-up = (\$5.71 - *\$2.43*(not included)) = \$5.71 + \$1.63 + 146.51 = \$153.85

Current Credit = -\$3.65 + \$0.04 + \$2.43 = -\$1.19

1977

Portfolio to start year—\$176.67 * - 11.50% S&P Performance = \$156.35 \$156.35 @ 20% turnover = \$31.27

Cost Basis on those shares = \$153.85 * 20% = \$30.77

Taxed on (\$31.27 - \$30.77) = \$0.50 @ 45.9% = \$0.23

Quarterly Dividends totaling \$6.44 taxed @ 76% = \$1.55

Year End Portfolio Value = \$156.35 - *\$0.23*(not included) + \$1.55 = \$157.90

Principal after step-up = (\$0.50 - *\$0.23*(not included)) = \$0.50 + \$1.55 + 153.85 = \$155.90

Current Credit = -\$3.65 + \$0.04 + \$2.43 + \$0.23 = -\$0.96

1978

Portfolio to start year—\$157.90 * 1.06% S&P Performance = \$159.57 \$159.57 @ 20% turnover = \$31.91

Cost Basis on those shares = \$155.90 * 20% = \$31.18

Taxed on (\$31.91 - \$31.18) = \$0.73 @ 45.9% = \$0.34

Quarterly Dividends totaling \$8.12 taxed @ 76% = \$1.95

Year End Portfolio Value = \$159.57 - *\$0.34*(not included) + \$1.95 = \$161.52

Principal after step-up = (\$0.73 - *\$0.34*(not included)) = \$0.73 + \$1.95 + 155.90 = \$158.58

Current Credit = -\$3.65 + \$0.04 + \$2.43 + \$0.23 + \$0.34 = -\$0.61

1979

Portfolio to start year—\$161.52 * 12.31% S&P Performance = \$181.40 \$181.40 @ 20% turnover = \$36.28

Cost Basis on those shares = \$158.58 * 20% = \$31.72

Taxed on (\$36.28 - \$31.72) = \$4.56 @ 45% = \$2.05

Quarterly Dividends totaling \$9.38 taxed @ 76% = \$2.25

Year End Portfolio Value = \$181.40 - *\$1.44*((\$2.05 - \$0.61 credit) + \$2.25 = \$182.21

Principal after step-up = $(\$4.56 - \$1.44 \text{*(after credit)}) = \$3.12 + \$2.25 + \$158.58 = \$163.95$ (rounded)

Current Credit = $-\$3.65 + \$0.04 + \$2.43 + \$0.23 + \$0.34 + \$2.05 = \$1.44$

Liquidation Value

On January 1, 2005, the portfolio has a final value of \$1,807.00 yielding an annual average return of 6.80% on the portfolio. However, for this investor to be able to put this money to some use other than investing, he would need to pay a capital gains tax on any gains in the portfolio above the adjusted principal. Because of the current tax environment, less would be lost to taxes than at any other time before 2004 especially compared to the average over the time period studied of 27%

federal + 6% state = 33%. Currently, the tax loss would only be 15% federal + 6% state.

To calculate the annual return on the portfolio after liquidation:

Final portfolio value of \$1,807.00 - \$1,533.75 principal = \$273.25 taxed @ 21% = \$57.38

Value after liquidation = $\$1,807.00 - \$57.38 = \$1749.62$

ROR = $((\$1,807.00/\$100) ^{(1/44)}) - 1 = 6.72\%$

One thing to be noted, if a different scenario was run with liquidation coming in a year with a tax credit, that value must be added to final principal before the tax is taken out.

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