

# The Index Investor

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

## Global Asset Class Returns

| YTD 30July04 | In USD | In AUD | In CAD | In EURO | In JPY | In GBP  |
|--------------|--------|--------|--------|---------|--------|---------|
| Asset Held   |        |        |        |         |        |         |
| US Bonds     | 1.10%  | 8.09%  | 3.56%  | 5.38%   | 4.77%  | -0.72%  |
| US Prop.     | 5.60%  | 12.59% | 8.06%  | 9.88%   | 9.27%  | 3.78%   |
| US Equity    | -0.10% | 6.89%  | 2.36%  | 4.18%   | 3.57%  | -1.92%  |
|              |        |        |        |         |        |         |
| AUS Bonds    | -9.23% | -2.24% | -6.78% | -4.95%  | -5.56% | -11.05% |
| AUS Prop.    | 6.68%  | 13.67% | 9.14%  | 10.96%  | 10.35% | 4.86%   |
| AUS Equity   | -0.90% | 6.09%  | 1.56%  | 3.38%   | 2.77%  | -2.72%  |
|              |        |        |        |         |        |         |
| CAN Bonds    | -0.86% | 6.13%  | 1.60%  | 3.42%   | 2.81%  | -2.68%  |
| CAN Prop.    | -3.00% | 3.99%  | -0.54% | 1.29%   | 0.67%  | -4.82%  |
| CAN Equity   | 0.80%  | 7.79%  | 3.26%  | 5.08%   | 4.47%  | -1.02%  |
|              |        |        |        |         |        |         |
| Euro Bonds   | -1.84% | 5.15%  | 0.62%  | 2.44%   | 1.83%  | -3.66%  |
| Euro Prop.   | 17.76% | 24.75% | 20.22% | 22.04%  | 21.43% | 15.94%  |
| Euro Equity  | -2.90% | 4.09%  | -0.44% | 1.38%   | 0.77%  | -4.72%  |
|              |        |        |        |         |        |         |
| Japan Bonds  | -5.07% | 1.92%  | -2.61% | -0.79%  | -1.40% | -6.89%  |
| Japan Prop.  | 18.94% | 25.93% | 21.40% | 23.23%  | 22.61% | 17.12%  |
| Japan Equity | 2.10%  | 9.09%  | 4.56%  | 6.38%   | 5.77%  | 0.28%   |
|              |        |        |        |         |        |         |
| UK Bonds     | 2.73%  | 9.72%  | 5.19%  | 7.01%   | 6.40%  | 0.91%   |
| UK Prop.     | 18.75% | 25.73% | 21.20% | 23.03%  | 22.41% | 16.93%  |
| UK Equity    | 1.20%  | 8.19%  | 3.66%  | 5.48%   | 4.87%  | -0.62%  |
|              |        |        |        |         |        |         |
| World Bonds  | -0.80% | 6.19%  | 1.66%  | 3.48%   | 2.87%  | -2.62%  |
| World Prop.  | 9.30%  | 16.29% | 11.76% | 13.58%  | 12.97% | 7.48%   |
| World Equity | 0.35%  | 7.34%  | 2.81%  | 4.63%   | 4.02%  | -1.47%  |
| Commodities  | 10.90% | 17.89% | 13.36% | 15.18%  | 14.57% | 9.08%   |
| Hedge Funds  | -0.39% | 6.60%  | 2.07%  | 3.89%   | 3.28%  | -2.21%  |
|              |        |        |        |         |        |         |
| A\$          | -6.99% | 0.00%  | -4.53% | -2.70%  | -3.32% | -8.81%  |
| C\$          | -2.46% | 4.53%  | 0.00%  | 1.83%   | 1.21%  | -4.28%  |
| Euro         | -4.28% | 2.70%  | -1.83% | 0.00%   | -0.62% | -6.10%  |
| Yen          | -3.67% | 3.32%  | -1.21% | 0.62%   | 0.00%  | -5.49%  |
| UK£          | 1.82%  | 8.81%  | 4.28%  | 6.10%   | 5.49%  | 0.00%   |
| US\$         | 0.00%  | 6.99%  | 2.46%  | 4.28%   | 3.67%  | -1.82%  |

## Model Portfolios Update

The objective of our first set of model portfolios is to deliver higher returns than their respective benchmarks over a one-year holding period, while taking on no more risk. The benchmark for the first portfolio in this group is an aggressive mix of 80% domestic equities, and 20% domestic bonds. Through the end of July, this benchmark had returned 2.9%, while our model portfolio had returned 5.1%. We have also compared our model portfolios to a set of global benchmarks. In this case, the global benchmark is a mix of 80% global equities, and 20% global bonds. Through the end of last month, it had returned 2.6%.

The benchmark for the second portfolio in this group is a mix of 60% domestic equities and 40% domestic bonds. Through the end of last month, it had returned 2.6%, while our model portfolio had returned 4.8%, and the global benchmark had returned 2.3%.

The benchmark for the third portfolio in this group is a conservative mix of 20% domestic equities and 80% domestic bonds. Through the end of last month, it had returned 1.9%, while our model portfolio had returned 4.6% and the global benchmark 1.9%.

The objective of our second set of model portfolios is to deliver less risk than their respective benchmarks, while delivering at least as much return over a one-year holding period. The benchmark for the first portfolio in this group is an aggressive mix of 80% domestic equities, and 20% domestic bonds. Through the end of last month, this benchmark had returned 2.9%, while our model portfolio had returned 4.5%. We have also compared our model portfolios to a set of global benchmarks. In this case, the global benchmark is a mix of 80% global equities, and 20% global bonds. Through the end of last month, it had returned 2.6%.

The benchmark for the second portfolio in this group is a mix of 60% domestic equities and 40% domestic bonds. Through the end of last month, it had returned 2.6%, while our model portfolio had returned 3.6%, and the global benchmark had returned 2.3%. The benchmark for the third portfolio in this group is a conservative mix of 20% domestic equities and 80% domestic bonds. Through the end of last month, it had returned 1.9%, while our model portfolio had returned 2.4% and the global benchmark 1.9%.

The objective of our third set of model portfolios is not to outperform a benchmark index over a one year holding period, but rather to maximize the probability of achieving a minimum level of compound annual real return over a twenty-year period while taking on as little risk as possible. Through last month, our 7% target real return portfolio had returned, in nominal terms, 3.7% year-to-date, our 5% target real return portfolio had returned, in nominal terms, 4.1%, and our 3% target real return portfolio had returned, in nominal terms, 5.9%.

Our fourth set of model portfolios are also target real return portfolios; however, they include the possibility of investing in a hedge fund index. For more information on these portfolios, please see our January, 2004 issue. Through last month, our 7% target real return HF portfolio had returned, in nominal terms, 3.0% year-to-date, our 5% target real return HF portfolio had returned, in nominal terms, 4.1%, and our 3% target real return HF portfolio had returned, in nominal terms, 7.4%.

## 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, 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 | 3.31%                    | 4.00%                      | 7.31%                            | 4.90%                           | 3.53%                 | 8.43%                         |
| Canada    | 2.30%                    | 4.00%                      | 6.30%                            | 2.10%                           | 1.94%                 | 4.04%                         |
| Eurozone  | 2.09%                    | 4.00%                      | 6.09%                            | 2.50%                           | 2.70%                 | 5.20%                         |
| Japan     | 0.97%                    | 4.00%                      | 4.97%                            | 2.70%                           | 0.90%                 | 3.70%                         |
| U.K.      | 2.06%                    | 4.00%                      | 6.06%                            | 2.50%                           | 3.20%                 | 5.70%                         |
| U.S.A.    | 2.09%                    | 4.00%                      | 6.09%                            | 4.50%                           | 1.70%                 | 6.20%                         |

\*High Productivity Growth Scenario. See Asset Class Review, in our June 2003 Issue, for assumptions used in both productivity growth scenarios for each region.

\*\* 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* | Current Index Value | (Under) or Overvaluation in High Growth Scenario | (Under) or Overvaluation in Low Growth Scenario |
|-----------|----------------------|---------------------|--------------------------------------------------|-------------------------------------------------|
| Australia | 146.47               | 100.00              | -46%                                             | -4%                                             |
| Canada    | 46.19                | 100.00              | 54%                                              | 63%                                             |
| Eurozone  | 75.21                | 100.00              | 25%                                              | 47%                                             |
| Japan     | 41.47                | 100.00              | 59%                                              | 72%                                             |
| U.K.      | 89.89                | 100.00              | 10%                                              | 37%                                             |
| U.S.A.    | 106.92               | 100.00              | -7%                                              | 34%                                             |

\*High productivity growth scenario.

Our estimate of over or under-valuation is based on the relationship between the returns an equity market is expected to supply, and those investors are likely to demand. We define the former as the 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, we view these as being essentially driven by psychological factors which we have no basis for predicting. Hence, we do not include future price/dividend ratio changes in our analysis.

We define the future demand for equity market returns 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, as a number of readers have pointed out, by assuming one of these, 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      | 3.53%                         | 3.31%                          | 3.78%                                                   | 4.12%                                                   | 5.12%                                                    |
| Canada         | 1.94%                         | 2.30%                          | 4.36%                                                   | 0.74%                                                   | 1.74%                                                    |
| Eurozone       | 2.70%                         | 2.09%                          | 3.39%                                                   | 1.61%                                                   | 3.11%                                                    |
| Japan          | 0.90%                         | 0.97%                          | 4.07%                                                   | 1.73%                                                   | 2.73%                                                    |
| United Kingdom | 3.20%                         | 2.06%                          | 2.86%                                                   | 2.14%                                                   | 3.64%                                                    |
| United States  | 1.70%                         | 2.09%                          | 4.39%                                                   | 3.11%                                                   | 4.11%                                                    |

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>Rate Gap</b> | <b>Asset Class Over or (Under) Valuation, based on 10 year zero</b> |
|-----------|--------------------------|------------------------------------------|--------------------------------|-----------------------------------------------|-----------------|---------------------------------------------------------------------|
| Australia | 3.31%                    | 2.96%                                    | 6.27%                          | 5.85%                                         | -0.42%          | 4.04%                                                               |
| Canada    | 2.30%                    | 2.40%                                    | 4.70%                          | 4.76%                                         | 0.06%           | -0.57%                                                              |
| Eurozone  | 2.09%                    | 2.37%                                    | 4.46%                          | 4.21%                                         | -0.25%          | 2.43%                                                               |
| Japan     | 0.97%                    | 0.77%                                    | 1.74%                          | 1.85%                                         | 0.11%           | -1.07%                                                              |
| UK        | 2.06%                    | 3.17%                                    | 5.23%                          | 5.09%                                         | -0.14%          | 1.34%                                                               |
| USA       | 2.09%                    | 2.93%                                    | 5.02%                          | 4.48%                                         | -0.54%          | 5.29%                                                               |

It is important to note that this analysis looks only at 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 the yield on 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%  | -1.09% | -1.64% | -4.00% | -0.76% | -1.37%  |
| <b>C\$</b>  | 1.09%  | 0.00%  | -0.55% | -2.91% | 0.33%  | -0.28%  |
| <b>EU</b>   | 1.64%  | 0.55%  | 0.00%  | -2.36% | 0.88%  | 0.27%   |
| <b>YEN</b>  | 4.00%  | 2.91%  | 2.36%  | 0.00%  | 3.24%  | 2.63%   |
| <b>GBP</b>  | 0.76%  | -0.33% | -0.88% | -3.24% | 0.00%  | -0.61%  |
| <b>US\$</b> | 1.37%  | 0.28%  | -0.27% | -2.63% | 0.61%  | 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 year-to-date returns in the table give a good indication of how investors in different sectors expect the economy to perform in the near future.

**Year-to-Date Returns on Classic Rotation Strategies**

| <b>Economy</b>        | Bottoming                                                             | Strengthening                                                               | Peaking                                                        | Weakening                                                            |
|-----------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------------|
| <b>Interest Rates</b> | Falling                                                               | Bottom                                                                      | Rising                                                         | Peak                                                                 |
| <b>Style</b>          | Growth (IWZ)<br><b>-3.80%</b>                                         | Value (IWW)<br><b>1.40%</b>                                                 | Value (IWW)<br><b>1.40%</b>                                    | Growth (IWZ)<br><b>-3.80%</b>                                        |
| <b>Size</b>           | Small (IWM)<br><b>-0.70%</b>                                          | Small (IWM)<br><b>-0.70%</b>                                                | Large (IWB)<br><b>-0.90%</b>                                   | Large (IWB)<br><b>-0.90%</b>                                         |
| <b>Style and Size</b> | Small Growth (DSG)<br><b>-0.70%</b>                                   | Small Value (DSV)<br><b>-0.70%</b>                                          | Large Value (ELV)<br><b>0.50%</b>                              | Large Growth (ELG)<br><b>-3.30%</b>                                  |
| <b>Sectors</b>        | Cyclicals (IYC)<br><b>-4.10%</b><br>Technology (IYW)<br><b>-9.30%</b> | Basic Materials (IYM)<br><b>-3.30%</b><br>Industrials (IYJ)<br><b>3.30%</b> | Energy (IYE)<br><b>16.70%</b><br>Staples (IYK)<br><b>0.90%</b> | Utilities (IDU)<br><b>2.80%</b><br>Financials (IYF)<br><b>-0.50%</b> |
| <b>Bond Mkt</b>       | High Risk (VWEHX)<br><b>2.00%</b>                                     | Short Maturity (SHY)<br><b>-0.80%</b>                                       | Low Risk (TIP)<br><b>2.80%</b>                                 | Long Maturity (TLT)<br><b>-1.00%</b>                                 |

**This Month's Letters to the Editor**

*What do you think about the merits of equal versus market capitalization based index weighting?*

Whether equal weighting is superior to market cap weighting in an index is a subject about which reasonable, clear-thinking people can and do disagree. There's really no generally correct answer; it really depends on the asset class involved. The most common discussion involves domestic equity, and most recently market cap versus equal weighted S&P 500 funds. The argument in favor of market cap weighting is that in the case of equity,

it is the most accurate view of the total economic value being created by the asset class. To justify a view that equal weighting provides a more accurate view, you would also have to make some rather extreme assumptions: namely, that investors were consistently and substantially over-optimistic in their assumptions about future dividend growth and risk for large cap companies, and consistently and substantially over-pessimistic in their assumptions about future dividend growth and risk for mid and small cap companies. As we describe in more detail in this month's product and strategy notes, the data don't support this conclusion. Moreover, even in those cases (e.g., the late 1990s) people cite as example of market valuation diverging from economic reality, there is an argument to be made that this is more a reflection of increased uncertainty about future growth (e.g., due to the rapid expansion of internet technologies) than evidence irrationality. In short, the evidence suggests that the equity market is generally quite rational when it comes to economic valuation (which isn't necessarily the same as being accurate).

Hence, we believe that equal weighting really represents a tilt toward mid and small cap companies within the U.S. equity asset class (or, if we are talking about just the S&P 500, then it is a tilt toward the smaller of the largest companies -- confusingly stated!). As we analyzed at length in last month's issue, on a risk-adjusted basis we question the wisdom of taking this tilt.

However, once you get beyond the equities asset class, things get a bit murkier with respect to the equal versus market-cap weighted issue. For example, if the percentages of the different sub-segments in total market value of the commercial property market (e.g., hotels, industrial, retail, etc.) do not match the percentages of these types of property in the total market value of the REIT market (e.g., because some segments of the commercial property market are more easily securitized than others), then a market cap weighted REIT Index may not give you an accurate picture of the total economic value being created in this asset class. On the other hand, because the non-securitized segment often relies on appraisals for valuation, it may not be accurate either. In sum, it is probably more difficult to accurately measure the economic value being created in the commercial property market than it is in the equity market.

The commodities asset class presents a similar challenge, because there are legitimate questions about the "right" way to calculate a commodity's proper weight in the overall index. Should you use the value of its production? The value of its trade? Using what currency? Why not use equal weighting? Reasonable people can and do disagree on these questions.

Finally, we come to bonds. In this case, market value is quite hard to accurately calculate. First, the market includes many small issues that trade infrequently. Second, bond issues trade in over-the-counter markets that are far less transparent than their equity counterparts (e.g., much less information is reported, and in a much less timely manner). Third, bond market cash flows are complex: they include not only interest payments, but frequent principal payments, at uneven intervals (e.g., due to a bond being called, or mortgage backed securities experiencing high prepayments), as well as varying cash flows related to defaults (a function of both the rate of default, which varies with the economic cycle, and post-default principal recovery rates). Given these factors, the argument in favor of market capitalization bond index weighting, while theoretically sound, is practically much more difficult to implement. This has led bond index providers to use a number of alternative approaches; for example, market-cap weighting based on the original issue amount of a diversified sample of large, highly liquid bond issues. However, a weighting scheme based on the value of new issues creates a potential problem of giving more weight to the biggest issues, regardless of subsequent changes in the underlying credit quality of the bonds and market interest rates. To simplify matters, other index providers have chosen to use equal weighting (e.g., the Goldman Sachs InvestTop index of corporate bonds that underlies the LQD exchange traded fund).

### *How do you define risk?*

Unfortunately, this apparently simple question requires a rather complicated answer. In much of the literature about investment management, risk is defined as the standard deviation of returns over some period. Standard deviation, in turn, is a measure of how widely a sample of returns is distributed around its average. In essence, this interpretation equates risk with variability. Assuming the sample of returns is normally distributed, this approach makes sense. The smaller the standard deviation of annual returns, the higher the probability that an investment's long-term compound return (i.e., its geometric average return)

will be close to its (arithmetic) average annual return. Most people invest in order to achieve goals that are more than one year away (e.g., accumulating enough savings to provide a certain level of retirement income). Rationally, people in this situation should be more concerned with achieving at least a given level of compound annual returns, rather than a given level of annual return.

More specifically, when the standard deviation of annual returns on an asset or portfolio is greater than zero, its arithmetic average annual rate of return will be higher than its compound average rate of return. This is due to a phenomenon called either "variance drain" or "volatility drag." This is an important concept that too few investors clearly understand. Here's an example that should help make it clear. Consider an investment that over five years earns annual returns of 10%, 5%, (20%), (5%), and 25%. Over this five-year period, the arithmetic average return on this investment is 3.00%. The standard deviation of these returns is 16.81%. Because of this variability, the compound average annual return over this five year period is only 1.87%. A quick (if not perfectly accurate) estimate of the impact of volatility drag (that is, the difference between the arithmetic average annual return on an investment and the actual compound annual return you are likely to earn) is that it is equal to one half the square of volatility (that is, it is equal to one half the variance, which is the same thing as the standard deviation squared).

Unfortunately, the distribution of returns for most asset classes is not normal (i.e., not shaped like the familiar "bell curve"), which makes problematic the use of standard deviation as a proxy for risk. Fortunately, the shape of non-normal distributions can be described using additional statistics (also known as "higher moments") such as skewness and kurtosis. The former is a measure of the relative asymmetry of the distribution. A distribution whose skewness is negative has relatively more returns below its average than above it. To look at it another way, a negatively skewed distribution has a median (the value half the outcomes in the sample are above, and half below) that is below its arithmetic average (also known as its mean). In contrast, kurtosis measures how far away from the mean the values in a distribution tend to be located, relative to the case of the normal distribution. A distribution with higher kurtosis than the normal distribution has relatively more values located far away from the mean (i.e., more large positive and negative returns), while one with low kurtosis has just the opposite. Skewness and kurtosis provide a much more accurate picture of the relative

riskiness of a security or asset class whose returns are not normally distributed than does standard deviation alone. For example, two asset classes with the same mean and standard deviation can still substantially differ in riskiness if one has negatively skewed returns and high kurtosis while the other has just the opposite.

Findings from cognitive psychology (some of which won the Nobel Prize in economics for Daniel Kahneman last year) support this broader conception of risk. Prospect theory (as formulated by Kahneman and the late Amos Tversky) shows how people are typically much more sensitive to losses (defined as falling short of a reference point or goal) than they are to gains. To put it more simply, research has found that losses hurt approximately twice as much as gains feel good. To bring this back to our asset class return distributions, prospect theory predicts that, all else being equal, investors will demand a higher return to hold investments whose returns are negatively skewed with high kurtosis. Empirical research studies have found evidence that this prediction is correct.

However, a much more important finding from psychological research is that our perceptions, thoughts and feelings don't exist in free-floating isolation; instead, they are generated by the relationship between the current situation and the particular goals we are pursuing. Cognition, as they say, is "situated." And our perception of risk is the product of cognition. An example will help make this point clear. Assume you and your spouse have gone to the beach with your three year old child. Your primary goal is to have a good time. The surf that day is heavy and the water is cold. Given the goal you are pursuing and the situation you confront, you estimate the risk of swimming to be unacceptably high. Now assume that, in a moment of inattention, your three year old wanders too close to the shore, and is swept out into the surf. Hearing his cry for help, you race towards the water. Clearly, your primary goal has changed: rather than having a good time at the beach, it is now saving your child's life. Under these circumstances, you estimate the risk of going swimming to be much lower, and you charge into the waves.

This example shows that the goals you set have a critical impact on your assessment of the riskiness of different courses of action. Here is a practical investment example: consider someone saving for their anticipated retirement twenty-five years from now. If they consider their primary goal to be avoiding any "loss of capital" (defined as year during which their portfolio goes down in value), they will have a very different perception of the risk of

different asset allocation strategies than if they define their primary goal as accumulating at least the amount needed to provide their target retirement income. At *The Index Investor*, our definition of risk is in line with the second point of view. For us, it is the probability that an investor will fall short of the compound rate of return his or her portfolio must earn to achieve their long-term accumulation goal.

This also means that we don't have much confidence in the practical usefulness of the "risk capacity" surveys employed by an unfortunately large number of financial advisers and websites. In our opinion, the validity of these surveys is low. They usually fail to specify (or allow the investors taking them to specify) a realistic goal or goals in relation to which their willingness to take risk can be assessed. In effect, they say to an investor, given your theoretical "risk capacity", here is your best asset allocation. Given the returns it will probably produce, your current capital and your expected rate of savings, here is the most you can hope to accumulate at the end of your time horizon. If that isn't acceptable, you can either lengthen your time horizon and/or increase your savings rate, because your "risk capacity" is fixed.

In contrast, our approach starts with the establishment of an investor's accumulation goal. We use this, along with current capital and expected future savings, to derive the minimum compound annual rate of return the investor's portfolio must earn (to achieve his or her accumulation goal). We then identify the asset allocation strategy that maximizes the probability of achieving this compound annual rate of return. If the investor judges this probability unacceptably low (i.e., too risky), he or she can decide what action to take in order to increase it: reduce his or her accumulation goal, lengthen the time horizon over which to achieve it, and/or increase his or her annual savings rate. We very strongly believe that this approach is not only much better aligned with the latest findings from cognitive psychology, but also a more accurate reflection of the way most people (not to mention most endowments and defined benefit pension plans) practically think about the investment management process.

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

Our first letter to the editor this month looks at the advantages and disadvantages of market-capitalization versus equal weighting of securities that make up an index. While we

believe that generally efficient and transparent markets make the market-cap approach the best methodology in equity markets, we also find that it is more open to question when it comes to commercial property, commodities, and bonds. One of our product and strategy notes addresses a related question: does the fact that the United States has many small private companies imply that you should tilt your equity allocation toward small cap (public) companies? We look at a lot of data, and find that this probably doesn't make sense. Our second letter to the editor this month looks at a deceptively easy question: how do we define "risk?" After reviewing different statistical definitions, we conclude that perceived risk, like all products of human cognition, can only be properly understood in light of a given set of circumstances, most importantly the primary goal being pursued. We note that this makes us highly skeptical about the practical validity of many of the "risk capacity" surveys used by an unfortunately large number of financial advisers and websites.

Our feature article this month is a reply to an article purporting to present "the case against indexing" that was recently published on the Motley Fool's website. To put it mildly, we find its arguments underwhelming. Our product and strategy notes this month cover a number of interesting subjects. We provide further evidence against active management in our reviews of two new reports on the performance of independent research companies, and the long-term returns realized by investors in 19 international markets. On a brighter note, we also look at the emergence of State Street Global Advisors and Barclays Global Investors (the world's leading institutional indexers) at the top rank of the United State's largest asset managers. We then review a new global survey that quantifies how depressingly unprepared (financially) most people are for their retirement, and close with a review of two new (if misnamed) "commodity index funds" in Canada.

## Who's The Real Fool?

On July 20, 2004 The Motley Fool ([www.fool.com](http://www.fool.com)) published an article titled "The Case Against Index Funds." We can't resist responding to it.

The author's approach is to set out and then attempt to discredit what he claims are the "popular myths" that underlie the conclusion that for most investors, most of the time, indexing is the most prudent approach to implementing their portfolio's target asset allocation.

The first alleged myth cited by the author is that "tax-conscious investors are better off with index funds." More specifically, "conventional wisdom has it that passively managed funds are infrequently traded, thus avoiding those pesky capital gains distributions." He offers three pieces of evidence that he believes undermine this alleged myth. First, the author states that "much of the luster of this claim was tarnished during the great bear market. Losses were so widespread that capital gains distributions all but disappeared...Today, most funds still have embedded capital losses to carry forward...to offset future gains in the near term." In our view, this does little to weaken the case in favor of indexing for long-term investors. Those accumulated capital losses won't last forever. After they turn to gains active managers' higher trading volume (and the tax consequences it triggers) will have a significant negative impact on investors' after-tax returns.

The author's second argument anticipates this point, suggesting that "those [investors] specifically trying to minimize tax liability consider a tax-efficient [actively managed] fund." He offers no evidence, however, that such funds on average generate risk-adjusted after-tax returns that are superior to those on comparable index funds. Finally, the author offers the argument that the whole tax issue is somewhat beside the point (for U.S. investors), because "given recent legislation that slashed taxes on dividends and capital gains, this [tax] advantage of indexing is far less pronounced than in years past." Note that he does not claim the tax advantage enjoyed by index funds is non-existent; it is merely "less pronounced." Not exactly a convincing argument from our perspective.

So let's move on to alleged myth number two: "Index funds are a quick, efficient means of achieving overall portfolio diversification." Strangely, our friend at the Fool begins by acknowledging that "studies have concluded that over 90% of the variability between investors' long term returns is a function of asset allocation -- not market timing, not security selection." He continues, "the key to diversification, and thus reduced volatility, lies in structuring a portfolio that contains a cross section of asset classes." So far, we don't see the myth; everything he says is spot on. But finally, he offers this criticism: "far too many investors have been led to believe that a properly diversified portfolio can be assembled by

replicating the S&P 500 Index, maybe adding a bond fund, and throwing in a handful of tech stocks for good measure...At the core of this myth is the belief that an investment in the S&P 500 provides exposure to hundreds of leading companies across different industries and sectors. In reality, the S&P is a market-cap weighted index, with each stock represented in proportion to its market capitalization. In other words, returns generated by this index are influenced primarily by the fluctuations of a small number of stocks."

I don't know about you, but to us this doesn't seem like powerful evidence that supports "the case against indexing" (or, more specifically, that supports the hypothesis that "active management is the more prudent course of action for long term investors"). We agree that for most investors, a properly diversified portfolio includes more asset classes than just domestic bonds and equities. And we agree that the S&P 500 is too narrow to be a good proxy for the U.S. equity asset class (compared, for example, to broader indices like the Wilshire 5000, the Russell 3000, or the Dow Jones Total Market). Finally, as we note in this month's letter to the editor, we agree that reasonable people can disagree about the wisdom of market capitalization versus equal weighting when it comes to indexing methodology. But none of these points is a valid argument against index investing; rather, they are a series of cautions about the right way to do it.

This brings us to alleged myth number three: "In the long run, passive investing nearly always beats active investing." On this point, the author notes that he has "always been troubled by the underlying constraints of passive management, which preclude a manager from exercising any semblance of common sense. If an inexpensive stock with dynamite fundamentals were out there, most people would overweight it. Conversely, if a poor stock or sector deteriorated, most would sell or avoid it. Passive managers do not have this luxury. They can't take advantage of market inefficiencies, or unload bad companies, or strategically shift assets to cash in uncertain times. They simply buy a predetermined basket of stocks, good and bad, and hope for the best." If you are like us, you have probably lost count of the number of times you have heard this argument. Our response to it has two parts: first, absent any data on actively managed funds' returns, what would we expect them to look like?

Consistently successful active investment management fundamentally comes down to successful forecasting, which must be based on either access to superior information or use of a superior model. Changes in regulation (e.g., S.E.C. Regulation FD) and the internet's growth

have made it much more difficult for active managers to obtain a consistent information advantage. Models suffer from two limitations: changes in the underlying dynamics of the real economy (which, like many others, we view as a complex adaptive system) invalidate their assumptions, and copying by other managers eliminates the edge they provide. Given this, we would expect that only a tiny proportion of active managers would be able to generate statistically significant alpha over the long time horizons (say, ten years or more) faced by many investors.

In contrast to this view, the argument made by the author of the Motley Fool article implies that forecasting skill is quite widespread, and that we should expect to see many active managers delivering higher risk-adjusted after-tax returns than returns on comparable index funds. He notes that, "fans of indexing like to lecture about the wisdom of the efficient market theory: all stocks are priced perfectly, no undervalued stocks exist, and fundamental analysis is an utter waste of time. Therefore, they assert, beating the market is impossible, and even the best strategy is no better than a random coin toss. Either this theory is seriously flawed, or the likes of Warren Buffet...are extraordinarily lucky." He implies that it should be easy for most investors to identify winning funds in advance, noting that "if you're looking for the perfect actively managed fund to anchor your portfolio, be sure to consider [its] portfolio composition, trailing returns, style drift, beta, standard deviation, sharpe ratio, turnover, expense ratio, asset base, managerial tenure and tax efficiency." Finally, (while implicitly assuming they are the right ones to use) he conveniently notes that the Motley Fool itself -- in a premium section of its site -- has already screened funds using just these criteria...

Our first response to this argument is always to ask the person making it to identify the next Warren Buffet, and tell us what percentage of their portfolio they have invested with him or her. This rather quickly clarifies the practical (not to mention financial) difference between perfect hindsight and much more uncertain foresight. Our next response is to move on to the performance data for actively managed and index funds.

So what does it say? The author of the Motley Fool article begins by acknowledging that "certainly, index funds have had a good run." However, he argues that "much of that performance is attributable to a select few mega-cap stocks that were fueled by the momentum investing of the late 1990s." He goes on to note that, in recent years, "beating the

S&P 500 index hasn't been nearly as challenging." He cites data from another Motley Fool author that shows that "an astounding 1,700 actively managed funds have done so over the past five years." This argument suffers from a number of critical limitations.

To begin with, it fails to specify how many of those 1,700 funds were available to retail investors -- for example, funds with a minimum initial investment of \$3,000 or less. Second, it fails to clarify whether those 1,700 funds have simply delivered higher absolute returns than the S&P 500 or higher risk-adjusted five-year returns after sales loads and taxes are taken into account. From an investor's point of view, this is a critical distinction. When we ran the same analysis taking these additional factors into consideration (using the Vanguard S&P 500 Index Fund -- VFINX -- as our S&P 500 benchmark), we found that only 1,074 funds outperformed. This amounts to only 23% of the 4,656 index and actively managed funds with at least five years of return data available. But even this overstates matters, by a rather significant amount, because the database does not include the results for funds that closed or merged over this five-year period. As Carhart, Carpenter, Lynch, and Musto showed in their paper "Mutual Fund Survivorship", this "survivorship bias" in fund performance databases can have a significant effect. These authors found that between 1962 and 1995, an average of 3.6% of the funds in existence at the beginning of the year were not in existence at the end (the standard deviation was 2.4%). This causes the impact of survivorship bias on average reported returns (for a sample of funds) to increase with the length of the sample period. According to the most recent data from the Center for Research in Securities Prices at the University of Chicago, at the end of 2003 fund survivorship bias added 1.2% to annualized five-year fund performance data. This means that our finding that 23% of actively managed funds outperformed VFINX over the previous five years is almost certainly overstated.

It is also useful to look at fund performance data over a ten-year time horizon, which is more in line with the situation facing investors who are saving to achieve long-term goals.

We asked a simple question: out of the 1,535 domestic equity funds at the end of June, 2004 that had at least ten years of performance data, how many non-index retail oriented funds (i.e., those with a minimum investment of \$3,000 or less) had ten-year load-adjusted after-tax returns that were greater than those on the Vanguard Total Market Index Fund (VTSMX), which tracks the broad Wilshire 5000 U.S. equity market index, as well as a lower

standard deviation of returns over the last three years? Any guesses? Sixty-eight -- or about 4.4% of the 1,535 funds in the sample. And again, this sample is not adjusted for survivorship bias. For a period of ten years, Carhart et al found that survivorship bias resulted in funds' average annual return being overstated by 0.71% (that is, by 71 basis points). The more recent CRSP study found it to be more than twice as large, at 1.6%. So our finding that only 4.4% of funds now available delivered higher after-tax, risk and load adjusted returns than VTSMX over the past ten years is almost certainly on the high side, probably by a significant amount. Moreover, it is almost certain that not all of these funds achieved their winning performance due to their manager's (or managers') skill. Statistically, you would expect luck alone to be the reason some of these 68 ten-year winners pass our screen (the exact percentage varies depending on how you model the impact of luck).

This brings us to a simple question: is this data more consistent with our prior view (based on theory) that few active managers are likely to deliver "better than comparable index fund" returns over long periods, or is it more consistent with the Motley Fool author's view that active managers' "exercise of common sense" should result in quite a few of them outperforming comparable index funds?

Of course, our friend from the Fool might still have a leg to stand on if the few superior funds we found were easy to identify in advance, and if one could be sure that their future performance would be just as good as their historical track record. Unfortunately, neither argument has much evidence to support it. Study after study has found that an actively managed fund's past performance is a poor guide to its future performance (hence the fine print on fund prospectuses and advertisements that says just this). And why doesn't past fund performance predict future performance? First, because as we noted above, the superior information and/or superior models which underlie superior forecasting skills don't last for long. Second, because these days, successful mutual fund managers have a habit of leaving the retail funds where they learned their trade for far more lucrative work as hedge fund managers. And third, because even those that stay usually find that they cannot easily earn the same high returns they have in the past when they have to invest much more money (as fund cash inflows tend, unfortunately, to chase historical performance).

Let's make these points concrete: one of the 68 superior actively managed funds in our sample was the Fidelity Select Healthcare Fund. How many of you reading this had the

foresight to invest in this fund (or any of the 68 on the list for that matter) ten years ago, and hold it until today? And how many people, on the strength of its superior ten-year returns, would invest in it tomorrow? Finally, what percentage of your portfolio will you be investing in said fund? There's a reason most people know Warren Buffett's name: his performance as an active manager is extremely rare.

But don't expect the author of the Motley Fool's incredibly weak "case against index funds" to tell you this. And that, when all is said and done, is what really makes us angry. The last time we checked, lots of people these days work their tails off to hang onto a middle class existence. Their savings are precious, and the last thing they want to do is squander them. But that is exactly what countless purveyors of "the active management gospel" are encouraging them to do. As we have repeatedly tried to demonstrate, the evidence in favor of the superiority of active management is extremely weak when set against the case for index investing as the most prudent course of action for investors to follow. In the future, we fully expect a lot of people to ask why so many publications, regulators, and investment industry leaders were so silent for so long on this critical point. The answers, we are sure, won't be pretty.

## **The Summer Financial Humor Column: "Irreconcilable differences"**

*Editor's Note: We've asked Hesh Reinfeld, a well-known business humor columnist to add a little levity to the dog days of summer. Hesh can be reached at [hesh1@comcast.net](mailto:hesh1@comcast.net).*

The judge had to ask the question and we had to answer it in order to get our divorce finalized. It was all suppose to be pro-forma.

"Why are you getting divorced?" The judge asked , his head buried in legal file folders.

"Irreconcilable differences," my wife, Sue, and I answered in unison as our attorneys recommended.

To our surprise, he followed up with a second question, "Differences about what?"

“Investment strategies,” I blurted out. My attorney stomped me on my foot to shut me up. The judge was intrigued even though twenty other couples, with their attorneys, were waiting behind us. He gave us a nod which definitely meant: now, you know have my attention.

Sue jumped in. “He believes in using only index funds in our portfolio. What a mistake! We need to actively manage our investments. Since the tech stock bubble burst we’ve been losing money. And I had dated a guy before this bozo (that was me she was alluding to) who is now a top mutual fund manager on Wall St. His fund has increased 13.2 % a year even during the bear market. We should have given him our money.”

The judge was definitely impressed. “I wish I could get my wife to be as interested as you are in our investments. Seems like you have a real winner here Hesh, so why are you breaking up?”

Just what I needed, the judge siding with Sue. I quickly counter-attacked. “Your honor, I believe in index funds. Why waste all that money having someone help you beat the market when the numbers say that over time no one really beats the market. That is unless you’re lucky enough to have Warren Buffet as your next door neighbor.”

The judge really seemed interested. He wondered out loud, “You guys seem like a sophisticated couple, didn’t you discuss this before you got married?”

I answered immediately. I didn’t want Sue saying anything else that would make me look like a fool. “Your honor, when the topic of money came up, we agreed that mutual funds made the most sense and that we would max out our 401k’s. Honestly, we were just out of grad school and we really didn’t have much money. The topic just never came up again. And there were bigger issues, I am the son of a prominent New York rabbi, and she is a descendent of an original Daughter of the American Revolution.”

“Well if you can live with that cultural divide,” the judge suggested, “I would imagine you could overcome your investment disagreements.”

The couples behind us had given up hope of leaving soon; they sat down dejected as their attorneys pulled out their cell phones and began sending text messages to their secretaries telling them to cancel their morning appointments.

The judge’s tipstaff was motioning for him to quicken the pace. He ignored the signals. His tone became more fatherly. “Life is not just the big philosophical issues; it’s the daily routines that are important. How did you guys get along conducting the minutia of day

to day living?" Now I was worried. The judge was sounding like our marriage counselor. We had tried that for a year, another fiasco.

I answered before Sue could jump in. "Not much better your honor. I was naïve. I should have seen the signs immediately. (But I couldn't get past the physical attraction) When we went to buy our first lottery ticket together, she spent four minutes trying to remember the birthdates of all of her sorority sisters, and the people behind us were really peeved (just like today). I simply told the guy behind the counter 'let the computer pick my number.' Sue's response was to call me an idiot."

"Have either of you ever won the lottery?" The judge asked.

"Of course not," I answered, "but at least I am not screwing with the numbers and decreasing our probabilities."

The judge called for a recess and invited us back to his chambers for some coffee. Our attorneys were ordered not to accompany us. Behind the closed doors, I remarked. "Your honor, we would have saved enough money to put our sons through Harvard for the amount of money Sue has wasted on financial advisors, books, stock-picking newsletters, and seminars. And I am tired of renting a beach house on Nantucket from the Cohen's."

"Who are they?" asked the Judge.

"Our last financial advisors," I answered in exasperation. The judge hushed Sue and did not let her respond to my last volley.

"Listen," he said, "I have a solution. We are going back into court. Just follow my lead." Could we say *no*, I didn't think so? He pushed us out the door back into the courtroom.

The courtroom was filled. We were the lead story for the noon newscasts. All the local TV crews were lining the back row. I even overheard that a reporter from Court TV was in a helicopter on her way to the courthouse. The judge followed us in a few minutes later wearing a new robe embroidered with purple lace. He looked regal as if he was King Solomon ready to split the baby.

He began solemnly, "After reviewing the facts and consulting both parties I have negotiated a settlement that they have agreed to." We had? My attorney gave me this look - you know the one that says: you got yourself into this mess, not me.

“As a judge in divorce court, I have heard flimsy excuses for couples to split. And personally I am against the no-fault divorce law in our fair Commonwealth. However, for the first time I have come across true irreconcilable differences in my courtroom.

“Adultery can be forgiven, just ask Hillary Clinton, but a spouse that hides his or hers investment preferences prior to their marriage cannot. Fortunately, in the case before me, neither side knowingly covered up his/her investment orientation. Therefore with the powers invested in me by this Commonwealth, I hereby grant their divorce.

“I am, however, outraged by the attorneys who profited from these clients and raised hopes that their differences might be overcome. I hereby order that all attorneys fees be returned and be placed into a trust fund for the children. I am also issuing a bench warrant for the arrest of the marriage counselor who bilked these two fine people of thousands of dollars in counseling fees in an ill conceived plot to keep them together.

“In addition, I order the marriage license bureau to require all future applicants complete a detailed questionnaire on their investment philosophies. Couples that cannot agree should never marry.

“Only one question remains, how to invest these funds to ensure an appropriate nest egg for the children. Before I rule, excuse me for a personal digression. While I was in law school at Columbia, I was fortunate to room with Warren Buffett. He was studying for his MBA at the same time. (Harvard had been dumb enough to have rejected his application.) I *just* gave him a call and told him of the case I was ruling on. In his typical homespun manner he said that he could not tell me how to rule on the legal issues. However, he strongly recommended that whomever handles the trust fund for the children invest in index funds. It is the most risk averse strategy for the common investor to take.

“Now who am I, to disagree with “The Sage of Omaha.” I hereby rule that the children’s trust fund utilize only index mutual funds.”

## Product and Strategy Notes

### A Turning Point in the Money Management Industry

Institutional Investor magazine has just published its ranking of the largest money managers in the United States, based on their assets at the end of 2003. At the top of the list in this year's ranking was State Street Global Advisors, which surpassed Fidelity as America's largest asset manager. However, as Institutional Investor notes, "the ascension of SSgA marks a symbolic turning point in money management -- the first time that an "indexer" has emerged as the largest U.S. asset manager. Underscoring the point, another indexer, Barclays Global Investors, places second [on the list]." We also note that two other big indexers -- Vanguard and Northern Trust -- respectively rank ninth and twelfth on this year's list. However, there is both more and less in these rankings than meets the eye. SSgA and BGI have moved up in the rankings not only because of the growing popularity of their index offerings, but also because of the money that has flowed into their actively managed products. More specifically, both firms have been strong proponents of a key trend in asset management: the separation of beta and alpha risk.

As readers will recall from previous articles on this subject, beta risk is inherent in an asset class as a whole. The only way to reduce a portfolio's beta risk is to diversify across asset classes. In contrast, alpha risk is specific to a company or group of similar companies (e.g., in an industry sector). Within an asset class, the returns for bearing alpha risk are a zero sum game. Within any time periods, the positive and negative returns for bearing alpha risk cancel each other out, leaving only the return for bearing the beta risk of the asset class.

In a typical "long only" actively managed fund, return is due to a combination of overall market movements (compensation for holding beta risk) and the returns on the specific securities held by the fund (compensation for holding alpha risk). However, the expenses charged by an actively managed long-only fund are typically much higher than those charged by an index fund, which bears only beta risk. This has caused many institutional investors to look for ways to separate the decision to bear beta risk from the decision to bear alpha risk. A practical example of this would be a portfolio that combines low cost index funds for different asset classes (to provide returns for bearing beta risk) with smaller investments in a number of

much more expensive hedge funds (e.g., a market neutral fund) whose returns are compensation for bearing only alpha risk.

Both SSgA and BGI have aggressively seized on this trend, and their asset growth (and improvements in the Institutional Investor rankings) reflect not only the success of their index fund offerings, but also the growing attractiveness of their hedge fund and enhanced index products.

However, the growth of strategies that separate beta and alpha has taken place in an environment in which indexing has continued to gain market share. Institutional Investor cites a study by the consulting firm Greenwich Associates that estimated that as of June, 2003, "forty percent of U.S. institutional equity assets were indexes, up from thirty percent [ten years earlier]." Comparative numbers for the U.K. were 31% versus 22%. All in all, we find this to be very encouraging data.

#### Independent Research: It's Still Active Management

As you recall, the settlement of charges related to conflicts of interest in equity research reached with the U.S. Securities and Exchange Commission by various Wall Street investment banks and brokerage firms required them to spend over \$1 billion dollars to support the production and distribution of independent investment research. The basis of the settlement was that independent research would help active investors to make better decisions. In its July 26, 2004 issue, *Business Week* magazine tested this hypothesis by comparing the performance so far this year of 121 independent research providers. They found that only three of them -- that's about 2.5% -- had managed to beat the return delivered by the S&P 500 Index. While independent research may be an improvement over its predecessor, indexing still seems the more prudent choice for most investors.

#### How Effectively Are People Preparing for Retirement?

Ask yourself two questions. First, how well do you think you have prepared for your own retirement? Second, how well do you think most people have prepared for their retirements? We would guess that most of our readers would say they've done a better job

than the majority of their peers. A new research report from the Principal Group, “The 2004 Global Financial Well-Being Study” provides more data on this issue.

The survey is based on at least five hundred interviews in each of twelve different countries, and was conducted earlier this year. At the 95% confidence level, the margin of error for the studies findings is approximately four percent (e.g., if a finding is that 25% of the people surveyed believes X, you can be 95% confident that the true value of X for the population as a whole is between 21% and 29%).

The study’s authors recognize that its key findings are a paradox: “although people worldwide say they are concerned about their financial future and recognize that putting money aside for retirement is increasingly important, a surprisingly small number have done anything about it. Many have not even begun planning for retirement...Few have tried to figure out how much money they will need to retire and how many years their nest egg will have to last.” It is therefore not surprising that the study also found “ a deep-seated pessimism about retirement prospects in almost every country. People are concerned their standard of living will be lower after retirement and are afraid they may become a burden to their families. Even more alarming, a significant number of [those surveyed] are concerned that they won’t be able to pay for basic expenses after retirement.”

Two survey questions asked (1) how well people felt they were doing “in performing your role to ensure that you have a financially secure retirement”, and (2) whether they have tried to estimate the amount of savings they would need to accumulate to live comfortably in retirement.

| Country        | Percent who believe they are doing “well” or “very well” preparing for their retirement: | Percent who have tried to calculate how much money they need to save to live comfortably in retirement: |
|----------------|------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Japan          | 80%                                                                                      | 26%                                                                                                     |
| France         | 81%                                                                                      | 12%                                                                                                     |
| Germany        | 84%                                                                                      | 34%                                                                                                     |
| Italy          | 85%                                                                                      | 17%                                                                                                     |
| United Kingdom | 79%                                                                                      | 34%                                                                                                     |
| United States  | N/A                                                                                      | 49%                                                                                                     |

A March 2004 survey of 2,000 Canadians by SEI Investments produced similar findings in that country. They found that only 15% of those surveyed considered themselves to be "very knowledgeable" about retirement planning, while 34% reported that they "did not feel knowledgeable at all." Moreover, a separate question found that only 30% of those surveyed "considered themselves to be actively involved in their retirement planning."

Could these findings be explained by a widespread belief that benefit payments received from national social security programs will provide an adequate standard of living in the future? Another question on the Principal Group survey addressed this issue. It asked people to rate their confidence that their national social security programs would continue to provide the same level of benefits in the future as it does today. The percentages of people saying they were very or somewhat confident were actually quite low: Japan, 18%; France, 28%; Germany, 26%; Italy, 31%; United Kingdom, 19%; and United States, 35%.

Given that they haven't planned and don't have much confidence in their national social security programs, it is no surprise that people are concerned about the quality of life they will have in their retirement. Another survey question asked people whether they thought their standard of living in retirement would be better, worse, or about the same as it is now. The percentages answering worse were as follows: Japan, 53%, France, 62%, Germany, 44%, Italy, 40%, the United Kingdom, 34%, and United States, 49%.

Another way of looking at this issue is the percentage of people who reported that they feel "very confident" they will have enough money to take care of their basic expenses during retirement. In Japan, only 3% gave this answer; in France, 13%, Germany, 25%, Italy, 8%, the U.K., 28% and the United States 24%.

These findings are both depressing and provocative. Clearly, they indicate a crisis is brewing, and that it will become increasingly acute as more baby boomers reach retirement and confront the stark reality of their insufficient savings. But they also raise an intriguing question. How is it that so many people can still report a belief that they are doing a good job of preparing for their retirements when their answers to other questions suggest that this objectively is not the case? At minimum, it suggests that many people have a much more short-term perspective than is assumed by most economic theories (technically, they have much higher time discount rates). This would also explain why people are now much more

willing to use borrowing to finance consumption than they were in the past. It might also explain why so many people prefer active investment management, and tend to “chase performance” by investing in those funds with the most impressive recent returns. However, the even more interesting question is why this is the case. What economic or social changes can account for the shortened time horizons and preference for current consumption over long-term security that we observe across such a wide range of countries? We don’t pretend to have a definitive answer to this question. However, we suspect that it is one that future historians will spend a lot of time trying to answer.

### Another Dismal Report on Long-Term Performance

Iliia Dichev of the University of Michigan Business School has just published a fascinating paper titled “What are Stock Investors’ Actual Historical Returns?” It does not make for pleasant reading, particularly if you are believer in active management. The study begins with an observation: “stock investors’ returns are determined by two factors: the returns on the securities they hold, and the timing of their capital flows into and out of these securities.” Dichev notes that many studies “typically use buy-and-hold returns to assess the return experience of stock investors, essentially ignoring the effects of capital flow timing.” Dichev’s study attempts to take capital flows into account, to provide a more accurate estimate of investors’ returns.

The way he does this is to use an internal rate of return methodology to calculate the actual return experienced by investors at the level of the aggregate stock market. He treats initial public offerings as cash outflows (from investors to the aggregate equity market) and dividends and repurchases as cash inflows (from the market to investors). Dichev compares this IRR to a value weighted buy-and-hold return (i.e., each year the proportion of each share held is adjusted for its relative market value). This buy-and-hold return is, as the author notes, the return that would be achieved by an investor who simply bought and held a broad-based equity index fund over the time period covered by his study.

As Dichev notes, there is no inherent reason why buy-and-hold and IRR returns should differ. This only occurs “if there are material correlations between the timing of

[investor cash outflows and inflows] and past and future stock returns.” In particular, the IRR-based return will be lower than the “buy-and-hold” return if cash outflows (i.e., net investor purchases of equity) are followed by lower than average equity returns, while net inflows to investors are followed by higher than average equity returns. This is exactly the phenomenon that Dichev discovers in his data. He finds that “dollar-weighted [IRR] returns are lower than buy-and-hold returns for both the NYSE/AMEX and Nasdaq firms, suggesting that in the aggregate actual U.S. investor returns are lower than buy-and-hold returns...The difference between [IRR] and buy-and-hold returns is (1.3%) for NYSE/AMEX firms...The truly remarkable evidence is for the Nasdaq, where the difference is (5.3%).” Since the buy-and-hold return for the Nasdaq was roughly equal to that for the NYSE/AMEX, Dichev notes that “one could reach radically different conclusions about investors’ performance depending on the return metric used. If one uses the conventional yardstick of buy-and-hold returns, one would conclude that Nasdaq investors have performed roughly in line with the overall market. If one uses dollar-weighted [IRR] returns, one would conclude that investing in the Nasdaq has been disappointing, yielding returns in line with the risk-free rate, but with much higher volatility.”

The author also finds evidence that “investors tend to move into the market after high past returns and before low future returns.” He notes that in the United States, aggregate cash inflows and outflows “show long-swing patterns over the years, with [cash inflows] dominating the time series, but also with three clusters of frequent [cash outflows] in the 1920’s, 1968-1972, and 1990-2002.” He notes that “these clusters tend to coincide with strong bull markets, and are followed by the worst bear markets in the century, during the Great Depression, 1973-1974, and 2000-2002.”

Dichev also tests his U.S. results using shorter data series from non-U.S. markets. While his NYSE data series covers 1926-2002, his international series are shorter, and begin only in 1973. He finds that “dollar weighted returns are lower than buy-and-hold returns in 18 out of 19 countries; the only exception is Canada, where the difference is not statistically significant.” The following table presents the results for some of these countries:

**Buy-and-Hold versus IRR Returns**  
Data based on February 1973 – February 2004

| Country        | Buy-And-Hold Return | IRR Return | Difference |
|----------------|---------------------|------------|------------|
| Australia      | 12.3%               | 11.7%      | (0.6%)     |
| Canada         | 11.0%               | 11.6%      | 0.6%       |
| France         | 13.4%               | 10.5%      | (2.9%)     |
| Germany        | 8.2%                | 7.5%       | (0.7%)     |
| Italy          | 13.1%               | 8.2%       | (4.9%)     |
| Japan          | 5.2%                | 2.7%       | (2.5%)     |
| Switzerland    | 8.7%                | 8.0%       | (0.7%)     |
| United Kingdom | 13.8%               | 12.7%      | (1.1%)     |
| United States  | 11.5%               | 10.5%      | (1.0%)     |

Finally, based on the evidence he presents, Dichev concludes that “passive investment strategies [i.e., indexing] are likely to do well because they avoid both transaction costs and the negative effects of timing.”

Two Interesting Canadian "Commodity Index" Products

In December 2003, SEI Investments Canada introduced a retail product (Class P Shares) of its Futures Index Fund, which had previously only been available to institutional investors (via Class O shares, which have a minimum investment of C\$ 150,000). Per its prospectus, the annual expenses charged on the fund can be no higher than 1.50%. These include both investment management and operating expenses. By comparison, on the Class O shares investment management and operating expenses are charged separately. The former is negotiated with each investor, while the latter was a flat 0.27% in 2003.

The Futures Index Fund tracks the Mount Lucas Management (MLM) commodity index, which is quite an interesting benchmark. First, it is based on 25 equally-weighted futures contracts. These include not only the usual suspects (e.g., metals, energies,

foodstuffs), but also U.S. Treasury securities (5, 10 and 20 year maturities) and currencies (A\$, C\$, Euro, Yen, UK Pounds and Swiss Francs). Second, it also includes a momentum-based trading rule: the index is long contracts that are above their 12 month moving average, and short those below the 12 month moving average. Because of this, it is another one of those odd ducks we wrote about last month in our article on "active indexing" -- in effect, the "index" it tracks actually reflects the results of a consistently (i.e., mechanically) applied active management strategy. In terms of its historical returns, the MLM Index has a low correlation with returns on the Goldman Sachs Commodities Index (a long-only index that we used as our proxy for the commodities asset class when developing our model portfolios). Given this, we consider the MLM Index to be more accurately classified as a subset of the larger class of hedge fund indexes, rather than as a commodities asset class index. There is nothing inherently wrong with this classification; our only objection is the potential confusion caused by calling this product a commodity index fund.

Year-to-date through June 2004, the Futures Index Fund had returns of 0.89%, versus a 1.73% return on the MLM Index. By way of comparison, the institutional (Class O) shares of the fund returned 1.70% over the same period. Presumably, the difference in returns is due to the difference in expenses; however, the fund's reports don't make this clear.

Finally, SEI Investments also offers another interesting fund based on the MLM Index. While thus far it is only available to institutional investors, it is also worthy of note. The fund is called the 3XL Futures Index Fund, and it uses debt (in addition to investors' money) to try to deliver a return that is equal to three times the return on the index. In short, it is a momentum trading strategy to which leverage has been added to make things more interesting, and hopefully more lucrative. Through the end of June 2004, the 3XL fund had returned 2.16% -- about 125% of the index return.

### Three Follow Ups From Last Month's Articles

An alert reader wrote to note that [www.scottrade.com](http://www.scottrade.com) offers online trades for U.S. \$7.00, even less than the \$10.99 fee at Ameritrade we used in our mutual funds versus exchange traded funds analysis. At the margin, this makes exchange traded funds more attractive.

Another reader wrote with a question about last month's article on the advantages and disadvantages of taking tilts toward small cap stocks. "Is it not true," he asked, "that what counts is expected portfolio risk and return? And, if this is the case, might not a tilt toward small caps still make sense in light of allocations to other asset classes?" We responded that he is right on both counts. However, in writing our article we did not include this additional level of complexity. To do so, we would have had to run our simulation optimization model substituting the risk, return, and correlations for small cap stocks with other asset classes in place of the broad asset class statistics we normally use. The challenge here is how to limit the possible permutations of this process (which, as you can well imagine, give rise to substantial computational challenges). For example, should we also include small cap data for foreign developed market and emerging market equities? Should we include other tilts (e.g., toward mortgage or high yield bonds, or towards one type of commercial property security)? Should we also include domestic equity sector indexes, some of which (e.g., utilities) have very low correlations with small cap stock returns? For better or worse, there is not right or wrong answer to this question, apart from the caution that including highly correlated tilts (e.g., large and small cap stocks) as investment options usually gives rise to very unstable optimization solutions (i.e., situations in which a very small change in expected return has a drastic impact on the portfolio weights given to different asset classes).

Finally, a reader from South Africa wrote "is it not the case that a total market index (or index fund) like the Wilshire 5000 is not 'neutral' but is, in fact, tilted toward large cap companies relative to the total market of listed and unlisted stocks? If this conclusion is correct, wouldn't it follow that a 'neutral' investor should invest in the Wilshire 5000 and additionally into a mid-cap and a small cap index fund?" This is a very interesting question. Our first step in addressing it was to look at flow of funds data from the Federal Reserve. The most recent report (statistical release z.1, table L.213) shows that at the end of the first quarter of 2001, the estimated value of the equity issued by U.S. companies (both private and public, financial as well as non-financial) was \$13.7 trillion (using a methodology based on the replacement cost of assets). We then compared it to the end of June, 2004 market value of the 5,079 companies included in the Wilshire 5000 Index: \$12.7 trillion. At first glance, this comparison would suggest that there is roughly (because of the different dates, and the

methodology differences used to calculate market value) about \$1 trillion in equity market value not captured by the Wilshire 5,000.

Our next step was to develop a better picture of the key differences between the companies included in the Wilshire and Federal Reserve data. We looked at two key indicators. The overall market/book ratio for the Wilshire companies was 2.86, and 1.67 for those that make up the microcap portion of the overall index (these are the companies whose market capitalization rank is less than 2,500). The market/book ratio in the Federal Reserve data was 1.34. The annualized dividend yield (dividends/market value) for the Wilshire 5000 was 1.61%, and just 0.58% for the microcap sub-index. For the Federal Reserve data it was 2.65%. Based on this evidence, we reach our first conclusion: in so far as "value" companies are characterized by relatively low market/book ratios and relatively high dividend yields, the data suggest that many companies not included in the Wilshire 5000 are probably in this category. Logically, this makes sense: if the market is not going accord your company a high valuation, why go public?

To get a more detailed picture of the companies that are not included in the Wilshire 5000, we looked at 2001 corporate tax return data (the most recent available) from the United States Internal Revenue Service. The following table summarizes this data:

| <b>NAICS Industry Category*</b> | <b>Pct of Total Number of Returns</b> | <b>Pct of Total Value of Assets</b> | <b>Pct of Total Value of Net Worth</b> |
|---------------------------------|---------------------------------------|-------------------------------------|----------------------------------------|
| Agriculture and Related         | 2.7%                                  | 0.2%                                | 0.6%                                   |
| Mining                          | 0.6%                                  | 0.9%                                | 0.8%                                   |
| Utilities                       | 0.2%                                  | 3.1%                                | 5.2%                                   |
| Construction                    | 12.2%                                 | 1.1%                                | 5.4%                                   |
| Manufacturing                   | 5.4%                                  | 16.5%                               | 26.2%                                  |
| Wholesale Trade                 | 7.0%                                  | 2.3%                                | 12.3%                                  |
| Retail Trade                    | 11.6%                                 | 2.4%                                | 13.9%                                  |
| Transportation and Warehousing  | 3.2%                                  | 1.1%                                | 2.5%                                   |
| Information                     | 2.2%                                  | 6.4%                                | 4.7%                                   |
| Finance and Insurance           | 4.3%                                  | 42.9%                               | 12.9%                                  |

| <b>NAICS Industry Category*</b> | <b>Pct of Total Number of Returns</b> | <b>Pct of Total Value of Assets</b> | <b>Pct of Total Value of Net Worth</b> |
|---------------------------------|---------------------------------------|-------------------------------------|----------------------------------------|
| Real Estate                     | 10.5%                                 | 1.1%                                | 1.2%                                   |
| Prof/Sci/Tech Services          | 13.8%                                 | 1.0%                                | 3.3%                                   |
| Mgmt of Companies (Holding)     | 0.9%                                  | 19.0%                               | 3.9%                                   |
| Admin and Support Services      | 4.4%                                  | 0.5%                                | 1.7%                                   |
| Education Services              | 0.7%                                  | 0.0%                                | 0.1%                                   |
| Health Care/Social Assistance   | 6.4%                                  | 0.4%                                | 2.2%                                   |
| Arts, Entertainment, Recreation | 2.1%                                  | 0.2%                                | 0.4%                                   |
| Accommodation and Food Services | 5.3%                                  | 0.7%                                | 1.7%                                   |
| Other Services                  | 6.3%                                  | 0.2%                                | 0.9%                                   |
|                                 | 100.0%                                | 100.0%                              | 100.0%                                 |

- The IRS data use the North American Industry Classification Standard, which is not comparable with the one used by Wilshire

After examining this data, our best guess is that a substantial portion of the equity value included in the Federal Reserve data but not the Wilshire 5000 is in wholesale and retail trade, and different types of services. Moreover, a comparison across the three data columns (percent of returns, assets, and net worth) suggests that within these industry sectors, this equity (net worth) value is distributed across a large number of small, relatively unleveraged (i.e., high net worth/total assets) companies. If many of these companies are paying out to their owners a relatively high proportion of their earnings, and growing at a relatively slow rate (or not at all), it would account for both the higher dividend yield and the lower market/book ratio of the Federal Reserve relative to the Wilshire 5000 data.

In sum, while there are no doubt very attractive private companies in which one might like to invest, we infer from the data that most of them are not in this category. Given this, we do not believe it makes sense to tilt a portfolio's U.S. equity allocation toward small cap public equities in order to better represent the true distribution of companies in the overall economy.

## Model Portfolios Year-to-Date Performance

| <i>These portfolios seek to maximize return while matching their benchmark's risk (standard deviation)</i> |                         |        |                    |
|------------------------------------------------------------------------------------------------------------|-------------------------|--------|--------------------|
|                                                                                                            | <b>YTD<br/>30July04</b> | Weight | Weighted<br>Return |
|                                                                                                            | In C\$                  |        | In C\$             |
| <b>High Risk Portfolio</b>                                                                                 |                         |        |                    |
| <i>Asset Classes</i>                                                                                       |                         |        |                    |
| <i>Canadian Benchmark</i>                                                                                  |                         |        |                    |
| Canadian Equity                                                                                            | 3.3%                    | 80%    | 2.6%               |
| Canadian Investment Grade Bonds                                                                            | 1.6%                    | 20%    | 0.3%               |
|                                                                                                            |                         | 100%   | <b>2.9%</b>        |
| <i>Global Benchmark</i>                                                                                    |                         |        |                    |
| U.S. Equity                                                                                                | 2.4%                    | 40%    | 0.9%               |
| Non-U.S. Equity                                                                                            | 3.3%                    | 40%    | 1.3%               |
| U.S. Bonds                                                                                                 | 3.6%                    | 10%    | 0.4%               |
| Non-U.S. Bonds                                                                                             | -0.2%                   | 10%    | 0.0%               |
|                                                                                                            |                         | 100%   | <b>2.6%</b>        |
| <i>Recommended</i>                                                                                         |                         |        |                    |
| Canadian Equity                                                                                            | 3.3%                    | 25%    | 0.8%               |
| Foreign Equity (US)                                                                                        | 2.4%                    | 28%    | 0.7%               |
| Canadian Investment Grade Bonds                                                                            | 1.6%                    | 5%     | 0.1%               |
| Foreign Equity (EAFE)                                                                                      | 3.8%                    | 22%    | 0.8%               |
| Commodities                                                                                                | 13.4%                   | 20%    | 2.7%               |
|                                                                                                            |                         | 100%   | <b>5.1%</b>        |

| <i>These portfolios seek to maximize return while matching their benchmark's risk (standard deviation)</i> |                         |        |                    |
|------------------------------------------------------------------------------------------------------------|-------------------------|--------|--------------------|
|                                                                                                            | <b>YTD<br/>30July04</b> | Weight | Weighted<br>Return |
|                                                                                                            | In C\$                  |        | In C\$             |
| <b>Medium Risk Portfolio</b>                                                                               |                         |        |                    |
| <i>Asset Classes</i>                                                                                       |                         |        |                    |
| <i>Canadian Benchmark</i>                                                                                  |                         |        |                    |
| Canadian Equity                                                                                            | 3.3%                    | 60%    | 2.0%               |
| Canadian Investment Grade Bonds                                                                            | 1.6%                    | 40%    | 0.6%               |
|                                                                                                            |                         | 100%   | <b>2.6%</b>        |
| <i>Global Benchmark</i>                                                                                    |                         |        |                    |
| U.S. Equity                                                                                                | 2.4%                    | 30%    | 0.7%               |
| Non-U.S. Equity                                                                                            | 3.3%                    | 30%    | 1.0%               |
| U.S. Bonds                                                                                                 | 3.6%                    | 20%    | 0.7%               |
| Non-U.S. Bonds                                                                                             | -0.2%                   | 20%    | 0.0%               |
|                                                                                                            |                         | 100%   | <b>2.3%</b>        |
| <i>Recommended</i>                                                                                         |                         |        |                    |
| Canadian Equity                                                                                            | 3.3%                    | 25%    | 0.8%               |
| Foreign Equity (US)                                                                                        | 2.4%                    | 20%    | 0.5%               |
| Foreign Equity (EAFE)                                                                                      | 3.8%                    | 15%    | 0.6%               |
| Canadian Investment Grade Bonds                                                                            | 1.6%                    | 20%    | 0.3%               |
| Commodities                                                                                                | 13.4%                   | 20%    | 2.7%               |
|                                                                                                            |                         | 100%   | <b>4.8%</b>        |

| <i>These portfolios seek to maximize return while matching their benchmark's risk (standard deviation)</i> |                         |               |                            |
|------------------------------------------------------------------------------------------------------------|-------------------------|---------------|----------------------------|
|                                                                                                            | <b>YTD<br/>30July04</b> | <b>Weight</b> | <b>Weighted<br/>Return</b> |
|                                                                                                            | In C\$                  |               | In C\$                     |
| <b>Low Risk Portfolio</b>                                                                                  |                         |               |                            |
| <i>Asset Classes</i>                                                                                       |                         |               |                            |
| <i>Canadian Benchmark</i>                                                                                  |                         |               |                            |
| Canadian Equity                                                                                            | 3.3%                    | 20%           | 0.7%                       |
| Canadian Investment Grade Bonds                                                                            | 1.6%                    | 80%           | 1.3%                       |
|                                                                                                            |                         | 100%          | <b>1.9%</b>                |
| <i>Global Benchmark</i>                                                                                    |                         |               |                            |
| Foreign Equity (US)                                                                                        | 2.4%                    | 10%           | 0.2%                       |
| Non-U.S. Equity                                                                                            | 3.3%                    | 10%           | 0.3%                       |
| U.S. Bonds                                                                                                 | 3.6%                    | 40%           | 1.4%                       |
| Non-U.S. Bonds                                                                                             | -0.2%                   | 40%           | -0.1%                      |
|                                                                                                            |                         | 100%          | <b>1.9%</b>                |
| <i>Recommended</i>                                                                                         |                         |               |                            |
| Canadian Equity                                                                                            | 3.3%                    | 20%           | 0.7%                       |
| Foreign Equity (US)                                                                                        | 2.4%                    | 12%           | 0.3%                       |
| Canadian Investment Grade Bonds                                                                            | 1.6%                    | 39%           | 0.6%                       |
| Foreign Equity (EAFE)                                                                                      | 3.8%                    | 9%            | 0.3%                       |
| Commodities                                                                                                | 13.4%                   | 20%           | 2.7%                       |
|                                                                                                            |                         | 100%          | <b>4.6%</b>                |
| <i>Global Bond Index = 50% US\$ plus 50%<br/>Non-US\$ Bonds</i>                                            |                         |               |                            |

| <i>These portfolios seek to minimize risk while matching their benchmark's returns.</i> |                         |        |                    |
|-----------------------------------------------------------------------------------------|-------------------------|--------|--------------------|
|                                                                                         | <b>YTD<br/>30July04</b> | Weight | Weighted<br>Return |
|                                                                                         | In C\$                  |        | In C\$             |
| <b>High Return Portfolio</b>                                                            |                         |        |                    |
| <i>Asset Classes</i>                                                                    |                         |        |                    |
| <i>Canadian Benchmark</i>                                                               |                         |        |                    |
| Canadian Equity                                                                         | 3.3%                    | 80%    | 2.6%               |
| Canadian Investment Grade Bonds                                                         | 1.6%                    | 20%    | 0.3%               |
|                                                                                         |                         | 100%   | <b>2.9%</b>        |
| <i>Global Benchmark</i>                                                                 |                         |        |                    |
| U.S. Equity                                                                             | 2.4%                    | 40%    | 0.9%               |
| Non-U.S. Equity                                                                         | 3.3%                    | 40%    | 1.3%               |
| U.S. Bonds                                                                              | 3.6%                    | 10%    | 0.4%               |
| Non-U.S. Bonds                                                                          | -0.2%                   | 10%    | 0.0%               |
|                                                                                         |                         | 100%   | <b>2.6%</b>        |
| <i>Recommended</i>                                                                      |                         |        |                    |
| Foreign Equity (US)                                                                     | 2.4%                    | 23%    | 0.5%               |
| Foreign Equity (EAFE)                                                                   | 3.8%                    | 18%    | 0.7%               |
| Canadian Investment Grade Bonds                                                         | 1.6%                    | 39%    | 0.6%               |
| Commodities                                                                             | 13.4%                   | 20%    | 2.7%               |
|                                                                                         |                         | 100%   | <b>4.5%</b>        |

| <i>These portfolios seek to minimize risk while matching their benchmark's returns.</i> |                         |               |                            |
|-----------------------------------------------------------------------------------------|-------------------------|---------------|----------------------------|
|                                                                                         | <b>YTD<br/>30July04</b> | <b>Weight</b> | <b>Weighted<br/>Return</b> |
|                                                                                         | In C\$                  |               | In C\$                     |
| <b>Low Return Portfolio</b>                                                             |                         |               |                            |
| <i>Asset Classes</i>                                                                    |                         |               |                            |
| <i>Canadian Benchmark</i>                                                               |                         |               |                            |
| Canadian Equity                                                                         | 3.3%                    | 20%           | 0.7%                       |
| Canadian Investment Grade Bonds                                                         | 1.6%                    | 80%           | 1.3%                       |
|                                                                                         |                         | 100%          | 1.9%                       |
| <i>Global Benchmark</i>                                                                 |                         |               |                            |
| U.S. Equity                                                                             | 2.4%                    | 10%           | 0.2%                       |
| Non-U.S. Equity                                                                         | 3.3%                    | 10%           | 0.3%                       |
| U.S. Bonds                                                                              | 3.6%                    | 40%           | 1.4%                       |
| Non-U.S. Bonds                                                                          | -0.2%                   | 40%           | -0.1%                      |
|                                                                                         |                         | 100%          | 1.9%                       |
| <i>Recommended</i>                                                                      |                         |               |                            |
| Foreign Equity (US)                                                                     | 2.4%                    | 5%            | 0.1%                       |
| Foreign Equity (EAFE)                                                                   | 3.8%                    | 4%            |                            |
| Emerging Mkts Equity                                                                    | -0.9%                   | 2%            | 0.0%                       |
| Canadian Investment Grade Bonds                                                         | 1.6%                    | 55%           | 0.9%                       |
| Global Bonds                                                                            | 1.7%                    | 28%           | 0.5%                       |
| Commodities                                                                             | 13.4%                   | 6%            | 0.8%                       |
|                                                                                         |                         | 100%          | 2.2%                       |
| <i>Global Bond Index = 50% US\$ plus 50%<br/>Non-US\$ Bonds</i>                         |                         |               |                            |

|                                                                                                                                                       |                                |               |                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------|----------------------------|
| <i>These portfolios seek to maximize the probability of achieving at least the target real return over twenty years, at the lowest possible risk.</i> |                                |               |                            |
|                                                                                                                                                       | <b>YTD<br/>30July04</b>        | <b>Weight</b> | <b>Weighted<br/>Return</b> |
|                                                                                                                                                       | In C\$                         |               | In C\$                     |
| <b>7% Target Real Return</b>                                                                                                                          | <i>YTD Returns are Nominal</i> |               |                            |
| <i>Asset Classes</i>                                                                                                                                  |                                |               |                            |
| Canadian Real Return Bonds                                                                                                                            | 11.0%                          | 0%            | 0.0%                       |
| Canadian Investment Grade Bonds                                                                                                                       | 1.6%                           | 18%           | 0.3%                       |
| Global Bonds                                                                                                                                          | 1.7%                           | 27%           | 0.4%                       |
| Commercial Property                                                                                                                                   | -0.5%                          | 0%            | 0.0%                       |
| Commodities                                                                                                                                           | 13.4%                          | 20%           | 2.7%                       |
| Canadian Equity                                                                                                                                       | 3.3%                           | 0%            | 0.0%                       |
| Foreign Equity (USA)                                                                                                                                  | 2.4%                           | 9%            | 0.2%                       |
| Foreign Equity (EAFE)                                                                                                                                 | 3.8%                           | 6%            | 0.2%                       |
| Emerging Equity                                                                                                                                       | -0.9%                          | 20%           | -0.2%                      |
| Hedge Funds                                                                                                                                           | 2.1%                           | 0%            | 0.0%                       |
|                                                                                                                                                       |                                | 100%          | 3.7%                       |
|                                                                                                                                                       | <b>YTD<br/>30July04</b>        | <b>Weight</b> | <b>Weighted<br/>Return</b> |
|                                                                                                                                                       | In C\$                         |               | In C\$                     |
| <b>5% Target Real Return</b>                                                                                                                          | <i>YTD Returns are Nominal</i> |               |                            |
| <i>Asset Classes</i>                                                                                                                                  |                                |               |                            |
| Canadian Real Return Bonds                                                                                                                            | 11.0%                          | 10%           | 1.1%                       |
| Canadian Investment Grade Bonds                                                                                                                       | 1.6%                           | 27%           | 0.4%                       |
| Global Bonds                                                                                                                                          | 1.7%                           | 23%           | 0.4%                       |
| Commercial Property                                                                                                                                   | -0.5%                          | 0%            | 0.0%                       |
| Commodities                                                                                                                                           | 13.4%                          | 13%           | 1.7%                       |
| Canadian Equity                                                                                                                                       | 3.3%                           | 5%            | 0.2%                       |
| Foreign Equity (USA)                                                                                                                                  | 2.4%                           | 7%            | 0.2%                       |
| Foreign Equity (EAFE)                                                                                                                                 | 3.8%                           | 5%            | 0.2%                       |
| Emerging Equity                                                                                                                                       | -0.9%                          | 10%           | -0.1%                      |
| Hedge Funds                                                                                                                                           | 2.1%                           | 0%            | 0.0%                       |
|                                                                                                                                                       |                                | 100%          | 4.1%                       |

|                                 | YTD<br>30July04                | Weight | Weighted<br>Return |
|---------------------------------|--------------------------------|--------|--------------------|
|                                 | In C\$                         |        | In C\$             |
| <b>3% Target Real Return</b>    | <i>YTD Returns are Nominal</i> |        |                    |
| <i>Asset Classes</i>            |                                |        |                    |
| Canadian Real Return Bonds      | 11.0%                          | 30%    | 3.3%               |
| Canadian Investment Grade Bonds | 1.6%                           | 33%    | 0.5%               |
| Global Bonds                    | 1.7%                           | 15%    | 0.2%               |
| Commercial Property             | -0.5%                          | 3%     | 0.0%               |
| Commodities                     | 13.4%                          | 12%    | 1.6%               |
| Canadian Equity                 | 3.3%                           | 0%     | 0.0%               |
| Foreign Equity (USA)            | 2.4%                           | 4%     | 0.1%               |
| Foreign Equity (EAFE)           | 3.8%                           | 3%     | 0.1%               |
| Emerging Equity                 | -0.9%                          | 0%     | 0.0%               |
| Hedge Funds                     | 2.1%                           | 0%     | 0.0%               |
|                                 |                                | 100%   | 5.9%               |

| <i>These portfolios seek to maximize the probability of achieving at least the target real return over twenty years, at the lowest possible risk.</i> |                                | <i>Unlike the other target return portfolios, these allow investment in a hedge fund index.</i> |                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-------------------------------------------------------------------------------------------------|--------------------|
|                                                                                                                                                       | <b>YTD<br/>30July04</b>        | Weight                                                                                          | Weighted<br>Return |
|                                                                                                                                                       | In C\$                         |                                                                                                 | In C\$             |
| <b>7% Target Real Return</b>                                                                                                                          | <i>YTD Returns are Nominal</i> |                                                                                                 |                    |
| <i>Asset Classes</i>                                                                                                                                  |                                |                                                                                                 |                    |
| Canadian Real Return Bonds                                                                                                                            | 11.0%                          | 0%                                                                                              | 0.0%               |
| Canadian Investment Grade Bonds                                                                                                                       | 1.6%                           | 3%                                                                                              | 0.0%               |
| Global Bonds                                                                                                                                          | 1.7%                           | 27%                                                                                             | 0.4%               |
| Commercial Property                                                                                                                                   | -0.5%                          | 0%                                                                                              | 0.0%               |
| Commodities                                                                                                                                           | 13.4%                          | 13%                                                                                             | 1.7%               |
| Canadian Equity                                                                                                                                       | 3.3%                           | 4%                                                                                              | 0.1%               |
| Foreign Equity (USA)                                                                                                                                  | 2.4%                           | 9%                                                                                              | 0.2%               |
| Foreign Equity (EAFE)                                                                                                                                 | 3.8%                           | 6%                                                                                              | 0.2%               |
| Emerging Equity                                                                                                                                       | -0.9%                          | 20%                                                                                             | -0.2%              |
| Hedge Funds                                                                                                                                           | 2.1%                           | 18%                                                                                             | 0.4%               |
|                                                                                                                                                       |                                | 100%                                                                                            | 3.0%               |
|                                                                                                                                                       |                                |                                                                                                 |                    |
|                                                                                                                                                       | <b>YTD<br/>30July04</b>        | Weight                                                                                          | Weighted<br>Return |
|                                                                                                                                                       | In C\$                         |                                                                                                 | In C\$             |
| <b>5% Target Real Return</b>                                                                                                                          | <i>YTD Returns are Nominal</i> |                                                                                                 |                    |
| <i>Asset Classes</i>                                                                                                                                  |                                |                                                                                                 |                    |
| Canadian Real Return Bonds                                                                                                                            | 11.0%                          | 10%                                                                                             | 1.1%               |
| Canadian Investment Grade Bonds                                                                                                                       | 1.6%                           | 7%                                                                                              | 0.1%               |
| Global Bonds                                                                                                                                          | 1.7%                           | 23%                                                                                             | 0.4%               |
| Commercial Property                                                                                                                                   | -0.5%                          | 4%                                                                                              | 0.0%               |
| Commodities                                                                                                                                           | 13.4%                          | 13%                                                                                             | 1.7%               |
| Canadian Equity                                                                                                                                       | 3.3%                           | 13%                                                                                             | 0.4%               |
| Foreign Equity (USA)                                                                                                                                  | 2.4%                           | 7%                                                                                              | 0.2%               |
| Foreign Equity (EAFE)                                                                                                                                 | 3.8%                           | 5%                                                                                              | 0.2%               |
| Emerging Equity                                                                                                                                       | -0.9%                          | 13%                                                                                             | -0.1%              |
| Hedge Funds                                                                                                                                           | 2.1%                           | 5%                                                                                              | 0.1%               |
|                                                                                                                                                       |                                | 100%                                                                                            | 4.1%               |

|                                 | YTD<br>30 July 04              | Weight | Weighted<br>Return |
|---------------------------------|--------------------------------|--------|--------------------|
|                                 | In C\$                         |        | In C\$             |
| <b>3% Target Real Return</b>    | <i>YTD Returns are Nominal</i> |        |                    |
| <i>Asset Classes</i>            |                                |        |                    |
| Canadian Real Return Bonds      | 11.0%                          | 50%    | 5.5%               |
| Canadian Investment Grade Bonds | 1.6%                           | 10%    | 0.2%               |
| Global Bonds                    | 1.7%                           | 15%    | 0.2%               |
| Commercial Property             | -0.5%                          | 0%     | 0.0%               |
| Commodities                     | 13.4%                          | 8%     | 1.1%               |
| Canadian Equity                 | 3.3%                           | 2%     | 0.1%               |
| Foreign Equity (USA)            | 2.4%                           | 4%     | 0.1%               |
| Foreign Equity (EAFE)           | 3.8%                           | 3%     | 0.1%               |
| Emerging Equity                 | -0.9%                          | 2%     | 0.0%               |
| Hedge Funds                     | 2.1%                           | 6%     | 0.1%               |
|                                 |                                | 100%   | 7.4%               |