

# The Index Investor

*Why Pay More for Less?*

## Model Portfolio Update

Before we review the year-to-date performance of our model portfolios, a number of readers have asked that we again provide a short summary of the different approaches we have used to construct them. The first approach we use is basically a "rule of thumb" (or, to use the more formal term, a "heuristic") approach. To construct our benchmark portfolios, we used three "rule of thumb" weightings: a mix of 80% equities and 20% debt (for our high risk/high return portfolios); a mix of 60% equities and 40% debt (for our moderate risk/moderate return portfolios); and a mix of 20% equities and 80% debt (for our low risk/low return portfolios). Using different terminology, somebody else might call these three portfolios aggressive, balanced, and conservative. We used two types of equity and debt to construct these portfolios. For our "domestic benchmarks" we used broad domestic equity and bond market indexes and funds that track them. For our "global benchmarks" we used broad global equity and bond market indexes and funds.

The second approach we used was "mean/variance optimization" or MVO. This approach uses three variables for each asset class (its expected return, standard deviation of returns, and correlation of returns with other asset classes) to construct different combinations of portfolios which maximize return per unit of risk (another way of looking at this is that they minimize risk per unit of return). In other words, for each of these portfolios, there is no way to get more return for the same risk, or less risk for the same level of expected return. For that reason, these portfolios are called "efficient", and the set that comprises all of them is called "the efficient frontier" (because when they are plotted on a graph based on their risk and return, they form a line). We used the MVO approach to form two different sets of portfolios, using a wider range of asset classes than the two that we had used to form our rule of thumb benchmark portfolios. In the first set

of MVO portfolios, our objective was to maximize expected return while taking on no more risk than the domestic benchmark portfolio.

In the second set of MVO portfolios, our objective was to match the domestic benchmark's return while taking on substantially less risk. When it comes to MVO portfolios, we favor this second approach because historically the relative risk rankings of different asset classes has been nearly twice as stable as their relative return rankings. As a result, the second approach should generate model portfolios which outperform their benchmarks more often than the first approach (though when the first approach outperforms, it will probably do so by a larger margin).

MVO, however, has some significant limitations. While it is a good approach to single year portfolio optimization problems, in multiyear settings it fails to adequately take into account the fact that poor portfolio performance in early years can substantially reduce the probability of achieving long term goals. It also fails to adequately account for most people's intuitive understanding of risk: what's important isn't standard deviation (the dispersion of annual returns around their mean), but rather the chance that I will fall short of my long-term goals. In response to these concerns, we have employed a third approach called dynamic programming, which is essentially a method for optimization in the face of uncertainty (for more details, see our November, 2001 issue). We used the DP approach to form our four "target return" model portfolios, whose objective is to maximize the probability of achieving at least a minimum compound annual rate of return over a ten year period, while minimizing the risk taken on. The DP approach usually leads to different conclusions than the MVO approach -- in particular, it usually uses a higher percentage of fixed income and real estate so as to minimize the downside risk in any year.

So, whatever your preference in terms of asset allocation approaches, we think The Index Investor has something for you!

Now, on to our year-to-date performance review.

As noted above, the objective of our first set of MVO portfolios is to maximize return while matching their respective benchmark's risk. Through the end of March, the domestic 80% equity/20% debt "rule of thumb" benchmark portfolio has returned 0.1%, while the global 80/20 benchmark has returned 0.4%. In contrast, our model portfolio has returned 2.5%, largely due to the strong returns on emerging markets equity and commodities.

The 60/40 domestic benchmark returned just under 0.1% through March, while the global 60/40 benchmark was at breakeven (0.0%). Our model portfolio has returned 2.4%.

The last of the portfolios in this first set is benchmarked against a mix of 20% equity and 80% debt. In this case, the domestic benchmark is at breakeven year-to-date, while the global benchmark is down (1.0%) and our model portfolio is up 1.3%.

The objective of our second set of MVO portfolios is to match their respective benchmark's returns while taking on less risk. As noted above, the 80/20 domestic benchmark has returned 0.1% year-to-date, and the global 80/20 has returned 0.4%. In contrast, our model portfolio is up 2.3%.

The 60/40 domestic benchmark returned just under 0.1% through March, while the global 60/40 benchmark was at breakeven (0.0%). Our model portfolio matched against this domestic benchmark has returned 1.3%.

Finally, the 20/80 domestic benchmark has returned 0.0% year-to-date, while the global 20/80 benchmark is down (1.0%). In contrast, our model portfolio is up 1.5% through the end of March.

The objective of our last set of model DP portfolios is to maximize the probability of achieving at least a minimum target level of compound annual return over ten years, while taking on as little risk as possible. Year-to-date, our 12% target return portfolio is

up 2.8%, our 10% target return portfolio is up 2.3%, our 8% target return portfolio is up 2.3%, and our 6% target return portfolio is up 2.2%.

## **Asset Class Review**

We've been asked by a number of readers to provide a "plain English" guide to different asset classes and why diversification is important. Here it is.

An asset class is a group of assets that have more in common with each other than they do with assets in other asset classes. At the broadest level, we can think of at least four separate asset classes.

### **Debt**

The first asset class goes by many names, including bonds, fixed income, and debt. All of these terms refer to the same basic underlying transaction: When you make a loan to an organization, you receive in return a written promise from the organization to repay the amount originally loaned (called the principal), plus interest, by some date in the future. That written promise to pay is called a debt. If the interest rate on the debt remains the same over the full life of the loan, it is called a "fixed income" obligation. And if that obligation is one of many with exactly the same terms, a maturity of more than five years (that is, full repayment of the obligation takes place five years or more from the date the loan is made), and it can be easily sold before its maturity date, it is usually called a bond.

People who invest in these "fixed income" assets take on up to three different types of risk. The first of these is the risk that the organization to which you loaned the funds won't pay you back. This is called "default risk." The only organizations whose fixed income obligations are free of default risk are governments, but only when they control the printing of the currency in which the fixed income assets are denominated. For

example, a city government does not control the printing of money. Therefore, it is possible for a city to default on its debt. Similarly, while a country (Argentina, for example), controls the printing of money in its own currency, it does not control the printing of U.S. dollars. So it is possible for Argentina to default on debt that it has issued that is denominated in U.S. dollars. On the other hand, the U.S. government controls the printing of U.S. dollars. So it is theoretically impossible for the U.S. government to default on the U.S. dollar denominated debt it has issued.

More broadly, the general rule of thumb is that the higher its risk of default, the higher the interest rate an organization needs to pay to convince people to invest in its debt (that is, to lend it money). Given this, for any given maturity, the lowest interest rates should be paid by governments in those cases where they control the printing of the currency in which the debt is denominated.

The second type of risk taken on by fixed income investors is interest rate risk. Consider the situation in which you invested \$1,000 last year in a ten year bond that pays an annual interest rate of five percent (also called the "coupon rate", which refers to the days when to claim your interest payment, you had to clip a coupon off the bond). If this year rates on similar obligations have risen to seven percent (because of an increase in inflation), you are missing out on the difference (in this case, two percent per year, for the remaining nine years until the bond matures). Now suppose you need the money right away, and so you try to sell the bond. In order to compensate for the foregone two percent per year, the person buying the bond from you will logically offer you less than \$1,000 for it. On the other hand, if interest rates had declined to four percent, then the bond would be worth more than the \$1,000 you originally paid for it. As this example shows, interest rate risk is the risk that the value of the bond you own will change because of a change in market interest rates. Three other points about interest rate risk are important. Potential interest rate risk increases with the maturity of the bond (because you would be missing out for a longer period of time if interest rates rose, a larger reduction in the market value of the bond would be required to compensate). Second, some types of debt don't have interest rate risk (for example, because they pay a

"floating" interest rate that is regularly adjusted as market rates change). Third, if you hold the bond to maturity, you still get back the face amount (that is, the original amount of your loan), regardless of how the bond's market price goes up and down in the intervening years.

The third type of risk taken on by some fixed income investors is currency or exchange rate risk. This occurs when you buy bonds that are denominated in a currency that is different from the one you normally use. For example, an investor located in the United States who buys a bond denominated in Australian Dollars runs the risk that, at maturity, he or she will receive back less than the amount of their original loan because the Australian dollar is worth less relative to the U.S. dollar. On the other hand, if the Australian dollar is worth more than it was at the time the bond was purchased, then our investor will earn an additional profit. More broadly, if the bond in question is a fixed rate bond issued by an Australian corporation, then our investor will have taken on all three types of risk that we have discussed: default, interest rate, and currency.

## **Equity**

The second major type of asset you can purchase is an ownership share in an organization, which is often called equity or stock. Unlike debt, there is no requirement on the part of the organization in question to make any payment to you. As an owner, your interests are represented by the organization's Board of Directors. Any payments to you and other shareholders (known as "dividends") are at their discretion, based on their perception of the organization's best interests. The funds from which dividend payments can be made are those that remain after all other parties have been paid, including suppliers, workers, debtholders, and governments (in the form of taxes). In other words, shareholders are entitled to the organization's "residual income". However, rather than making cash payments to shareholders, the Board may decide that the residual income should be re-invested into the organization to finance its future growth. Funds so reinvested are known as "retained earnings" and result in an increase in the "book value" of the shares. For example, assume a company sells 100 shares for \$100 each at the start

of the year. Their initial book value is \$100 per share. At the end of the year, \$1,000 in residual income is added to retained earnings. Book value is now \$110 per share.

A person's total profit from an investment in equities therefore comes in two forms. First, there are the dividends that are received from time to time from the organization itself. Second, there is the difference between what the person originally paid for the shares, and what someone else will pay for them if they are sold at a later date. This difference is known as capital appreciation, or change in share price.

This raises the interesting question of how equity shares are valued. This is a very complicated subject on which many, many articles continue to be written. So our explanation will be, by necessity, a simplification. One investor wishing to determine the value of a share might start by trying to estimate the size of the residual income that the company in question will generate in the years ahead. As we have described, future residual income will depend on a number of factors: (a) the speed with which sales revenue grows; (b) any change in the company's operating profit margin (that is, the amount of profit earned per dollar of sales, after payments to suppliers and workers); (c) any change in its interest payments to debtholders; and (d) any change in its tax payments to governments. Changes in any or all of these factors will affect the value of the shares, and represent risks that are being taken on by the shareholder. Some of these (e.g., an increase in interest rates or taxes, or a broad economic downturn) will affect all companies, and are called systemic risks. Others are unique to a company or industry (e.g., changes in profit margins), and are called specific risks.

Having made an estimate of these future residual income amounts, the investor then has to determine how much they are worth today. This largely depends on interest rates. If current rates are high, the opportunity cost of not having the money to invest today (that is, the cost of waiting to receive future payments of residual income (that is, dividends) from the company is also high, and these future payments are therefore worth less than they would be if interest rates were low. In other words, a rise in interest rates tends to reduce the value of equity shares, holding all other variables unchanged.

The other factor that determines the current value (also known as the present value) of those future payments is the additional amount that investors expect to earn in exchange for investing in a company's shares instead of its debt (remember, debt holders get paid before equity holders do, and take on less risk). This additional amount is called the "equity risk premium". Many papers have been written that try to estimate the size of this premium; at best, they conclude that it moves around a lot, and is usually between three to seven percent. The equity risk premium is added to the current interest rate to determine the actual "discount rate" that is used to convert future residual income into a present value (that is, to convert future dollars into today's dollars). Given this, the value of a company's shares may go up and down not only because of changes in an investor's estimate of its future residual income, and because of change in interest rates, but also because of changes in how risky people perceive its operations to be.

Finally, if the shares in question are issued by a foreign company, and their price is set in a foreign currency, then just like our bondholder in the previous example, our shareholder will also be taking on exchange rate, or currency risk.

### **Real Estate**

As an asset class, real estate is unique in that it has characteristics that are similar to both debt and equity. Broadly speaking, real estate can be divided into two areas: commercial and residential. Commercial real estate includes properties such as hotels, malls, warehouses, office buildings and industrial parks. A collection of a specific type of property is typically owned by a specialized organization, which in turn finances them with a mix of debt and equity shares. Like debt, investments in real estate equity shares typically generate a stream of payments that are relatively predictable. This is due to the fact that leases are generally written to cover more than one year at known rents, and also that maintenance and debt service are also quite predictable. As with coupon payments on a bond, the value of these future lease payments is affected by changes in current interest rates -- if they go up, the present value of future lease payments goes down.



On the other hand, unlike debt, commercial real estate assets have (like equity) more potential to appreciate in value. For example, if supply in an area is limited, and demand for space is growing, rents can be raised when leases come up for renewal. Similarly, long term mortgages that finance the real estate can be refinanced when rates drop, which increases the residual income available to investors.

In terms of the risks being taken on by an investor in commercial real estate, they include general economic risks, company specific risks (e.g., a glut of new hotel construction in the specific markets in which a company operates), interest rate risk, and, if the real estate shares in question are issued by a foreign company (and their price is set in a foreign currency), currency risk.

Residential real estate is a bit different. For most people, it consists of their own principal residence, and perhaps a vacation home. As such, they generally produce little or no current cash income (though they do produce significant current economic benefits, as described in our April, 2001 newsletter). The risks being taken on are usually much more location specific than in the case of commercial real estate (e.g., a downturn in the local economy, changes in the local town, or even on the street on which you live can all affect the value of your house). You are also taking on interest rate risk, as a rise in rates will increase the cost of a mortgage and generally reduce the price that people are willing to pay for your house. Finally, more so than other assets, you are taking on liquidity risk, or the risk that you won't be able to sell the house in a short time without deeply discounting its price. Because financial markets are much more similar to each other than are houses and commercial properties, it is easier to find buyers and sellers in a short period of time -- for this reason, financial markets are said to be more "liquid" than real estate markets.

### **Commodities**

Commodities are neither financial nor real estate assets; instead, they are the basic raw materials used to produce the goods we consume and the services we use. Commodities

include fibers, grains, metals, and energy. Commodities do not produce current income; rather, you buy them in the expectation that their price will go up by the time you sell them. The way most investors purchase commodities is via specialized funds that invest in them, either directly or via financial instruments whose value is tied to the commodities themselves. Investors in commodities are taking on not only broad economic risk (commodity prices generally rise when the economy is strong, and fall when it weakens), but also commodity specific risk (e.g., in oil, the risk that OPEC members will cheat on their quotas, causing excess supply and price declines), and, in some cases, currency risk too.

### **Why Diversification Is Important**

Why should you diversify your investments across asset classes? As we have said in the past (see our November, 2001 newsletter), the reason you should invest in different asset classes is to reduce the overall riskiness of your portfolio. Diversification reduces risk because the annual returns on different asset classes do not go up and down together. The way we measure the extent to which the annual returns on two different asset classes go up and down together is called the "correlation statistic", which has a value of between (-1.0) and 1.0. When the correlation between two asset classes is positive, their returns tend to move together in the same direction; when it reaches 1.0 they are moving exactly in parallel. When the correlation is negative, they tend to move together, but in opposite directions, and when it is close to zero, there is no relationship between their returns. The key point is this: by investing in a mix of asset classes, you can improve your trade-off between return and risk. Compared to investing in just one asset class, you can usually either increase your expected return while taking on no more risk, or have the same level of expected returns while taking on less risk.

### **Why Indexing Is Important**

The same arguments in favor of diversification across asset classes also hold true within each asset class. For example, say you've decided to invest a portion of your portfolio in

equities. How do you do this? Do you just invest in a couple of funds, and perhaps the shares of the company you work for? Once again, adequate diversification is the key to reducing risk. By investing in a wider mix of assets, you can improve your risk/return trade-off, either earning more return for the same risk, or taking on less risk for the same return. And the lowest cost way to achieve this mix is via the use of index investment products, such as mutual and exchange traded funds. For example, if you invest \$50,000 in an index fund that charges you .25% (that's one quarter of one percent) per year in expenses, after twenty years you'll have \$14,000 more than you would if you had invested in an actively managed mutual fund that charged expenses of 1.50% per year. That difference equals 28% of your original investment -- a substantial amount. In short, if you're not using index funds, you're probably paying too much for too little in the way of risk reduction and expected performance.

### **Asset Class Diversification at The Index Investor**

As we've just described, asset classes are indeed very important. However, the term itself tends to be used in a variety of ways. The net result is that while most people have heard the term, for too many it remains a source of confusion. For example, one company will call "U.S. small cap value equities" an "asset class", while another will call "international bonds" an asset class. As we've said, the ability to reduce your portfolio's risk through diversification is the reason asset classes are important. As such, at The Index Investor, we have defined the asset classes we use so as to maximize this diversification benefit. More specifically, we have said that in order for us to consider a group of assets an "asset class", the returns of the group can have a correlation that is no higher than .65 with the returns of other asset classes. Setting the maximum correlation this low is what maximizes the diversification benefit in our model portfolios.

As a result, we tend to use a relatively small number of asset classes in our model portfolios. For example, in the case of the U.S. dollar portfolios, we use ten of them: U.S. equities; European equities; Pacific equities; Emerging Market equities; domestic high grade bonds (that is, bonds with no or low default risk); domestic high yield bonds

(bonds with higher default risk, and higher expected returns); domestic inflation protected bonds (essentially bonds with no default or interest rate risk); non-dollar denominated bonds (bonds with currency risk); commercial real estate; and commodities. To be sure, there are different tilts one can take within each of these asset classes (e.g., you could overweight small cap value shares within the U.S. equities asset class). However, when it comes to ensuring sufficient diversification across asset classes, we have found that using a smaller number of more broadly defined classes with lower correlations produces better risk/return tradeoffs.

## Product and Strategy Notes

- Last month marked the beginning of the after tax reporting of mutual fund returns that was mandated by the SEC back in January, 2001. The SEC's rulemaking noted that in 1999, U.S. mutual funds had distributed \$238 billion in capital gains and \$159 billion in taxable dividends to their shareholders, and that the average fund's after tax return was approximately 2.5% lower than its reported pre-tax return. As a general rule, index funds are usually much more tax efficient than actively managed funds because they trade less often. Unfortunately, due to industry pressure, after-tax performance will only be reported in a fund's prospectus, and not in its advertising and sales materials. Still, it's a start, and a big move in the right direction.
- Active Management Watch: Did you catch the news item where UBS Paine Webber admitted to firing the broker who had the temerity to buck the party line and back in August advised his clients at Enron to sell the company shares they held in their 401(k) plans? Apparently, PW had an exclusive arrangement with Enron to help that firm's employees deal with their stock options and other deferred benefits. So when Enron took a dislike to the broker's recommendation, PW moved quickly to get rid of him. Thus far, however, PW stands by its action. As they stated in a letter they sent to the U.S. Congress to explain the incident, "Any financial adviser who sends an

email in the middle of the night to dozens of firm clients urging them to take an action contrary to [the firm's] research recommendation...would be treated the same."

- Now consider the remarks made by Alan Greenspan (yes, that Alan Greenspan) in a speech at New York University on March 26<sup>th</sup>: "Apart from a relatively few large institutional investors, not many existing or potential shareholders have the research capability to analyze corporate reports and thus to judge the investment value of a corporation. This vitally important service has become dominated by firms in the business of underwriting and selling securities. But, as we can see from recent history, long-term earnings forecasts of brokerage-based security analysts, on average, have been persistently overly optimistic...Perhaps the last sixteen years, for which systematic data have been available, are an historical aberration. But the persistence of the bias year after year suggests that it more likely results, at least in part, from the proclivity of firms that sell securities to retain and promote analysts with an optimistic inclination. Moreover, the bias apparently has been especially large when the brokerage firm issuing the forecast also serves as the underwriter for the company's securities." Doesn't indexing look better all the time?
- Of course, indexing has had its critics. One of the most persistent criticisms has been that the popularity of indexing in effect created its own success, as inflows into index funds helped drive up the prices of the securities that made up the index (and thereby widened the gap between the index and the average active manager's performance). Unfortunately (for the critics, at least), recent research by professor Burton Malkiel. (author of A Random Walk Down Wall Street) has put this notion to rest. Rather than inflows into index funds, he found that the gap between index fund and active manager performance could be "fully explained by the extra management and transaction costs involved in active management." Score another one for the Jedi Knights...
- Last but not least, Standard and Poor's last week announced that they will soon be launching an investable hedge fund index product. We covered hedge funds last year

in our March, 2001 issue, and will be doing so again next month. In the meantime, suffice to say that hedge fund assets have been growing quickly (they now total around \$500 billion), and many hedge funds have managed to generate returns that have a low correlation with other major asset classes. As a result, this new index could be an attractive addition to our model portfolios. We'll have more for you next month on this.

## **Why Don't More People Use Index Funds?**

Here at The Index Investor, we are strongly committed to the twin disciplines of adequate diversification across and within asset classes, its implementation through low-cost index funds. Each month we try to present more evidence in support of these views, and, on those rare occasions when it shows up, contrary evidence as well. Over time, we believe that the weight of evidence that has been accumulated strongly supports our basic views.

Unfortunately, convincing though it may be, that body of evidence has to be set against a still very large and thriving active investment management industry. While we don't dispute the statistical probability that some of these active managers indeed possess a combination of superior information and analytical models that enable them to consistently earn "above the benchmark" returns, we very strongly believe that the number of such managers is well below the total number of active fund managers. Logically, this compels us to ask why more people aren't using index funds.

We have thought a great deal about this subject. When you consider the financial consequences of people having poorly diversified portfolios and paying too much for active management, one quickly concludes that this is a critical issue that too few people have directly addressed. Just think of the amount of resources that will NOT be available to finance people's retirements as a result of their poor investment decisions, and the reduced quality of life that will result. On the one hand, its depressing; on the other, it motivates you to try to change things...

So, back to our question. Why don't more people adequately diversify their portfolios, and invest them in index funds? Our answers to these questions fall into three broad categories, which we term "rational explanations", "information and herding" and "irrational causes".

### **Rational Explanations**

The first rational explanation is that given the size and timing of their financial goals, and their current and expected savings, many investors have no other choice but to "swing for the fences". In other words, their only hope of achieving the goals they have set is to earn the kind of exceptionally high returns that can only come from concentrating one's investments in a limited number of securities in the hope of earning very high returns on them over a relatively short period of time. In support of this potential explanation, one can find a number of studies that have concluded that the majority of Americans have not saved enough money to achieve the standard of living they aspire to in their retirement years. Other studies have shown how many American investors' portfolios are relatively undiversified. Set against this evidence, however, are an equally impressive list of studies that conclude that many Americans have not thought systematically about their retirement savings needs and how to satisfy them. Absent such consideration, one cannot logically decide to concentrate one's investments in a limited number of securities if one's goal is to adequately finance one's retirement income needs.

This leads us to our second rational explanation for the investor behavior we observe. Could it be that active investment management provides people with some additional non-financial benefits that more than make up for the apparent financial disadvantages of this approach (compared to indexing)? When we thought more along these lines, we developed a hypothesis that the non-financial benefit in question might be the "social capital" or "reputational benefits" that accrue to people who others perceive to know a lot about and/or "be successful at investing". We have not been able to find any studies that have directly tested this hypothesis; however, we have found some work that has

supported similar hypotheses in other areas. As a result, we believe that this is definitely an area that merits more in-depth study.

### **Information and Herding**

Perhaps the simplest explanation for the continued popularity of active investment management is that many investors have not yet heard and/or understood the arguments in favor of diversification and indexing. To be sure, there are strong institutional incentives to limit the reach of this argument -- the number of people employed in, and the public relations, advertising, and lobbying power of the active management industry far outweigh the resources deployed by companies offering index products (many of which also offer actively managed products). Moreover, active managers are probably more enthusiastic consumers of financial journalism and information products, which would tend, at the margin, to discourage communication of the diversification and indexing message through these channels as well. Again, there is no published research we could find that tested this hypothesis; however it too seems like one well worth examining.

Herding is the tendency for people to discount their own opinions, and instead follow the example set by people they believe to be better informed than themselves. The rush into internet and other technology stocks provides ample evidence that this is a phenomenon that one shouldn't take lightly. If these leaders were seen to be strong advocates of diversification and indexing, it would probably provide a strong inducement for others to follow them in this direction. Still, this begs two questions: who these leaders are, and why they haven't used indexing more extensively (or, perhaps, admitted that they do).

### **Irrational Causes**

The first irrational cause of the behavior we observe may be that investors (and especially the those whose actions are copied by others) are simply overconfident about their ability to pick stocks and/or funds that will "beat the benchmark." Psychological research has



shown that overconfidence is widespread (for example, in many areas substantial majorities of the population believe they are better than average). Moreover, these studies have shown that overconfidence is exacerbated by information overload, which clearly characterizes much of the investment management world today.

Our second explanation in this category is more complex, and involves a number of related phenomena that have been well documented by psychological researchers. The first phenomenon is called "prospect theory", which is based on the observation that people's risk appetite changes depending on their current position relative to some reference point. If they are below the reference point, they become risk seekers, in order to make up the lost ground; once they are above it, they become risk averse, to avoid falling below it. If many people saw themselves as being below some reference point, then this could explain their "risk seeking" behavior in choosing low levels of diversification for their portfolios, and an active management approach. What then, could give rise to this widespread feeling of being "below the reference point"?

One part of our theory has to do with the nature of the reference point. Logically, the reference point should be either the compound annual return one needs to earn, or the amount one needs to have saved in order to fund one's liabilities. But, as we all know, in many aspects of our lives logic takes a back seat to emotion. Given this, it is easy to see how at least two different reference points could emerge. The first is the best investment performance achieved by one's friends. As more and more consumer research has shown, people increasingly don't want to be "just average." The disappearance of traditional "mass market" products and stores, and their replacement by "mass luxury" items and outlets is testimony to the power of this trend. Given this, it is easy to see how one could feel frustrated ("below the reference point" in terms of prospect theory) if the performance of one's portfolio lagged behind that of one or more of one's peers (of course it also helps that the only people doing the bragging are usually the ones who beat the index. Those that didn't have a tendency to wander off toward the bar during these conversations...).

This phenomenon is no doubt compounded by something called "hindsight bias", which is a normal human tendency to believe when looking at history that the events that occurred were more likely than previous foresight had estimated them to be. In other words, looking forward, you may estimate that there is a 50% chance that U.S. bonds will be the best performing asset class next year, a 25% chance that it will be U.S. stocks, a 20% chance that it will be foreign stocks, and a 5% chance that it will be foreign bonds. However, if it turns out that in fact it was foreign stocks that performed the best, when asked to recreate from memory your probability estimates, it is almost certain that foreign stocks will be higher than your original 20% estimate. In short, hindsight bias probably adds to our frustration at not having matched our best performing peer's investment results, and so tempts us toward riskier courses of action in the future.

Further adding to the strength of these forces is our tendency to evaluate our portfolio's performance annually, and to do so on an "asset by asset" basis. In a well diversified indexed portfolio, in any given year, some asset classes will have strong performances, and some will have weak performances. This generates the pattern of steady returns that leads over time to truly outstanding long-term performance. However, and this is a big however, in any given year luck alone almost guarantees (in a big enough peer group) that somebody with a less diversified portfolio (perhaps composed of individual stocks or actively managed funds) will outperform our diversified indexer. People simply don't talk about the compound portfolio returns they've earned over the past five or ten years. They talk about what their portfolio earned last year. Actually, it's even more likely that they talk about what the best asset in their portfolio earned last year. And, unless he or she is a zen master, this will naturally cause our good diversified indexer to feel at least a little bit of frustration. And tempt them, perhaps, to go over to the dark side of the force, and either (a) sell out of an asset class whose recent performance has been poor, and/or (b) invest in one whose recent performance has been relatively good (even though there is next to no evidence that past performance predicts future performance). In short, it is easy to see how social interactions can tempt someone to abandon a well-diversified indexed portfolio.

So what can be done to increase the number of people who hold and stick with the well-diversified indexed portfolios that have the highest probability of helping them to achieve their long term financial goals?

I suppose we could start by encouraging more reading of the story of the tortoise and the hare to young investors. Beyond that, other educational efforts designed to encourage diversification and indexing certainly seem to be critical. In particular, they should focus on the importance of having the right goal: not beating the benchmark this year (or your cousin Ralph), but rather adequately funding your own future liabilities. More effort also should be devoted to helping people to understand just how difficult active management actually is, and how few active managers consistently beat the benchmark year after year. Finally, we need to keep in mind that many of the obstacles we face have their roots deep in human nature, and will therefore take years to overcome. Still, considering how far indexing has come over the past thirty years, I'd say we're doing pretty well. We just need to keep it up...