

# Retired Investor

*Invest Wisely...Get an Impartial Second Opinion.*

## **This Month's Issue: Key Points**

This month's letter to the editor asks why the asset allocations in our model portfolios are different from those found in *The Index Investor*, even when the target real rate of return is the same. We explain that the difference is caused by the very different optimization problems faced by investors who are already retired and those who aren't there yet. Our first feature article reviews the pros and cons of tilting your equity allocation toward mid-cap stocks. We find that there is a solid theoretical basis for expecting this to produce higher returns, but with higher risk than the broad market index. We also find that the data support this. However, not all mid-cap indexes are created alike. In particular, the Russell, MSCI, and especially Standard and Poor's products seem to deliver better performance than those from Dow Jones and Morningstar. However, we also note that all these indexes have limited data available, so our conclusions are only tentative. A final consideration for mid-cap investors is the comparable lack of mid-cap index funds available, all over the world. Our next feature this month combines data from multiple sources to produce an estimated value of the global market portfolio. This provides a useful point of departure when thinking about asset allocation issues. Our third feature this month is another guest "Ask the Financial Adviser" column by Rick Miller from Sensible Financial Planning ([www.sensiblefinancial.com](http://www.sensiblefinancial.com)). This month, he provides a very interesting overview of long-term tax strategies that can enhance portfolio returns.

## **This Month's Letter to the Editor**

*Why are the asset allocations in the Retired Investor's model portfolio solutions different from those in The Index Investor, even though both portfolios' have the same target real rate of return?*

Thank you for an excellent question. The short answer is that the different asset allocations reflect the very different underlying optimization problems the portfolios are intended to solve. Let's use the portfolio solutions with a 3% target real rate of return as an example.

*The Index Investor's* portfolio is based on the assumption that an investor wants to maximize the probability of achieving a 3% target real return over a twenty year horizon to reach a specified accumulation target while taking on as little risk (defined as the standard deviation of annual portfolio returns) as possible. In contrast, in the case of the Retired Investor's portfolio, the underlying situation is an investor who has (a) a starting amount of capital; (b) target portfolio income (withdrawal) and bequest goals; and (c) an expected lifetime over which he or she wants to achieve them. This retired investor faces a significantly more challenging optimization problem than his or her younger counterpart who is still saving for retirement. Our retired investor first wants to be at least 95% sure of achieving his or her portfolio income objective, and then, subject to this hurdle being attained, to maximize the probability of achieving his or her bequest target. However if, given the combination of target income and bequest goals, and the expected lifetime, it is not possible to meet the initial 95% probability of reaching the income target, then the optimization defaults to attempting to maximize the probability of achieving the income target without taking the bequest goal into consideration. From a technical perspective, this is a much more complicated optimization problem. Given the non-linearity of the underlying problem, it is what is called by mathematicians "NP-Hard" which means that it cannot be solved computationally (or at least not without a supercomputer). In other words, we cannot identify a single best (i.e., an "optimum") asset allocation solution to this type of problem. The best we can do is use sophisticated techniques (e.g., genetic algorithms) to identify asset allocations that are "robust" -- that is, asset allocations that (given our assumptions) will achieve the target objectives under a wide range of possible future return scenarios for the asset classes we use.

As a practical matter, because of the very different nature of the optimization problem faced by the retired investor, our model produces more conservative asset allocations for him or her compared to those produced by the model we use to develop *The Index Investor's* portfolios.

## Global Asset Class Returns

<i>YTD 29Oct04</i>	<u>In USD</u>	<u>In AUD</u>	<u>In CAD</u>	<u>In EURO</u>	<u>In JPY</u>	<u>In GBP</u>
Asset Held						
US Bonds	4.10%	4.63%	-2.33%	2.36%	2.66%	1.19%
US Prop.	19.80%	20.33%	13.37%	18.06%	18.36%	16.89%
US Equity	3.70%	4.23%	-2.73%	1.96%	2.26%	0.79%
AUS Bonds	1.58%	2.11%	-4.85%	-0.17%	0.14%	-1.33%
AUS Prop.	14.01%	14.54%	7.58%	12.27%	12.57%	11.11%
AUS Equity	15.80%	16.33%	9.37%	14.06%	14.36%	12.89%
CAN Bonds	11.43%	11.96%	5.00%	9.69%	9.99%	8.52%
CAN Prop.	10.54%	11.07%	4.11%	8.80%	9.10%	7.63%
CAN Equity	15.40%	15.93%	8.97%	13.66%	13.96%	12.49%
Euro Bonds	6.52%	7.05%	0.09%	4.78%	5.08%	3.61%
Euro Prop.	25.26%	25.79%	18.83%	23.52%	23.82%	22.35%
Euro Equity	7.50%	8.03%	1.07%	5.76%	6.06%	4.59%
Japan Bonds	1.67%	2.20%	-4.76%	-0.07%	0.23%	-1.24%
Japan Prop.	18.71%	19.24%	12.28%	16.97%	17.27%	15.80%
Japan Equity	3.00%	3.53%	-3.43%	1.26%	1.56%	0.09%
UK Bonds	7.18%	7.71%	0.75%	5.44%	5.74%	4.27%
UK Prop.	27.20%	27.73%	20.77%	25.46%	25.76%	24.30%
UK Equity	7.80%	8.33%	1.37%	6.06%	6.36%	4.89%
World Bonds	4.40%	4.93%	-2.03%	2.66%	2.96%	1.49%
World Prop.	21.00%	21.53%	14.57%	19.26%	19.56%	18.09%
World Equity	5.80%	6.33%	-0.63%	4.06%	4.36%	2.89%
Commodities	22.20%	22.73%	15.77%	20.46%	20.76%	19.29%
Hedge Funds	1.15%	1.68%	-5.28%	-0.59%	-0.29%	-1.76%
A\$	-0.53%	0.00%	-6.96%	-2.27%	-1.97%	-3.44%
C\$	6.43%	6.96%	0.00%	4.69%	4.99%	3.52%
Euro	1.74%	2.27%	-4.69%	0.00%	0.30%	-1.17%
Yen	1.44%	1.97%	-4.99%	-0.30%	0.00%	-1.47%
UK£	2.91%	3.44%	-3.52%	1.17%	1.47%	0.00%
US\$	0.00%	0.53%	-6.43%	-1.74%	-1.44%	-2.91%

## Equity and Bond Market Valuation Update

Our equity market valuation analysis rests on two fundamental assumptions. The first is that the long term real equity risk premium is 4.0% per year. The second is the average rate of productivity growth an economy will achieve in the future. As described in our June, 2003 issue, because future growth rates are uncertain, we use both high and a low productivity growth assumptions for each region. Given these assumptions, here is our updated market valuation analysis at the end of last month:

Country	Real Risk Free Rate Plus	Equity Risk Premium Equals	Required Real Return on Equities	Expected Real Growth Rate* plus	Dividend Yield Equals	Expected Real Equity Return**
Australia	2.82%	4.00%	6.82%	4.90%	3.51%	8.41%
Canada	2.24%	4.00%	6.24%	2.10%	1.90%	4.00%
Eurozone	1.83%	4.00%	5.83%	2.50%	2.65%	5.15%
Japan	0.65%	4.00%	4.65%	2.70%	0.99%	3.79%
U.K.	1.85%	4.00%	5.85%	2.50%	3.22%	5.72%
U.S.A.	1.73%	4.00%	5.73%	4.50%	1.73%	6.23%

\*High Productivity Growth Scenario..

\*\* When required real equity return is greater than expected real equity return, theoretical index value will be less than actual index value – i.e., the market will appear to be overvalued.

Country	Implied Index Value <sup>1</sup>	Current Index Value	Current to Implied Value Under High Growth Scenario <sup>2</sup>	Current to Implied Value Under Low Growth Scenario
Australia	182.81	100.00	55%	83%
Canada	45.89	100.00	218%	271%
Eurozone	79.58	100.00	126%	182%
Japan	53.51	100.00	187%	288%
U.K.	96.12	100.00	104%	151%
U.S.A.	140.65	100.00	71%	129%

<sup>1</sup>High productivity growth scenario. <sup>2</sup>Values below 100% indicate undervaluation; more than 100% indicates overvaluation

Our valuation estimate is based on the relationship between the returns an equity market is expected to supply, and those investors are likely to demand. The rate of return the equity market is expected to supply in the future equals current dividend yield plus the expected rate of real long-term economic growth. To be sure, changes in the market price/dividend (or price/earnings) ratio also affect the returns supplied. However, because this is driven by psychological factors which we have no basis for predicting, we do not include future price/dividend ratio changes in our analysis.

We define the future equity market return that investors demand to be equal to the current yield on long term real return bonds, plus a four percent long term equity market risk premium. As you can see, the good news is that two of the factors in our model -- current dividend yields and the real bond return -- are easily obtained from the daily paper. The bad news is that the other two -- the expected rate of dividend growth and the "correct" equity market risk premium -- are two of the most contentious issues in finance. However, if you assume that an equity market is currently in equilibrium (that is, neither under or overvalued), by assuming a value for one of these variables, you can derive an estimate of the market's current expectation for the other. Specifically, the market's current implied rate of future dividend growth equals the current real bond yield plus the four percent equity market risk premium less the current dividend yield. Similarly, the market's current implied equity market risk premium equals the current dividend yield plus our estimated future growth rate less the current real bond yield. These estimates are shown in the following table:

	<b>Current Dividend Yield</b>	<b>Current Real Bond Yield</b>	<b>Implied Future Real Growth Rate, Assuming 4% ERP</b>	<b>Implied ERP, Assuming Low Future Growth Scenario</b>	<b>Implied ERP, Assuming High Future Growth Scenario</b>
Australia	3.51%	2.82%	3.31%	4.59%	5.59%
Canada	1.90%	2.24%	4.34%	0.76%	1.76%
Eurozone	2.65%	1.83%	3.18%	1.82%	3.32%
Japan	0.99%	0.65%	3.66%	2.14%	3.14%
United Kingdom	3.22%	1.85%	2.63%	2.37%	3.87%
United States	1.73%	1.73%	4.00%	3.50%	4.50%

Our bond market valuation update is based on the same supply and demand methodology we use for our equity market valuation update. In this case, the supply of future fixed income returns is equal to the current nominal yield on ten-year government bonds. The demand for future returns is equal to the current real bond yield plus the historical average inflation premium (the difference between nominal and real bond yields) between 1989 and 2003. To estimate of the degree of over or undervaluation for a bond market, we use the rate of return supplied and the rate of return demanded to calculate the present values of a ten year zero coupon government bond, and then compare them. If the rate supplied is higher than the rate demanded, the market will appear to be undervalued. This information is contained in the following table:

	<b>Current Real Rate</b>	<b>Average Inflation Premium (89-03)</b>	<b>Required Nominal Return</b>	<b>Nominal Return Supplied (10 year Govt)</b>	<b>Return Gap</b>	<b>Asset Class Over or (Under) Valuation, based on 10 year zero</b>
Australia	2.82%	2.96%	5.78%	5.39%	-0.39%	3.76%
Canada	2.24%	2.40%	4.64%	4.50%	-0.14%	1.35%
Eurozone	1.83%	2.37%	4.20%	3.86%	-0.34%	3.32%
Japan	0.65%	0.77%	1.42%	1.50%	0.08%	-0.79%
UK	1.85%	3.17%	5.02%	4.74%	-0.28%	2.71%
USA	1.73%	2.93%	4.66%	4.09%	-0.57%	5.61%

It is important to note that this analysis looks only at ten year government bonds. The relative valuation of non-government bond markets is also affected by the extent to which their respective credit spreads (that is, the difference in yield between an investment grade or high yield corporate bond and a government bond of comparable maturity) are above or below their historical averages (with below average credit spreads indicating potential overvaluation).

Finally, for an investor contemplating the purchase of foreign bonds or equities, the expected future annual percentage change in the exchange rate is also important. Study after

study has shown that there is no reliable way to forecast this. At best, you can make an estimate that is justified in theory, knowing that in practice it will not turn out to be accurate. That is what we have chosen to do here. Specifically, we have taken the difference between the yields on ten- year government bonds as our estimate of the likely future annual change in exchange rates between two regions. This information is summarized in the following table:

***Annual Exchange Rate Changes Implied by Bond Market Yields***

	To A\$	To C\$	To EU	To YEN	To GBP	To US\$
From						
<b>A\$</b>	0.00%	-0.89%	-1.53%	-3.89%	-0.65%	-1.30%
<b>C\$</b>	0.89%	0.00%	-0.64%	-3.00%	0.24%	-0.41%
<b>EU</b>	1.53%	0.64%	0.00%	-2.36%	0.88%	0.23%
<b>YEN</b>	3.89%	3.00%	2.36%	0.00%	3.24%	2.59%
<b>GBP</b>	0.65%	-0.24%	-0.88%	-3.24%	0.00%	-0.65%
<b>US\$</b>	1.30%	0.41%	-0.23%	-2.59%	0.65%	0.00%

**Sector and Style Rotation Watch**

The following table shows a number of classic style and sector rotation strategies that attempt to generate above index returns by correctly forecasting turning points in the economy. The basic logic is that you earn high returns by investing today in the styles and sectors that will perform best in the next stage of the economic cycle. We publish this table to make an important point: there is nothing unique about the various rotation strategies we describe, which are widely known by many investors. Rather, whatever active management returns (also known as "alpha") they are able to generate is directly related to how accurately (and consistently) one can forecast the turning points in the economic cycle. Regularly getting this right is beyond the skills of most investors. In other words, most of us are better off getting our asset allocations right, and implementing them via index funds rather than trying to earn extra returns by accurately forecasting the ups and downs of different sub-segments of the U.S. equity and debt markets. That being said, the highest year-to-date returns in the table give a good indication of how investors employing different strategies expect the economy to

perform in the near future. The highest returns in a given row indicate that most investors are anticipating the economic and interest rate conditions noted at the top of the next column.

***Year-to-Date Returns on Classic Rotation Strategies in the U.S. Markets***

<b><i>Economy</i></b>	Bottoming	Strengthening	Peaking	Weakening
<b><i>Interest Rates</i></b>	Falling	Bottom	Rising	Peak
<b><i>Style Rotation</i></b>	Growth (IWZ) <b>-1.60%</b>	Value (IWW) <b>5.60%</b>	Value (IWW) <b>5.60%</b>	Growth (IWZ) <b>-1.60%</b>
<b><i>Size Rotation</i></b>	Small (IWM) <b>4.90%</b>	Small (IWM) <b>4.90%</b>	Large (IWB) <b>1.80%</b>	Large (IWB) <b>1.80%</b>
<b><i>Style and Size Rotation</i></b>	Small Growth (DSG) <b>3.30%</b>	Small Value (DSV) <b>5.50%</b>	Large Value (ELV) <b>3.20%</b>	Large Growth (ELG) <b>-2.40%</b>
<b><i>Sector Rotation</i></b>	Cyclicals (IYC) <b>1.20%</b>	Basic Materials (IYM) <b>1.50%</b>	Energy (IYE) <b>25.60%</b>	Utilities (IDU) <b>12.00%</b>
	Technology (IYW) <b>-6.30%</b>	Industrials (IYJ) <b>6.20%</b>	Staples (IYK) <b>-0.50%</b>	Financials (IYF) <b>3.60%</b>
<b><i>Bond Market Rotation</i></b>	High Risk (VWEHX) <b>7.00%</b>	Short Maturity (SHY) <b>-0.40%</b>	Low Risk (TIP) <b>6.70%</b>	Long Maturity (TLT) <b>4.70%</b>

As you can see from this table, there continues to be a substantial amount of confusion among investors about whether the U.S. economy will weaken or strengthen in the coming months.

## **Should You Tilt Toward Mid-Cap Equities?**

In our June, 2004 issue we examined the arguments in favor and against tilting your equity allocation toward small capitalization companies. This month, we will look at the pros and cons of tilting toward "midcaps." These are companies whose total market value (capitalization) lies in between those of small cap and large cap companies. We will begin



with the theoretical arguments that have been made in favor of midcaps, then look at what the historical data has to say. We will then compare the indexes and related products that can be used to implement a tip toward midcaps.

Arguments in favor of a tilt toward midcaps fall into two categories: those based on fundamental (economic) factors, and those based on market (investor) related factors.

The economic argument is grounded in the notion of a "business lifecycle." When companies are started, they are small, and many fail after a short time. Those that are sufficiently well-managed first learn how to avoid losses, and then move on to the search for a profitable growth idea. Some companies never find this, and at best remain in the "small value" category. These companies' market capitalization primarily reflects the present value of their current cash flow.

A popular way to quantify this is the dividend discount model. It determines the fair market (or fundamental) value of a company by discounting its current dividends to their present value using a rate equal to the required return on equity less the expected dividend growth rate. The required return on equity is assumed to be equal to the risk free bond rate plus an additional "equity risk premium." Mathematically, the model is deceptively simple:  $\text{Market Value of Equity} = \text{Dividends} / (\text{Risk Free Bond Yield} + \text{Equity Risk Premium} - \text{Expected Dividend Growth Rate})$ . The good news is that values for two of the variables in this equation -- the current dividend on a stock (or, indeed, an entire equity market) and the risk free government bond yield are easily obtained online or from a newspaper. The bad news is that the correct values for the other two variables -- the equity risk premium and the future dividend growth rate -- are among the two most contentious issues in finance. However, regardless of the challenges of using this model in practice, it provides an excellent framework for thinking about a lot of investing issues. For example, in the case of a small company that as yet lacks a growth idea, the expected dividend growth rate is basically zero. That means that the company's value is driven by the size of its current dividend, as well as changes in the discount rate (caused by changes in the risk free bond yield and/or the equity risk premium). All else (e.g., industry sector or country) being equal, investors will often demand a higher equity risk premium for a smaller company than for a larger company, on the theory that the former's small size makes it less able to withstand the impact of changing business conditions, and therefore riskier to own.

In contrast, companies that identify a profitable growth strategy see their market capitalization increase due to an increase in investors' (quite uncertain) perception of the rate at which the company's dividends will grow in the future. Broadly speaking, these are "small growth" companies.

The next challenge a company faces is converting its growth options into real cash flows. During this phase of the lifecycle, dividends can be increasing in size, even as their expected future growth rate remains quite high, which causes the company's market capitalization to further increase. This process may be further accelerated by a decline in the equity risk premium required by investors to own shares they perceive to be less risky than those of smaller companies (not only because of their larger size and higher dividends, but also because of less uncertainty about their future growth rate). Because the market values of companies in this stage of the lifecycle are larger than those of small caps but not as big as the largest companies, they are known as "mid-caps."

Some mid-caps will progress into the third stage of the lifecycle, during which increased competition and growing size result in a reduction in investors' perception of both their future growth rates and their business risk. By this time, however, these companies are generating substantial dividends, which causes them to have large market capitalizations.

This lifecycle framework helps to clarify the fundamental argument in favor of tilting toward mid-cap companies. Stated simply, mid-cap companies should deliver higher returns than large cap companies (which also tend to dominate the return of the broad market index), with only slightly higher risk (compared to a tilt toward small caps). A closely related argument is that investors in mid-caps are also well positioned to earn additional premiums because these companies are favorite targets of larger companies making acquisitions.

As you can see, the economic argument for owning mid-caps is consistent with the idea of reasonably efficient financial markets (apart from the occasional excessive acquisition premiums paid by an over-enthusiastic CEO). This argument says that because midcap shares are riskier to own than the overall market, an investor should expect to earn returns that are also somewhat higher (but not as high as those from small cap stocks, which are even riskier than midcaps).

We should also point out that occasionally another argument is offered in support of investing in midcaps. This suggests that midcaps may deliver higher returns with lower risks

than small caps, because they receive relatively less attention from investors (who, presumably, are more attracted to the latter's potential for very high returns). While this argument may apply for short periods, its effectiveness over the long-term also requires the existence of permanent obstacles that prevent smart investors from arbitraging away the implied price discrepancies between small and midcap shares (e.g., by buying the latter and selling short the former). Given the intense competition and high rewards that characterize the world of active investment management, we cannot believe that such obstacles exist.

Let's now move on to an examination of the historical data, and see if it agrees with the theoretical arguments we have just outlined. The first problem you confront when trying to do this is the existence of multiple indexes that are intended to measure the performance of midcap companies. We will describe these differences in more detail below. For now, we will note that our quantitative assessment used three indexes that are based on very different underlying methodologies: the Standard and Poor's 400, the Russell Midcap 800, and the DowJones MidCap Index. The second problem you confront is that since most of these indexes were introduced quite recently, you have relatively little data available to work with. Our analysis is therefore based on monthly returns that only cover the June, 1995 to December, 2003 period.

The following table shows summary data for each of our three indexes, as well as for the Russell 3000, a broad market index (it covers about 98% of total U.S. public equity market capitalization). The data include the following measures: (1) the average annual return for each index. (2) The standard deviation of returns (also known as "volatility"), which measures how widely individual returns are distributed around the average. The higher the standard deviation, the riskier the asset. (3) The skewness of returns, which measures the degree of asymmetry in their distribution. Negative skewness implies higher risk, because it means that more returns fall below the average than above it. (4) The kurtosis of returns, which measures the extent to which returns are grouped close to or far away from the average. High kurtosis implies more returns far away from the average (or "extreme events" as they are sometimes referred to). Whether or not this implies higher risk depends on the skewness measure. If it is negative (that is, if more returns lie below the average than above it), then high kurtosis (that is, a high probability of returns that are far away from the average) implies higher risk, due to the presence of more big unpleasant surprises on the downside than nice

surprises on the upside. (We also note that prospect theory suggests that investors don't value these equally, with downside surprises hurting roughly twice as much as upside surprises feel good). And (5) as one measure of return relative to risk, we also include a variable equal to the average return divided by the standard deviation. A higher value for this variable is good, because it shows you are getting more return per unit of risk.

<b>Metric</b>	<b>Russell 3000</b>	<b>S&amp;P 400</b>	<b>Russell 800</b>	<b>DJ MidCap</b>
Average Annual Return	12.2%	15.5%	14.3%	11.8%
Standard Deviation	16.6%	18.4%	17.1%	16.8%
Skewness	(.69)	(.60)	(.66)	(.68)
Kurtosis	.35	1.09	.65	.99
Return/Std Deviation	.73	.84	.84	.70

This table illustrates a number of interesting points. At first glance, it looks like two out of the three midcap indexes provide, as theory predicts, higher return and higher risk than the broad market index. In fact, if you only looked at the return/standard deviation measure, you might even conclude that a midcap tilt offered a superior risk/return trade-off compared to the broad market index. However, when the meaning of "risk" is expanded to include skewness and kurtosis, it becomes clear that this may not be the case. In particular, the historical index data suggest that a midcap tilt exposes an investor not only to higher volatility, but also to somewhat greater extreme event risk.

Another technique for evaluating the pros and cons of a midcap tilt is called an Information Ratio, or "IR." The logic behind this is as follows. A tilt toward midcaps and away from the broad market index is a type of active management decision. One undertakes such decisions in the expectation that they will, in exchange for the additional "active risk" taken on, also produce additional active return, or "alpha." The IR is simply a measure that relates the size of alpha to the amount of active risk that was taken on to generate it.

Mathematically, in any given month, alpha is equal to the difference between the return on the midcap index and the return on the broad market index. Some months it is positive, and some months it is negative. The alpha for the overall tilt strategy is equal to the

average alpha for the period being study (in this case, annualized from monthly data). The active risk taken on is defined as the standard deviation of the monthly alphas. This is also known as "tracking error" versus the broad index. Armed with that quick summary of active management math, let's look at the Information Ratios produced by our different midcap tilts over the 6/95 to 12/03 period. In the case of the S&P 400, the IR was .60 (quite an impressive outcome). For the Russell 800, it was .31 (still respectable). But for the DowJones MidCap, it was slightly negative, at (.06).

Before moving on to examine the index-specific factors that could account for these different Information Ratios, let's conclude about the overall wisdom of taking a midcap tilt. First, the good news. On the basis of the Information Ratios we found, a midcap tilt appears to make sense. Compared to the results we found in our June, 2004 analysis of small and microcap tilts, we would say that a midcap tilt makes more sense than the former, and at least as much sense as the latter. The bad news is that we can't say this with any degree of confidence, at least in the statistical sense. Due to our very short data series, none of the Information Ratios we found is statistically different from zero (at the 95% confidence level). That being said, the S&P 400's IR is quite close to being statistically significant. However, even if a midcap tilt produces a statistically significant Information Ratio, it appears to do so by taking on more extreme event risk than the broad market benchmark. As we've written so many times before, there are precious few free lunches in life.

Let's now look at the index-specific factors that caused the disparity in the Information Ratios we found. Broadly speaking, there are three ways one can construct an equity index. First, one can set the target number and size range for the companies to include, and have a committee choose them using a loose set of guidelines (e.g., for industry sector representation and liquidity). This is the approach used to construct the Standard and Poor's MidCap 400 Index.

The other two approaches are more mechanical, and build their indexes using clearly defined sets of rules. One of these starts by ranking companies according to some factor (e.g., their market capitalization), and then grouping a fixed number of companies (counting from the top down) into one index, and another fixed number of companies into another. This is the approach used to construct the Russell MidCap 800 Index. It starts with the top 3,000 public companies in the United States equity markets (including the NYSE, AMEX, and

NASDAQ). The top 200 companies are included in the large cap index, the next 800 companies comprise the midcap index, and the bottom 2000 companies are the small cap index. Besides the Russell Indexes, the Morgan Stanley Capital International (MSCI) Indexes tracked by many Vanguard mutual funds and ETFs are based on this approach. MSCI assigns the top 300 companies to its large cap index, the next 450 to its midcap index, and the next 1,750 to its small cap index.

An index that includes a fixed number of companies will, by definition, cover a varying percentage of total market capitalization (e.g., the Russell 3000 covers about 98%). An alternative indexing approach fixes the percentage of market capitalization to be covered, and varies the number of companies it includes. This is the approach used to construct both the Dow Jones and the Morningstar Indexes. This includes companies that make up a fixed 95% of total market capitalization, while the latter covers 97% of the market. Both of these companies include the top 70% of market capitalization in their large cap index, and the next 20% in their midcap index. Dow Jones' small cap index includes the next 5% of market capitalization, while Morningstar's includes the next 7%.

The following table summarizes the differences between different midcap indexes:

<b>Factor</b>	<b>S&amp;P</b>	<b>Russell</b>	<b>MSCI</b>	<b>Dow Jones</b>	<b>Morningstar</b>
Total number of companies in all indexes?	1,500	3,000	2,500	1,623 (varies)	2,034 (varies)
Percent of total market value covered by all Indexes?	90% (varies)	98% (varies)	97% (varies)	95%	97%
Mid cap index contains how many companies?	400	800	450	543 (varies)	717 (varies)
Mid Cap Index covers what percentiles of total market capitalization?	About 20 down to 14	About 33 down to 11	About 26 down to 14	30 down to 11	30 down to 11
What percent of total market cap is included in the index?	7%	23%	13%	20%	20%

One interesting point in this table is the difference between the number of companies in the DowJones and Morningstar Indexes, which theoretically cover the same range of market capitalization percentiles. We suspect that the cause of this difference is the fact that Morningstar employs wider "buffer zones" than DowJones. Buffer zones exist at the borders between different subindexes -- for example, between large and midcap, or midcap and smallcap. They are used to help limit turnover in the companies included in an index. This is important because higher turnover generates higher trading costs (and lower performance) for index fund managers. Buffer zones limit trading by allowing a company to remain in one index even though it no longer quite qualifies (e.g., because its market capitalization has just surpassed or fallen below the cutoff point for index membership. In these cases, small changes in companies' stock prices can have them moving into and out of the index quite frequently. Using buffer zones reduces the trading costs that might otherwise be caused by these moves.

As you recall from the previous discussion of historical performance, the S&P 400 and the Russell 800 delivered the best performance over the relatively short 6/95 to 12/03 period we analyzed, while the Dow Jones product lagged behind. Given the similarity in their construction and market coverage, had comparable historical data been available, the Morningstar product probably would have delivered results similar to Dow Jones'.

It is less clear that this also would have been true for the Russell and MSCI products, since their definitions of "midcap" are somewhat different. However, data on their respective websites shows backtested ten year average returns (through September, 2004) of 12.77% for Russell, and 12.72% for MSCI.

Perhaps the most important question we have yet to address is what could possibly account for the relatively strong performance of the S&P 400 Index, compared to the other midcap products? A recent analysis of this issue (see "The Returns of the S&P 400: Implications for Active Mid-Cap Managers" by Peter Jankovskis) concluded that much of it was due to the migration of companies from the S&P 400 into the S&P 500 Index. Because many more assets under management track the latter compared to the former, speculative investing in companies thought to be due for "promotion" has a very strong impact on their share prices and consequently on the performance of the S&P 400 Index. This brings us back

to a fundamental point about the Standard and Poor's indexes: they involve a significantly higher degree of active management than their competitors. As we have noted, companies are included in these indexes not as the result of the consistent, mechanical application of a set of rules, but rather based on decisions by the S&P Index Committee. And as Jankovskis has shown, to some degree these decisions can be self-fulfilling in their results as companies migrate from the S&P 600 to the 400 to the 500 over their lifecycles.

Another logical question to ask is whether midcap indexes also exist in equity markets outside the United States. The answer is that they do, but the range of offerings is narrower. The following table lists these indexes in key currency regions:

<b>Currency Zone</b>	<b>MidCap Indexes</b>
Australian Dollar	<ul style="list-style-type: none"> <li>• S&amp;P/ASX MidCap Index</li> <li>• DowJones TMI MidCap Index</li> </ul>
Canadian Dollar	<ul style="list-style-type: none"> <li>• S&amp;P/TSE MidCap Index</li> <li>• DowJones TMI MidCap Index</li> </ul>
Euro	<ul style="list-style-type: none"> <li>• FTSE Euro Mid Index</li> <li>• DowJones Stoxx TMI MidCap</li> <li>• DowJones Stoxx 200 MidCap</li> <li>• DAX MidCap (Germany)</li> <li>• MIDCAC (France)</li> <li>• Milan MidCap (Italy)</li> <li>• Amsterdam MidKap (Netherlands)</li> </ul>
Japanese Yen	<ul style="list-style-type: none"> <li>• Russell/Nomura Midcap</li> <li>• TOPIX 400 MidCap</li> <li>• Nikko MidCap</li> <li>• DowJones TMI MidCap</li> </ul>
UK Pound	<ul style="list-style-type: none"> <li>• FTSE 250</li> <li>• DowJones STOXX TMI MidCap</li> <li>• DowJones Stoxx 200 MidCap</li> </ul>



Finally, we need to look at midcap index investment products. In the United States, there are far fewer vehicles that track midcap, as compared to small and large cap indexes. The following table summarizes this limited product offering. Note that it excludes funds that take growth and value tilts within the midcap segment.

<b>Mid Cap Index</b> ←	<b>S&amp;P</b>	<b>Russell</b>	<b>MSCI</b>	<b>Dow Jones</b>	<b>Morning-star</b>
ETFs which track the index? (annual expenses)	IJH (.20) or MDY (.25)	IWR (.20)	VO (.18)	None	JKG (.25)
Mutual funds which track the index? (annual expenses)	PESPX (.51)	None	VIMSX (.26)	None	None

Outside the United States, midcap offerings, and especially midcap index products, are also relatively limited. The only fund we know of that tracks the Australian midcap index is found in New Zealand (MOZY). Canada has an iUnit ETF (XMD) that tracks the midcap index there. In the Eurozone, there is a country specific midcap index ETF in German (MDAXEX). State Street (Balzac), Robeco, and Fidelity all offer actively managed pan-European midcap funds. On the other hand, in the UK there are relatively more index funds that track the FTSE-250, including an iShares ETF and a unit trust from HSBC. There are also actively managed funds that invest in the midcap segment of the UK equity market. In addition, Barclays' Global Investors (the company behind iUnits and iShares) has recently licensed the Dow Jones Stoxx midcap indexes in Europe. As a result, the number of midcap index ETF products available in both the Eurozone and UK should increase over the next year. Finally, in Japan all the micap-oriented funds we have identified are actively managed.

To conclude, there is a good theoretical basis for expecting an investment in a midcap index to produce higher returns, but with higher risk than an investment in the broad equity market index. However, a midcap fund's returns and risks should be lower than those delivered by small cap products. Our analysis of the limited historical data available found that it is in line with this theory. When we applied the analytical technique typically used to measure the performance of active investment managers, we found that a tilt toward midcaps

produced reasonably attractive (but not statistically significant) Information Ratios. We noted that taking on more extreme event risk than the broad market index apparently contributed to this result. We also found that the methodology used to construct the underlying midcap index appears to have a significant impact on these results, with the more active methodology used by the S&P 400 producing somewhat better returns. Last, but not least, we found that while they are relatively few in number today (in most markets of the world), the range of midcap index tracker products seems likely to grow over the next few years as more investors seek low cost ways to take this tilt in their portfolios.

## How Big is The Global Market Portfolio?

One of the more vexing questions in investment theory is how to properly define the global market portfolio. For example, some have asserted that the reason the single factor version of the Capital Asset Pricing Model (CAPM) does such a poor job of explaining and predicting returns is because it equates the public equity market with the global market portfolio. This argument suggests that the single factor CAPM might actually work quite well if the global market portfolio was properly defined. With that in mind, we collected data from a number of sources to develop a better estimate of what the global market portfolio really looks like. These findings are summed up in the following table:

Asset Class	Estimated Value in US\$ Billions	Percent of Total Global Market Portfolio	Comments
Public Bonds	\$ 20,242	15%	• From IMF Global Financial Stability Report
Commercial Property	\$ 5,000	4%	• Equity only. Average of estimates from multiple sources, includes both directly owned and securitized (hence there is some double counting with public equity)
Public Equity	\$ 31,202	24%	• From IMF Global Financial Stability Report
Commodities	\$ 600	1%	• \$128 gross market value of commodity derivatives (Global Fin. Stability Report)

Asset Class	Estimated Value in US\$ Billions	Percent of Total Global Market Portfolio	Comments
			<ul style="list-style-type: none"> <li>• \$360 private investor gold holdings (World Gold Council)</li> <li>• \$112 estimated value of other directly owned commodities, including timber, silver, etc.</li> </ul>
Housing Equity	\$ 20,000	16%	<ul style="list-style-type: none"> <li>• US housing net equity from Federal Reserve Flow of Funds Report</li> <li>• Rest of world value estimated as same proportion as global commercial property market, adjusted downward to reflect higher U.S. home ownership rate.</li> </ul>
Private Debt and Equity	\$ 31,723	25%	<ul style="list-style-type: none"> <li>• From IMF Global Financial Stability Report</li> </ul>
Bank Loans	\$20,300	15%	<ul style="list-style-type: none"> <li>• From IMF Global Financial Stability Report</li> <li>• Reported value of bank assets reduced by half to reflect bank ownership of other securities and real estate</li> </ul>
Total	\$129,067	100%	

While admittedly a rough estimate, this table still presents a fascinating picture of the underlying asset allocation in the global market portfolio. While few, if any investors will ever have a portfolio that matches these allocations, it still provides a very useful measure of the relative size and importance of different asset classes.

### **Ask the Financial Advisor: Long Term Tax Strategies**

*This month we have another article from Rick Miller, a Registered Investment Adviser. Rick Miller is the founder of Sensible Financial Planning, Inc. a fee-only, index-oriented firm located in Cambridge, Massachusetts ([www.sensiblefinancial.com](http://www.sensiblefinancial.com)).*

It's getting to be that time of year – Halloween is past, the sweaters and woolies are out, the holidays are fast approaching, and, oh right!, shouldn't you be thinking about reducing your income tax bill? Everywhere you look, there's another article with tips to help

you cut your taxes this year. Every tip is wonderfully action-oriented [pay this now, pay this later], easy to do, and has an easy-to-measure bottom line.

If you find that such tips will work for you, by all means take advantage of them. This article has a longer-term focus, however. I'll highlight long-term tax strategies that will keep your taxes down permanently, and raise your after-tax spending power significantly. They are the tax strategy counterpart to "buy and hold" index investing.

You may find it useful to think about your finances over your lifetime as a car taking a long trip. Taxes are a drag! The usual year-end tax advice is comparable to putting new tires on the car, aligning the front-end, getting a tune-up, and having the car detailed. Every one of these steps will improve the car's mileage and performance somewhat, but not one changes the car's aerodynamics in any fundamental way. Next year or in 10,000 miles, you'll have to do the same things all over again.

In fact, many of the usual tax tips simply shift taxes from this year to next year. You must still pay the taxes, just later. The net advantage is simply the interest or rate of return on the "saving,"<sup>1</sup> and the "tax saving" isn't really saved, merely postponed.

Now consider redesigning the car to make it more aerodynamically sleek. Imagine reshaping a Model T (the original box on wheels!) into a Porsche. Even if the two cars had the same engine, the one with the Porsche body would outperform the Model T dramatically. Less drag!

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<sup>1</sup> For example, shifting your January 2005 mortgage payment into this year is a typical "tax-saving" tip – you'll have 13 mortgage payments in 2004 instead of 12. Suppose a \$1,000 interest component to that payment (the 13<sup>th</sup> payment in a 6% loan of \$202,486). If you are in the 40% marginal tax bracket, your 2004 taxes will be \$400 lower. In 2005, you'll have two choices:

- You can leave the January 2006 payment until 2006. Then you'll have 11 mortgage payments in 2005. You'll have \$1000 less interest to report, and you'll owe \$400 more in taxes. Your net saving is just the return you earn on that \$400 between 2004 and 2005 (actually, between 2005 and 2006, when you pay the taxes for 2004 and 2005). If you earn 6% on your money, that's only \$24!
- You can shift the January 2006 mortgage payment into 2005. Then you'll have 12 mortgage payments in 2005 – your taxes will be about the same then as they would have been in 2004 if you hadn't shifted the payment. You must keep shifting your January payment into the previous year just to keep your most of your \$400 saving (the interest portion of the payment goes down every year). In the year you make your final payment, you'll have one less than you would have otherwise, and your taxes will be \$28.21 higher. Now your net saving is the return you earn on the (diminishing) tax saving you carry between 2004 and the year you make the final payment (actually, between 2005 and the year after you make the final payment). The present value of this set of actions is \$1,367 – much more than \$24, but much less than you might expect if you multiply \$400 times 30 years (\$12,000).

Completely redesigning a car is hard – witness the 70 years or so it took the boxy Ford Model T to evolve to the sleek Porsche 911. Only an engineer can understand (let alone love!) the many incremental steps it took to get there. Nevertheless, the result of all of those incremental steps is an enormous [and permanent] increase in miles per gallon due to (among other things) reduced drag.

It's somewhat the same with your taxes – organizing your finances for long-term tax efficiency requires taking a number of steps, some of them time-consuming. However, when you are finished you'll have a financial structure with much less tax drag, year in and year out. Just as the Porsche slips smoothly through the air, you won't notice or measure the daily impact of each component of the structure – you don't have to save taxes you don't owe! The suggestions you'll find in this article are of the second kind – intended to change the arrangement of your financial resources to minimize the burden of taxes year in and year out. You can make these changes any time, but now is always the best time. The sooner you establish a streamlined financial structure, the longer you'll have to enjoy it (and the more after-tax spending power you'll have).

### **Establish a Streamlined Financial Structure (Tax-wise)**

Your financial structure consists of accounts – locations to hold assets and locations you owe money (debts or liabilities) - and the assets and liabilities themselves. Only some accounts have tax advantages. The first step toward long-term tax efficiency is to be sure that you are using all of the tax-advantaged accounts available (and useful) to you. Tax-advantaged credit or debt accounts and tax-advantaged asset accounts both exist.

#### Tax-Advantaged Credit

Your mortgage and home equity-line of credit are the most obvious tax-advantaged credits. Interest on these loans is tax-deductible<sup>2</sup>. In addition, interest rates on home mortgages tend to be lower than car loans or credit card loans. As a result, the after-tax rate of

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<sup>2</sup> The home must be a primary residence valued at \$1M or less for the interest to be deductible.

interest you pay on a mortgage loan is likely to be ***a lot lower*** than the rate you'd pay on a car or credit card loan.

For example, suppose you have a mortgage at 6%, a \$20,000 car loan at 8%, and \$5,000 in credit card loans at 12%. Let's assume you are in a 40% state plus Federal marginal income tax bracket (that is, the IRS and your friendly state and local tax authorities tax your next dollar of income at 40%). Your annual after-tax savings from shifting your borrowing to your mortgage would be \$1300 per year, or nearly 60% of the \$2200 interest you'd pay otherwise.

The after-tax interest rate on your mortgage is 3.6%, while the after-tax rate on the car is 8% (no tax benefit). That 4.4% difference is worth \$880 per year to you. The after-tax rate on the credit card is 12% (no tax benefit there, either), so the 8.4% difference is worth \$420. Adding \$25,000 to your mortgage and paying off the car and credit card loans with the proceeds would save \$1300 per year.

Strictly speaking, this saving is due both to lowering the interest rate you pay, and to the tax-advantaged nature of the (low interest) mortgage loan (see table). However, even if the car loan and the credit card loan were both at only 6%

	<b>Car</b>	<b>Credit Card</b>	<b>Total</b>
<b>Loan Amount</b>	20,000	5,000	25,000
<b>Interest Rate</b>	8%	12%	
<b>Annual Interest</b>	1,600	600	2,200
<b>Annual Interest @6%</b>	1,200	300	1,500
<b>Interest Saving</b>	400	300	700
<b>Tax Saving</b>	480	120	600
<b>Total Saving</b>	<b>880</b>	<b>420</b>	<b>1,300</b>

pre-tax (the same as the mortgage), you'd still get a \$600 (40%) refund on the \$1500 interest bill for the car and credit card.

By the way, car leases involve interest, too, even though car dealers are reluctant to emphasize the point. So – pay cash for your car, pay off your credit card each month, and save a lot on taxes (and interest).

Are there drawbacks to this strategy? There are at least three:

- Credit card debt is unsecured; only your car secures car loans. Defaulting on credit card debt poses a risk to your credit rating, defaulting on a car loan will cause repossession of your car. Default on your mortgage loan or home equity loan risks loss of your home. This is a risk each family must assess and decide for itself.

- High-income families will receive a smaller tax benefit. The tax deduction for mortgage interest (and other itemized deductions) begins to phase out for (adjusted gross) incomes above \$142,700. The deduction declines by 3% of AGI above \$142,700, with a maximum decline of 80%. For higher incomes, in other words, the deduction is (much) smaller, and the benefit of consolidating car and credit card debt into a mortgage or home equity line of credit is limited.
- Consolidating a credit card loan into your mortgage increases your ability to borrow on that card. It's important to have an effective strategy for keeping your credit card debt at zero.<sup>3</sup>

### Tax-Advantaged Assets

Asset accounts targeted at retirement and higher education offer valuable tax benefits. You can increase your family's spending power by taking full advantage of each, to the extent they are relevant and appropriate for you.

The sheer number and variety of tax-advantaged retirement accounts is bewildering. There are individual plans (such as regular and Roth IRAs) and employer sponsored plans (such as 401(k)s and 403(b)s). There are even hybrids of the two – you might call these employer-sponsored individual plans (such as SEP IRAs and SIMPLE 401(k)s). This article will not review the merits and demerits of each one, nor attempt to help you determine which one or ones might be right for you. We'll have to leave that for another article.

Once you've identified your retirement plan of choice, you must be sure to do five things:

1. Establish the account in time to realize a benefit this year. You can establish some accounts (such as traditional and Roth IRAs) until the due date for taxes for the year in question – April 15, 2005 for 2004. You must establish others much earlier – for example, a SIMPLE IRA must be established by

<b>Benefit (per \$1,000 invested)</b>					
<b>Rate of Return</b>					
Years	4%	5%	6%	7%	8%
1	0	0	0	0	0
5	4	6	10	13	17
10	20	33	50	71	97
15	53	89	138	202	283
20	108	186	296	445	643
25	190	338	554	859	1,280
30	309	566	957	1,532	2,356
35	474	896	1,563	2,585	4,111
40	698	1,362	2,456	4,200	6,912

<sup>3</sup> Credit cards are useful for tracking spending and managing cash flow. They pose risks for spending discipline unless you pay off the full balance every month.

October 1<sup>st</sup>, while individual 401(k) plans must be established by December 31<sup>st</sup> or the business fiscal year end. You have to have an account in order to contribute to it.

2. Contribute to your accounts. Having a retirement account will produce a tax benefit only if you contribute to it. The tax benefit is a higher after tax rate of return on any investment *in the account*. The advantage depends upon the pre-tax rate of return on your investment, and the number of years you have to gain the tax advantage. The table at right illustrates (assuming a 40% tax rate). **The tax benefit is larger for higher rates of return.** For example, at ten years, the tax benefit is \$20 per \$1,000 invested at a 4% rate of return, and nearly \$100 at 8%. **The tax benefit is larger for longer holding periods.** For a 6% rate of return, the tax benefit is \$554 per \$1000 for 25 years, and nearly twice that if you can hold the asset in the tax advantaged account for 30 years. **Note:** These benefit estimates assume that investments in both taxable and tax-deferred accounts are in fixed income assets (bonds). The benefits may be smaller for equity investments (see the discussion of asset location below).
3. Contribute enough to receive matching contributions from your employer if your employer's plan offers them. Like the lower interest rates on home mortgages, employer-matching contributions are a benefit associated with a tax-advantaged account that is not a tax benefit, strictly speaking. However, these benefits are extremely valuable.<sup>4</sup> 100% matches represent 100% returns on your money, 50% matches are 50% returns, etc. Alternatively, you can think of employer matching as a raise you don't even have to ask for. Choose the description you find most motivating, and act on it.
4. Contribute early in the year. We just saw that the tax benefit is larger for longer holding periods. If those holding periods are long enough, the advantage of just one more year is very large – and one more year is what you get by contributing on January 1<sup>st</sup> rather than December 31<sup>st</sup> (you get *more* than a year by

*Added Benefit*  
(per \$1,000 invested)

Years	Rate of Return				
	4%	5%	6%	7%	8%
5	2	4	5	7	10
10	5	9	13	19	27
20	14	25	42	67	101
30	29	57	103	175	287
40	53	113	222	411	730

<sup>4</sup> An article in Sensible Financial's own newsletter, "[Matchmaker, matchmaker, make me a raise.](#)" provides a much more detailed statement of the value of employer matching benefits.



contributing January 1<sup>st</sup> rather than April 15<sup>th</sup> of the following year). The table at right shows the additional tax benefit of contributing early in the year. If you can expect your holding period to be at least 20 years, the incremental benefit goes from \$14 to \$100 as the rate of return ranges from 4% to 8%. Even if you are 65, and ready to retire, chances are very good you may not draw on the money for 20 years – there's still good reason to contribute early in the year.

5. Take your required minimum distributions. Rules for distributions from retirement plans are very strict, and the penalties for breaking them are draconian. The rules are also extremely complex – when it's time to start to take distributions, you may find it worthwhile to seek guidance from a professional specializing in this area<sup>5</sup>. By law, distributions from most retirement plans (Roth IRAs are the major exception) must begin in the year after you turn 70\_. The IRS has promulgated tables of minimal distribution rates. Failure to meet the requirements results in penalties of **50% (half!)** of the shortfall from the required distributions. That could ruin your whole day – not to mention its negative impact on your net tax benefit.

There are several potential drawbacks to tax-deferred retirement savings:

- You can save too much. In this case, you don't spend as much as you could when you are young, and find yourself being able to increase your standard of living dramatically when you retire. At that point, it's too late to go back and take the vacations you missed, and buy the car you had wanted to buy. Another risk of saving too much is discovering that you need to take distributions before 59\_ (the earliest allowable date in most cases). Such early distributions involve tax penalties of 10% - again reducing your tax benefit. You can overcome these risks, but it's hard work. Better to set your savings target correctly in the first place.
- You can save in a low tax bracket, only to withdraw in a high tax bracket. If you expect a big inheritance or if you expect tax rates to rise a lot in a short period of time, your tax rate

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<sup>5</sup> The rules for bequeathing and inheriting retirement plans are similarly complicated – if your retirement assets are a significant proportion of your total wealth, guidance from a professional specializing in estate planning for retirement plans can be very valuable.

may be higher after you retire than when you are contributing. This will reduce the size of your tax benefit, but unless the time horizon is short (say 5 years or less), the benefits are still positive. This is not an issue in the case of Roth IRAs – you owe no taxes on those distributions.

- You can turn capital gains into ordinary income. Capital gains tax rates are lower than ordinary income tax rates. Ordinary income tax rates apply to distributions from most tax-advantaged retirement accounts (except Roth IRAs). If you plan to invest your retirement contribution in equities that you intend to produce significant capital gains, and if you plan to withdraw the contribution and its returns in a short time (say 5 years or less), then the tax benefits are likely to be small.<sup>6</sup>

Saving for higher education also offers opportunities for tax benefits. You should consider these opportunities carefully – financial aid reductions may reduce the tax benefits significantly (see my article, "Saving for College" at *Retired Investor (April, 2004)* for a full discussion).

Education account tax benefits are usually smaller than retirement account benefits – you save smaller amounts, and you have a shorter time to realize the benefits. On the other hand, you pay *no* tax (as in *zero*) on 529 and Coverdell education savings account distributions used for higher education expenses. As a result, if you decide that a tax-advantaged college savings plan is for you, the tax benefits can be very significant. The rules for success are generally the same for education savings accounts as they are for retirement savings accounts.

- Establish the accounts timely. You can set up a Coverdell account for 2004 by April 15, 2005. However, Federal gift tax rules govern 529 accounts – gifts must be completed (the plan must cash the check!) by December 31, 2004 to qualify for the 2004 tax year.
- Contribute to the accounts. Each parent can add up to \$11,000 per child per year to these accounts. Moving money to these accounts

*Benefit (per \$1,000 invested)*

Years	Rate of Return				
	4%	5%	6%	7%	8%
1	16	20	24	28	32
5	91	117	145	174	205
10	213	285	367	458	561
15	374	521	697	905	1,152
20	584	847	1,179	1,593	2,107
22	685	1,009	1,426	1,958	2,631

<sup>6</sup> If you are making non-deductible IRA contributions, the time between contribution and withdrawal must be longer to realize some tax benefit – more like 15 to 20 years.

turns taxable returns into tax-free returns. Larger contributions produce larger tax benefits, as do contributions earlier in your child’s life. Even contributing just one year before you expect to need the money generates tax benefits, however. If you can contribute ten years ahead, even earning only 4% on your investment yields a tax benefit of an extra 21% (\$213 per \$1000 invested) in spending power.

- Contribute early in the year. Just as with retirement savings, contributing on January 1 rather than December 31 is worth a good deal (and of course, worth even more than waiting until April 15). If you can wait 5 years, the *extra* benefit [beyond the benefits shown in the previous paragraph] of investing early in the year is \$22/\$1000 at 4% (an extra 2%). It can be as much as a full \$274/\$1000 (an extra 27%) for money invested when your child is born, drawn as a last payment for her education, and earning 8% in the interim.

*Added Benefit  
(per \$1,000 invested)*

Years	Rate of Return				
	4%	5%	6%	7%	8%
5	22	29	37	47	57
10	29	41	56	74	96
20	49	78	119	175	250
22	52	83	128	190	274

- Don’t contribute too much. A 10% tax penalty applies to money not used for higher education. That is –ordinary income rates apply to all returns – and an additional 10% penalty is charged. The cost is small, \$20-\$30 / \$1000 invested for a wide range of returns

*Benefit (per \$1,000 invested)*

Years	Rate of Return				
	4%	5%	6%	7%	8%
1	4	5	6	7	8
5	18	21	24	27	30
10	28	29	29	25	19
15	27	19	2	26	66
20	11	21	75	158	276
22	0	47	124	243	413

and periods, but there is no need to incur it. The numbers at the lower right corner of the box may tempt you – invest for a long time at a high rate of return, and you make out well even after the tax penalty. Unfortunately, you must close Coverdell and 529 accounts by the time the beneficiary reaches 30, and the contribution constraints limit the usefulness of this “option” (even if the rates of return were attainable with bonds).

- Withdraw according to the rules. The same tax penalties apply to all withdrawals not used for higher education. Errors here can void your entire tax benefit.

Finally, there are tax-advantaged accounts offered by life insurance companies. These come in two main varieties – cash value life insurance and variable annuities. Usually, a commissioned life insurance agent or retail securities broker will bring one or both of these types of products to your attention. That usually means high fees and expenses to cover the commission, and a less-than-objective view on the benefits.

If you have exhausted all of the tax-saving opportunities available through retirement and educational savings, a product of this type may offer some benefit. Unless the fees and expenses are very low, you will do better with a buy-and-hold index investment strategy for fixed income. If you are considering an equity investment, expenses must be *extremely* low (and your investment horizon very long) for these products to beat a simple index strategy.

### **Manage capital gains and losses**

In tax-advantaged accounts, you can trade to your heart's content without affecting your tax advantages. The impact on your returns is likely to be negative, but that's another story.

In taxable accounts, trading has tax consequences. Taking losses has benefits – you can deduct up to \$3,000 of losses from income in any year. Furthermore, you can carry losses forward from one year to the next, and you can use them to offset gains that you realize as you rebalance, if you must.

Taking gains has costs – capital gains taxes must be paid now rather than (much) later. The benefits of tax deferral are lost. Therefore, the trading rules for taxable accounts are very simple:

- Take your losses every year.
- Rebalance only when you must to maintain your target asset allocation.
- Don't trade otherwise. (Taking gains forces you to pay taxes rather than defer them, reducing your lifetime after-tax returns).

### **Allocate your assets to maximize tax advantages**

Once you've established a streamlined account structure, and you've contributed assets to all of the accounts you've set up, the next question is how to *invest* the assets. Your

choices here can have a significant influence on the spending power you realize during your life, beyond the return you earn on each investment.

Your first investment decision is asset allocation – how much to stocks (and which kinds of stocks), how much to bonds (and which kinds) and how much to cash. (Stocks, bonds and cash are *asset classes*.) This decision is also beyond the scope of this article. *The Index Investor* offers sophisticated asset allocation advice, and so do many investment advisors.

Once you have an asset allocation, your next decision is asset *location* – assigning asset classes to accounts. You should plan your asset location to produce the largest possible after-tax rate of return on your entire portfolio. The basic rules are simple:

- Line up your asset classes from most to least susceptible to tax advantage.
- Place the most susceptible in the tax-advantaged accounts (retirement and college savings) first.
- Then place the next asset in the tax-advantaged accounts.
- Continue until you've used up all of the capacity in your tax-advantaged accounts.

Ranking the assets on susceptibility to tax advantage depends on a number of factors – time horizon, return assumptions, your tax rates, and your trading tendencies to name just the most important. The following ranking rules are good rules of thumb:

- Commercial real estate is most susceptible to tax advantage (its dividends count as interest).
- Higher yielding bonds are next.
- Higher risk and return equities are next (emerging markets and small cap stocks are good examples), with special advantage to high dividend asset classes.
- Ordinary equities follow – still susceptible to tax advantage, but less so than the asset classes above.
- Cash and low yielding bonds are last – highly susceptible to tax advantage in percentage terms, but the returns are so low that the dollar impact is minimal.

Let me emphasize, however, that these are just rules of thumb. The most tax-advantaged allocation will depend upon the likely returns for each asset class, the nature of your tax

deferral opportunities, your self-discipline in terms of taking capital gains, and your time horizon.

The following table illustrates the analysis that forms the basis of the rules of thumb: the table indicates the dollar value at the end of a 30-year investment horizon of \$1000 invested in each of two asset classes. For example, \$1,000

<i>Taxable</i>	<i>Sheltered</i>	VA	401(k)	Roth	NDRA
Equity	REIT	9%	7%	7%	8%
REIT	Equity				
REIT	FI	31%			12%
FI	REIT		16%	16%	
FI	Cash				
Cash	FI	1%	21%	21%	7%
Equity	FI	47%			28%
FI	Equity		5%	5%	

after-tax dollars invested in each of equities and REITs would produce 7% more if the REITs are sheltered in a 401(k) than if the equities are sheltered. The advantage of the better decision is shown. Note that the nature of the tax sheltered investment matters a great deal. Variable annuities (VAs) and non-deductible IRAs produce very different results than 401(k)s and Roth IRAs because the tax advantages are smaller, and in the case of VAs, expenses are higher.

The assumptions matter. For example, slightly higher fixed income interest rates reverse the preferred allocation of equity and fixed income investments in 401(k)s. For the table, the assumptions are:

- 1 Pre- and post-retirement ordinary income tax rates both 40%
- 2 Capital gains and dividend tax rates both 15%
- 3 30 year investment horizon
- 4 Account types: VA – variable annuity, ND IRA – non-deductible IRA
- 5 VA mortality and expense ratio – 100 bps
- 6 Rates of return:

	Equity	Fixed income	REIT s	Cash
Interest return		4%	2%	2%
Dividend return	2%			
Capital gain return	6%	0%	6%	0%
<b>Total Return</b>	<b>8%</b>	<b>4%</b>	<b>8%</b>	<b>2%</b>

You can see that in some cases the location decision doesn't matter much, and in other cases it matters a lot. For larger asset bases, the percentages translate into more dollars, and it's worth more to get the asset location decision right.

### In Summary

- Streamlining your financial structure, and maximizing your after-tax spending power once your brilliant investment strategy has succeeded is conceptually very simple:
  1. Use your tax-advantaged borrowing power in preference to other forms of borrowing.
  2. Maximize your tax-advantaged saving opportunities: retirement first, then education.
    - Set up the accounts
    - Contribute to the accounts
    - Contribute early in the year
    - Follow the withdrawal rules to avoid tax penalties
  3. Trade in your taxable accounts only to realize losses and to rebalance.
  4. Locate your assets to maximize the tax-deferral benefits.
- Tax-deferral benefits can be quite significant. After-tax returns in tax-deferred accounts can be more than double those in taxable accounts.
- There are only a few practical difficulties:
  1. Planning and self-discipline are essential.
  2. Assessing asset location benefits can be complex, and may require professional advice.





## Model Portfolios Year-to-Date Nominal Returns

We offer over 2,000 model portfolio solutions for subscribers whose functional currencies (that is, the currency in which their target income and bequest/savings are denominated) include Australian, Canadian, and U.S. Dollars, Euro, Yen, and Pounds-Sterling. In addition to currency, each solution is based on input values for three other variables:

- The target annual income an investor wants her or his portfolio to produce, expressed as a percentage of the starting capital. There are eight options for this input, ranging from 3 to 10 percent.
- The investor's desired savings and/or bequest goal. This is defined as the multiple of starting capital that one wants to end up with at the end of the chosen expected life. There are five options for this input, ranging from zero (effectively equivalent to converting one's starting capital into a self-managed annuity) to two.
- The investor's expected remaining years of life. There are nine possible values for this input, ranging from 10 to 50 years.

We use a simulation optimization process to produce our model portfolio solutions. A detailed explanation of this methodology can be found on our website. To briefly summarize its key points, in order to limit the impact of estimation error, our assumptions about future asset class rates of return, risk, and correlation are based on a combination of historical data (from 1971 to 2002) and the outputs of a forward looking asset pricing model. For the same reason, we also constrain the maximum weight that can be given to certain asset classes in a portfolio. These maximums include 20% for foreign bonds and foreign equities, and 10% each for commercial property, commodities, and emerging markets equities. There are no limits on the weight that can be given to real return and domestic bonds, and to domestic equities.

Each model portfolio solution includes the following information: (a) The minimum real (after inflation) compound annual rate of return the portfolio must earn in order to achieve the specified income and savings/bequest objectives over the specified expected lifetime. (b) The long-term asset allocation strategy that will maximize the probability of achieving this return,

given our assumptions and constraints. (c) The recommended rebalancing strategy for the portfolio. And (d) the probability that the solution will achieve the specified income and savings/bequest goals over the specified time frame.

The following tables show how asset allocations with different target compound annual rate of return objectives have performed year-to-date:

	<b>YTD 29Oct04</b>	<b>Weight</b>	<b>Weighted Return</b>
	In US\$		In US\$
<b>7% Target Real Return</b>	<i>YTD Returns are Nominal</i>		
<u>Asset Classes</u>			
Real Return Bonds	6.7%	0%	<b>0.0%</b>
U.S. Bonds	4.1%	0%	<b>0.0%</b>
Non-U.S. Bonds	4.7%	20%	<b>0.9%</b>
Commercial Property	19.8%	10%	<b>2.0%</b>
Commodities	22.2%	10%	<b>2.2%</b>
U.S. Equity	3.7%	50%	<b>1.9%</b>
Foreign Equity (EAFE)	7.9%	0%	<b>0.0%</b>
Emerging Mkt. Equity	8.7%	10%	<b>0.9%</b>
		<i>100%</i>	<b>7.9%</b>

:

	<b>YTD 29Oct04</b>	<b>Weight</b>	<b>Weighted Return</b>
	In US\$		In US\$
<b>6% Target Real Return</b>	<i>YTD Returns are Nominal</i>		
<u>Asset Classes</u>			
Real Return Bonds	6.7%	0%	<b>0.0%</b>
U.S. Bonds	4.1%	0%	<b>0.0%</b>
Non-U.S. Bonds	4.7%	20%	<b>0.9%</b>
Commercial Property	19.8%	10%	<b>2.0%</b>
Commodities	22.2%	10%	<b>2.2%</b>
U.S. Equity	3.7%	45%	<b>1.7%</b>
Foreign Equity (EAFE)	7.9%	5%	<b>0.4%</b>
Emerging Mkt. Equity	8.7%	10%	<b>0.9%</b>
		<i>100%</i>	<b>8.1%</b>

:

	<b>YTD 29Oct04</b>	<b>Weight</b>	<b>Weighted Return</b>
	In US\$		In US\$
<b>5% Target Real Return</b>	<i>YTD Returns are Nominal</i>		
<u>Asset Classes</u>			
Real Return Bonds	6.7%	0%	<b>0.0%</b>
U.S. Bonds	4.1%	0%	<b>0.0%</b>
Non-U.S. Bonds	4.7%	20%	<b>0.9%</b>
Commercial Property	19.8%	10%	<b>2.0%</b>
Commodities	22.2%	10%	<b>2.2%</b>
U.S. Equity	3.7%	30%	<b>1.1%</b>
Foreign Equity (EAFE)	7.9%	20%	<b>1.6%</b>
Emerging Mkt. Equity	8.7%	10%	<b>0.9%</b>
		<i>100%</i>	<b>8.7%</b>

:

	<b>YTD 29Oct04</b>	<b>Weight</b>	<b>Weighted Return</b>
	In US\$		In US\$
<b>4% Target Real Return</b>	<i>YTD Returns are Nominal</i>		
<u>Asset Classes</u>			
Real Return Bonds	6.7%	5%	<b>0.3%</b>
U.S. Bonds	4.1%	35%	<b>1.4%</b>
Non-U.S. Bonds	4.7%	20%	<b>0.9%</b>
Commercial Property	19.8%	10%	<b>2.0%</b>
Commodities	22.2%	10%	<b>2.2%</b>
U.S. Equity	3.7%	5%	<b>0.2%</b>
Foreign Equity (EAFE)	7.9%	10%	<b>0.8%</b>
Emerging Mkt. Equity	8.7%	5%	<b>0.4%</b>
		<i>100%</i>	<b>8.3%</b>

:

	<b>YTD 29Oct04</b>	<b>Weight</b>	<b>Weighted Return</b>
	In US\$		In US\$
<b>3% Target Real Return</b>	<i>YTD Returns are Nominal</i>		
<u>Asset Classes</u>			
Real Return Bonds	6.7%	75%	<b>5.0%</b>
U.S. Bonds	4.1%	0%	<b>0.0%</b>
Non-U.S. Bonds	4.7%	10%	<b>0.5%</b>
Commercial Property	19.8%	10%	<b>2.0%</b>
Commodities	22.2%	5%	<b>1.1%</b>
U.S. Equity	3.7%	0%	<b>0.0%</b>
Foreign Equity (EAFE)	7.9%	0%	<b>0.0%</b>
Emerging Mkt. Equity	8.7%	0%	<b>0.0%</b>
		<i>100%</i>	<b>8.6%</b>

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	<b>YTD 29Oct04</b>	<b>Weight</b>	<b>Weighted Return</b>
	In US\$		In US\$
<b>2% Target Real Return</b>	<i>YTD Returns are Nominal</i>		
<u>Asset Classes</u>			
Real Return Bonds	6.7%	85%	<b>5.7%</b>
U.S. Bonds	4.1%	0%	<b>0.0%</b>
Non-U.S. Bonds	4.7%	10%	<b>0.5%</b>
Commercial Property	19.8%	5%	<b>1.0%</b>
Commodities	22.2%	0%	<b>0.0%</b>
U.S. Equity	3.7%	0%	<b>0.0%</b>
Foreign Equity (EAFE)	7.9%	0%	<b>0.0%</b>
Emerging Mkt. Equity	8.7%	0%	<b>0.0%</b>
		<i>100%</i>	<b>7.2%</b>