

The Index Investor

Invest Wisely...Get an Impartial Second Opinion.

This Month's Issue: Key Points

This month's letter to the editor asks why we haven't included NASDAQ-100 funds in our index products directory. Our answer is that like similar "index" products, this one is so narrowly based that it comes very close to de facto active management. Our first feature article reviews the pros and cons of tilting your equity allocation toward mid-cap stocks. We find that there is a solid theoretical basis for expecting this to produce higher returns, but with higher risk than the broad market index. We also find that the data support this. However, not all mid-cap indexes are created alike. In particular, the Russell, MSCI, and especially Standard and Poor's products seem to deliver better performance than those from Dow Jones and Morningstar. However, we also note that all these indexes have limited data available, so our conclusions are only tentative. A final consideration for mid-cap investors is the relative lack of mid-cap index funds available, all over the world.

Our next feature this month summarizes the findings in the report of the UK Pensions Commission that was released earlier this month. On the assumption that a decline in retirees' incomes is not an acceptable policy outcome, it provides a very realistic assessment of the options available to the government. It finds that the solution to the problem of how to ensure adequate future incomes for retirees must involve some combination of (a) an increase in average retirement age; (b) increases savings, including the possible introduction of compulsory savings, along the lines of the plan now used in Australia; and/or (c) increases in taxes to fund an improved state pension benefit. This report will set the tone for similar debates now underway in many countries around the world, and deserves to be widely read.

This Month's Letter to the Editor

Why don't you include NASDAQ 100 index funds in your directory?

Our model portfolios are based on broadly defined asset classes (e.g., U.S. equity, commodities, etc.). This has two advantages. First, it captures the economic distinctions between "asset classes": they represent either different types of claim on the same underlying productive assets (e.g., U.S. investment grade bonds and U.S. equities), or claims on different productive assets (e.g., U.S. and Emerging Market equities). Second, from a quantitative point of view, using broadly defined asset classes ensures low correlations of returns between them. This makes for much more stable optimization solutions. With high correlations (e.g., as one would find if one treated large cap and small cap U.S. equities as separate asset classes), a small change in expected returns can result in substantial changes in recommended portfolio weights.

However, we also recognize that in implementing our model portfolio recommendations, a person might want to employ "tilts" within a broad asset class. Let's leave aside the arguments for and against the use of actively managed investments to implement these tilts, and assume that index products are being used. If one assumes that financial markets are basically efficient over the long term (the short term is another matter, as we have repeatedly noted in our writing), then such a tilt might reasonably be expected to produce either higher returns but with higher risk than the broad market index, or lower returns with lower risk. What one should not expect is for a tilt to result in higher returns and lower risk than the market index. Reaching this conclusion would require two further assumptions: a class of investors that is consistently willing to accept lower returns and higher risks, and obstacles to arbitrage by informed investors that would quickly eliminate any potential gains from taking advantage of the former. Over the long-term, the joint probability of both assumptions being true strikes us as quite low. This is not to deny that over some periods, in retrospect, some tilts have, for whatever reason (and one can argue about these), produced higher returns and lower risk than the broad index. All we are saying is that it seems unreasonable to assume in advance that this would be the outcome.

This leads us to the question of what type of tilt it makes sense to take. Logically, any tilt should be based on some theory of why it will produce a different return/risk outcome than the broad market index. One of these theories might be that investing in technology oriented stocks should produce higher returns (albeit with higher risk) than the broad market index. The next question is how to efficiently implement this theory.

And here we come to the issue of QQQ and other NASDAQ-100 products. To begin with, on our site we have never claimed that our "US Index Funds and ETFs" directory is exhaustive. We have always noted that our objective is to identify funds with reasonable expense levels that can be used to implement our asset allocations and tilts within them. We have also consistently noted that we deliberately exclude three kinds of index products (be they mutual funds or ETFs). First, those that seem over-priced (e.g., some of the many competing S&P 500 index funds). Second, those that are, in effect, actively managed products in index clothing (e.g., see our June, 2004 article on "active indexing"). And third, those that are so narrowly based that they are also effectively actively managed products. Our problem with QQQ is that it seems to fit into this last category, compared to, for example, the Dow Jones iShares Sector Funds. While QQQ includes the top 100 companies by market cap on the NASDAQ, the latter's Technology and Healthcare ETFs are much more broadly based (within their respective sectors), and include companies that trade on the NYSE, AMEX, and NASDAQ, (the sector funds are subsets of the Dow Jones Total Market Index that covers 95% of the total capitalization of these markets).

NASDAQ 100 products aren't the only ones that we find too narrowly based to be included in our index product directory. The same is true of funds like the Goldman Sachs Networking (IGN), Semiconductor (IGW) and Software (IGV), the NYSE 100 (NY), and the NASDAQ Biotech (IBB) ETFs.

Global Asset Class Returns

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

Equity and Bond Market Valuation Update

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

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

*High Productivity Growth Scenario..

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

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

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

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

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

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

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

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

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

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

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

Annual Exchange Rate Changes Implied by Bond Market Yields

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

Sector and Style Rotation Watch

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

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

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

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

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

Should You Tilt Toward Mid-Cap Equities?

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Mathematically, in any given month, alpha is equal to the difference between the return on the midcap index and the return on the broad market index. Some months it is positive, and some months it is negative. The alpha for the overall tilt strategy is equal to the average alpha for the period being study (in this case, annualized from monthly data). The

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

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

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

The other two approaches are more mechanical, and build their indexes using clearly defined sets of rules. One of these starts by ranking companies according to some factor (e.g., their market capitalization), and then grouping a fixed number of companies (counting from the top down) into one index, and another fixed number of companies into another. This is the approach used to construct the Russell MidCap 800 Index. It starts with the top 3,000 public companies in the United States equity markets (including the NYSE, AMEX, and NASDAQ). The top 200 companies are included in the large cap index, the next 800

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

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

The following table summarizes the differences between different midcap indexes:

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

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

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

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

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

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

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

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

Finally, we need to look at midcap index investment products. In the United States, there are far fewer vehicles that track midcap, as compared to small and large cap indexes. The

following table summarizes this limited product offering. Note that it excludes funds that take growth and value tilts within the midcap segment.

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

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

To conclude, there is a good theoretical basis for expecting an investment in a midcap index to produce higher returns, but with higher risk than an investment in the broad equity market index. However, a midcap fund's returns and risks should be lower than those delivered by small cap products. Our analysis of the limited historical data available found that it is in line with this theory. When we applied the analytical technique typically used to measure the performance of active investment managers, we found that a tilt toward midcaps produced reasonably attractive (but not statistically significant) Information Ratios. We noted that taking on more extreme event risk than the broad market index apparently contributed to this result. We also found that the methodology used to construct the underlying midcap

index appears to have a significant impact on these results, with the more active methodology used by the S&P 400 producing somewhat better returns. Last, but not least, we found that while they are relatively few in number today (in most markets of the world), the range of midcap index tracker products seems likely to grow over the next few years as more investors seek low cost ways to take this tilt in their portfolios.

How Big is The Global Market Portfolio?

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

Asset Class	Estimated Value in US\$ Billions	Percent of Total Global Market Portfolio	Comments
Public Bonds	\$ 20,242	15%	• From IMF Global Financial Stability Report
Commercial Property	\$ 5,000	4%	• Equity only. Average of estimates from multiple sources, includes both directly owned and securitized (hence there is some double counting with public equity)
Public Equity	\$ 31,202	24%	• From IMF Global Financial Stability Report
Commodities	\$ 600	1%	• \$128 gross market value of commodity derivatives (Global Fin. Stability Report) • \$360 private investor gold holdings (World Gold Council) • \$112 estimated value of other directly owned commodities, including timber, silver, etc.

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

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

The UK Pensions Commission Report

In our May, 2004 issue, we wrote a long article on the potential impact of global aging on asset class returns, and outlined the policy options available to governments to manage the impact of this trend. For over a year, a special commission in the United Kingdom (www.pensionscommission.org.uk) has also been studying this issue. In October, it published its report. We have yet to read anything that more clearly lays out the challenges and trade-offs faced by governments trying to decide how to adjust their pensions systems as their populations age. However, at over five hundred pages in length, it is a rather long read! We therefore thought our readers would appreciate a summary of this very important report.

The Pensions Commission begins by making an important point about how we arrived at the present situation: "The problems we face today are not the product of thoughtless policies, rather they are the product of multiple policy initiatives by successive governments, each of which appeared to make sense at the time, but which have often produced unintended consequences and which together have created a bewildering complexity which is in itself a barrier to effectiveness." In the following chapters, the report unravels that complexity, and lays out the fundamental choices the U.K. government faces in trying to improve the current situation.

The first chapter of the report lays out the demographic scenario with which we are all familiar. It notes how the combination of increasing life expectancy and declining birth rates have increased the "dependency ratio", or the number of retired people relative to the working population. It then lays out the four options that are available to deal with this change. First, if the current amount of resources (from all sources) consumed by retirees remained constant, they would become relatively poorer than they are now. The report notes that this is widely viewed as the least attractive solution to the problem. Hence, a choice must be made between some combination of three alternatives: increased taxes, increased savings, or an increase in the average retirement age.

With respect to the last option, the report notes that "healthy aging for many people makes [an increase in the retirement age] possible." However, it also cautions that "the increase [in average retirement age] needed to make this a sufficient solution on its own looks very large." It also notes that "significant inequities in life expectancy and health across socioeconomic groups may limit the scope for an across the board increase [in the retirement age]." Given this, a solution to the aging problem will also require some combination of increased taxes and increased saving.

The report then assesses the implication of making no changes in the current national pensions and savings system. It concludes that "given present trends, many people will face inadequate pension savings in retirement, unless they have large non-pension assets or are intending to retire much later than current retirees." It also notes that "the burden of this adjustment will be very unequally distributed." For example, there is a growing disparity between the declining number of employees who have access to relatively well-funded

defined benefit pension plans and those who are forced to rely on defined contribution pension plans.

This is a very significant change. In a defined contribution pension plan, an employer promises to provide a pension annuity equal to a fixed percentage of an employee's final salary. To fund this liability, the employer makes contributions to the company's pension plan (or to a group annuity policy purchased from an insurance company), and takes responsibility for responsibly investing its assets. The only risks taken by the employee are that he or she will be fired before his or her pension benefits vest, and/or that the employer will go out of business with an inadequately funded pension plan. However, over the years many countries have passed laws lowering the minimum number of years required for defined pension benefits to vest, and have also established guarantee funds to provide for situations in which companies go bankrupt without having fully funded their defined benefit pension plans. In short, the risks facing a member of a defined benefit pension plan are relatively limited.

Contrast this situation with that faced by an employee who can only participate in a defined contribution pension plan. In this case, the employee has the option of contributing some portion of his or her pre-tax pay to the pension plan. Often times, his or her employer will match this contribution up to some level. However, it is the employee, not the employer, who is responsible for deciding how the funds in his or her pension plan account are invested. Moreover, a defined contribution pension plan makes no promises about the level of annuity income it will provide when the employee retires. That all depends on the value of the fund, which in turn depends on the level of contributions that were made and how well they were invested. In addition, in a defined contribution plan, the employee is not required to convert to the assets in the plan into an annuity when he or she retires. Instead, DC plan participants can choose other withdrawal options that, while giving them more control over the assets, also expose them to the risk of outliving them. On the other hand, vesting in a defined contribution pension plan is immediate, and employer bankruptcy poses no risk, since, by definition, the plan is always fully funded. Moreover, by not requiring conversion to an annuity at retirement, they also create the option of leaving bequests to heirs or charities. In sum, while the switch from defined benefit to defined contribution pension plans has some benefits, it also represents a substantial transfer of risk from the employer to the employee.

Unfortunately, as the Pensions Commission notes, many employees do a poor job of managing this risk. For example, the report estimates that "at least seventy five percent of [workers with defined contribution pension plans] are making savings contributions to them that are below the level likely to be required to provide adequate pensions." Moreover, there is also a lurking political time bomb hidden inside this issue. Given the rapid decline in participation in private sector defined benefit pension plans (down by sixty percent since 1995 in the UK, according to the report), a rapidly increasing percentage of those who still have them are public sector employees, whose very generous benefits are being paid for by increasingly hard-pressed private sector taxpayers. Going forward, many writers have noted that this is a potentially explosive situation, not just in the UK, but also in the United States.

Another issued analyzed in the report is whether the shortfall in pension savings could be made up by some combination of non-pension holdings of liquid financial assets, home equity, and/or ownership of illiquid equity in private businesses. While non-pension financial assets are indeed significant, the report finds that they are not a potential solution to the overall pensions problem because "they are very unequally distributed and for the majority of people can only provide a modest contribution to their standard of living in retirement." Nor is business equity likely to provide a solution. The report notes that "of the total of four million business enterprises in the UK, only among the four hundred thousand businesses with more than five employees is there likely to be a significant proportion where the sale of the business is likely to provide a significant source of wealth...Research from the Small Business Service suggests that there are around three thousand small and medium size enterprises sold each year with a price in the range of 250,000 to 3 million pounds."

In contrast to non-pension savings and private business equity, "housing assets are more significant both because they are much bigger and their ownership is more equally distributed. While the liquidation of housing assets during retirement will likely remain limited in scope, the inheritance of housing assets by people who already own a house may play an increasing role in retirement provision for many people. But house ownership does not provide a sufficient solution to the problem of pension provision given (1) uncertainty over future house prices; (2) other potential claims on housing wealth such as paying for long-term care; and (3) the fact that housing wealth is not significantly higher among those with the least pension savings."

At this point, the report summarizes the situation: "the present level of pension accruals will leave many people with inadequate pensions. And there are likely to be limits to solving the problem solely via increased retirement ages. If the current state plans are taken as a given, a higher level of private savings will be required." The report then goes on to assess how likely it is that these higher voluntary savings will materialize. Its findings are not encouraging.

The Pensions Commission notes that "a free market voluntarist approach to pension savings would work if individuals made rational choices based on good understanding of attractive incentives to save. [However], these conditions do not apply in the UK today."

"The theory of rational economics assumes that people make utility maximizing choices between different products thinking through the consequences of purchase for both present and future standards of living and shopping around to find the best value. But there is an increasing body of academic work, known as behavioral economics, which demonstrates that very few individuals actually operate in this rational and well-informed fashion."

[This] "research identifies barriers that prevent people from saving, even when they recognize that it is in their best interest to do so. Researchers find extensive evidence of procrastination: a high proportion of people are persuaded by information and advice that savings is desirable but delay implementation, often indefinitely...The formal economic interpretation of procrastination is that individuals do not discount consumption over time with equal discount rates between all time periods...This means that in trading off consumption today versus consumption in the near future, they use a far higher discount rate [which makes current consumption relatively more attractive] than when trading off consumption today versus in, say, twenty years time. Over a twenty year period, they are willing to sacrifice current consumption (i.e., to save), but as between this year and next they strongly prefer consumption today. Therefore, the decision is always to start saving 'next year', but when next year arrives, the preference is to start the year thereafter. Pension saving is therefore put off indefinitely via a continual series of 'next year' delays..."

"Another key [research] finding is the power of inertia. People often accept the situation as it is or choose the course of action which requires them to make the fewest decisions...[For example, defined contribution] pension plans in which the default option for

new employees is to join produce much higher pension participation than those which require the employee to make an active decision to join the plan..."

In addition to the shortcoming of traditional economic theory with respect to individual decisions about whether to save at all, the report also examines its shortcomings with respect to how those savings (when they exist) are managed. "Traditional finance theory assumes that people make rational investment decisions, choosing between different asset classes in the light of prospective risk/return tradeoffs, and thinking logically about overall risk/return objectives. Even for financial industry experts this would be an immensely challenging task, requiring in theory both detailed analysis of the past risk/return performance for different asset classes, and a robust theoretical approach to deciding whether past performance carried information relevant to assessment of future risks and returns. For the vast majority of non-professionals it is simply an impossible task. As a result, people's [asset allocation] decisions are hugely influenced by the range of options with which they are presented, and by emotional considerations such as familiarity. Thus, for instance...people invest in things they understand. This seems to be the explanation of heavy investment in own company stock [in defined contribution plans], even when there is no company pressure to do so, and even when, post-Enron, the extreme dangers of this strategy should be clear...[In addition], people shy away from complexity. As a result, more choice can produce more procrastination...And people chase the market and follow fashions...Equally, individuals are very loath to admit mistakes, with very little rebalancing of portfolios."

Finally, "another insight from empirical research is that people are generally not good at estimating probabilities or understanding the consequences of risk. Annuities are unpopular with consumers because they have difficulty in estimating and understanding the risks against which an annuity protects them. Lump sum distributions [from pension plans] are therefore preferred even when the income stream they produce is much smaller [that that provided by an annuity] on an actuarially comparable present value basis..."

"The implication of [all] these findings is that external influences are hugely important in savings decisions. Many people will only save if some trusted institution, such as the government or their employer, instructs or encourages them to do so, or facilitates saving via automatic [pension plan] enrollment. Or they will only save if a financial advisor persuades them to...[However], the need [of an advisor] to actively sell products, and to persuade

people to save, makes the individual sale of pension products inherently expensive [compared to employer or government plans where enrollment is automatic]...This is particularly true for people with low incomes and low savings levels, since most of [the advisor's] costs are fixed and do not vary with the size of the premium paid [i.e., with the value of the investment products purchased by the adviser's client]...Moreover, products which have to be actively sold to imperfectly informed and unconfident customers can easily be mis-sold. As a result, the sales process has to be regulated, which increases the cost yet further."

The report goes on to conclude that the relatively high cost of distributing individual pension products "is itself a major disincentive to saving and has implications for the level of savings required to deliver adequate pensions. For a pension saver contributing over thirty years and achieving a four percent gross real return, an annual expense charge of 1.5% means that 24% of the accumulated savings and investment return is absorbed in operating expenses [of the fund manager and distribution channels] by the time of retirement." Moreover, lower income workers also face disincentives to save created by the state pension system's inclusion of a means-tested "top up" provision for people whose other savings (and state benefits) cannot generate a minimum level of income.

The report notes that "many proposals have been put forward for changes to the state pension system [i.e., the UK equivalent to US Social Security]. Most of these involve a higher basic pension but less means-testing, aiming to reduce [savings] disincentive effects." It notes, however, that even if they are enacted, such proposals "would not deliver pensions likely to be considered adequate for any except the bottom quartile of income earners. Even with radical changes to the Basic State Pension, therefore, two issues would remain: whether there should be government policies to ensure adequacy above the minimum level, and if so whether such adequacy should be achieved via a Pay As You Go (PAYG) plan [e.g., like most national pension plans, which tie benefit levels to average income during one's working years] or via funded savings."

"One possible approach to pension policy is to limit the government's role to ensuring that all citizens have sufficient income for a dignified retirement via a generous but flat-rate pension, but with no government responsibility for providing pensions linked to earnings, nor for ensuring that private savings are sufficiently large to provide pensions in line with lifetime earnings. This is, for instance, the overt philosophy of New Zealand's citizenship pension

[note that Canada and Ireland have similar systems]. But it is not the approach traditionally taken in the majority of rich, developed countries..."

"The answer depends on society's approach to the philosophical issue of whether there should be any government responsibility to ensure 'adequacy' above the basic level required for a dignified retirement...If we assume a government responsibility [for this] then the issue becomes whether this should be delivered through a state Pay-As-You-Go plan or via compulsory individual savings or via a mix of these two options."

The Pension Commission goes on to note that "the difference between funded and unfunded options for pension delivery is often overstated...If funded pension saving is compulsory, the individual worker is required to sacrifice consumption as much as under a tax-based PAYG system. The dividing line between compulsory savings and taxation is therefore a fine one. But there [still] remain four important differences between them:"

"First, the nature of the claim. In a PAYG system, future pensioners are dependent on future political decisions for delivery of their pension promise. In a funded system, they are dependent on the future market value of their assets. Given the frequency with which governments have changed pension promises in the past, people may be more willing to accept compulsory savings in identified assets than increased taxation matched by a PAYG pension promise. Whether this is the case, however, will depend crucially on how risky those assets are, which is driven both by market price volatility and by the trustworthiness and financial strength of financial intermediaries."

"Second, the impact on the savings rate. Funded private savings only deliver an increase in GDP and thus in the resources available to make increased pensioner incomes affordable if they increase the national savings rate. A key issue for compulsory savings plans is whether this increase is actually achieved, or whether people who are compelled to save in pensions will simply offset this by reducing savings in other asset categories or by higher borrowing." [Note that the Appendix to the report notes that "research on the Australian pension system (which uses compulsory savings) estimates that only 38% of these savings are offset]

"Third, the division of risk. In the traditional PAYG plan, the government absorbs both the risk of future increases in life expectancy and, implicitly, promises a guaranteed return on pension contributions... In a private defined benefit plan, these risks are largely

absorbed by employers. However, in a compulsory defined contribution plan these risks reside with the individual...[On the other hand], shifting [life-expectancy, or "longevity"] risk to individuals has the advantage of giving them the freedom to make their own trade-offs between retirement age and income in retirement, and of creating incentives for later retirement. [However], handing investment risk to people with low income and limited resources has disadvantages. Issues relating to risk management and to the provision of explicit or implicit advice therefore become particularly important in a system where people have been compelled to save."

"Fourth, selling and administrative cost. PAYG state-run pension systems typically achieve far lower running costs than systems of voluntary private savings. [For example], the UK's state system running costs are about 0.1% of the value of the pension liability, compared to 0.2% in large scale [defined benefit plans], and well over 1% in the case of most individual personal pensions. A crucial issue in compulsory savings plans is therefore whether the elimination of the need to persuade people to save can lead to a major reduction in operating costs." With respect to this issue, we note that in the United States, the defined contribution plan for federal government employees (known as the Thrift Savings Plan, see www.tsp.gov) offers participants only a choice of index funds in different asset classes, and has achieved extremely low operating costs.

Taking all these issues into consideration, the report concludes that, in addition to an increase in the average retirement age, "there are three possible ways forward: a radical revitalization of the voluntary savings system, changes to the state system, or increased use of compulsory savings. The Pensions Commission has reached no conclusion as to which of these should be the way forward, but it is clear that one or some mix of these is required." In the coming months, the Pensions Commission will be examining the advantages and disadvantages of different combinations of these policy changes. We look forward to their next report, which will no doubt set the tone for similar debates now underway in many other countries around the world.

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 October, this benchmark had returned 1.3%, while our model portfolio had returned 5.4%. 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 4.1%.

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 1.0%, while our model portfolio had returned 4.8%, and the global benchmark had returned 3.8%.

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 0.5%, while our model portfolio had returned 4.0% and the global benchmark 3.2%.

The objective of our second 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, 6.7% year-to-date, our 5% target real return portfolio had returned, in nominal terms, 6.6%, and our 3% target real return portfolio had returned, in nominal terms, 5.0%.

Our fourth set of model portfolios are also target real return portfolios; however, they include the possibility of investing in a hedge fund index, in addition to the asset classes used in our other portfolios. 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, 4.4% year-to-date, our 5% target real return HF portfolio had returned, in nominal terms, 5.7%, and our 3% target real return HF portfolio had returned, in nominal terms, 2.8%.

Model Portfolios Year-to-Date Performance

<i>These portfolios seek to maximize return while matching their benchmark's risk (standard deviation)</i>			
	YTD 29Oct04	Weight	Weighted Return
	in Yen		In Yen
High Risk Portfolio			
<i>Asset Classes</i>			
<i>Japan Benchmark</i>			
Japan Equity	1.6%	80%	1.2%
Japan Bonds	0.2%	20%	0.0%
		100%	1.3%
<i>Global Benchmark</i>			
U.S. Equity	2.3%	40%	0.9%
Non-U.S. Equity	6.5%	40%	2.6%
U.S. Bonds	2.7%	10%	0.3%
Non-U.S. Bonds	3.3%	10%	0.3%
		100%	4.1%
<i>Recommended</i>			
Foreign Equity (US)	2.3%	50%	1.1%
Foreign Equity (UK)	6.4%	10%	0.6%
Foreign Equity (Eurozone)	6.1%	13%	0.8%
Japan Bonds	0.2%	7%	0.0%
Emerging Mkts. Equity	7.3%	10%	0.7%
Commodities	20.8%	10%	2.1%
		100%	5.4%

<i>These portfolios seek to maximize return while matching their benchmark's risk (standard deviation)</i>			
	YTD 29Oct04	Weight	Weighted Return
	in Yen		In Yen
Medium Risk Portfolio			
<i>Asset Classes</i>			
<i>Japan Benchmark</i>			
Japan Equity	1.6%	60%	0.9%
Japan Bonds	0.2%	40%	0.1%
		100%	1.0%
<i>Global Benchmark</i>			
U.S. Equity	2.3%	30%	0.7%
Non-U.S. Equity	6.5%	30%	1.9%
U.S. Bonds	2.7%	20%	0.5%
Non-U.S. Bonds	3.3%	20%	0.7%
		100%	3.8%
<i>Recommended</i>			
Foreign Equity (US)	2.3%	46%	1.0%
Foreign Equity (UK)	6.4%	9%	0.6%
Foreign Equity (Eurozone)	6.1%	12%	0.7%
Emerging Mkts. Equity	7.3%	5%	0.4%
Japan Bonds	0.2%	18%	0.0%
Commodities	20.8%	10%	2.1%
		100%	4.8%

<i>These portfolios seek to maximize return while matching their benchmark's risk (standard deviation)</i>			
	YTD 29Oct04	Weight	Weighted Return
	in Yen		In Yen
Low Risk Portfolio			
<i>Asset Classes</i>			
<i>Japan Benchmark</i>			
Japan Equity	1.6%	20%	0.3%
Japan Bonds	0.2%	80%	0.2%
		100%	0.5%
<i>Global Benchmark</i>			
Foreign Equity (US)	2.3%	10%	0.2%
Non-U.S. Equity	6.5%	10%	0.6%
U.S. Bonds	2.7%	40%	1.1%
Non-U.S. Bonds	3.3%	40%	1.3%
		100%	3.2%
<i>Recommended</i>			
Foreign Equity (US)	2.3%	26%	0.6%
Foreign Equity (UK)	6.4%	5%	0.3%
Foreign Equity (Eurozone)	6.1%	7%	0.4%
Japan Bonds	0.2%	34%	0.1%
Global Bonds	3.0%	18%	0.5%
Commodities	20.8%	10%	2.1%
		100%	4.0%
<i>Global Bond Index = 50% US\$ plus 50% 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>			
	YTD 29Oct04	Weight	Weighted Return
	In Yen		In Yen
7% Target Real Return	<i>YTD Returns are Nominal</i>		
<i>Asset Classes</i>			
Japan Bonds	0.2%	0%	0.0%
Global Bonds	3.0%	37%	1.1%
Commercial Property	17.3%	0%	0.0%
Commodities	20.8%	20%	4.2%
Japan Equity	1.6%	20%	0.3%
Foreign Equity (US)	2.3%	9%	0.2%
Foreign Equity (UK)	6.4%	2%	0.1%
Foreign Equity (Eurozone)	6.1%	2%	0.1%
Emerging Equity	7.3%	10%	0.7%
Hedge Funds	-0.3%	0%	0.0%
		100%	6.7%
	YTD 29Oct04	Weight	Weighted Return
	In Yen		In Yen
5% Target Real Return	<i>YTD Returns are Nominal</i>		
<i>Asset Classes</i>			
Japan Bonds	0.2%	20%	0.0%
Global Bonds	3.0%	32%	0.9%
Commercial Property	17.3%	0%	0.0%
Commodities	20.8%	20%	4.2%
Japan Equity	1.6%	3%	0.0%
Foreign Equity (US)	2.3%	8%	0.2%
Foreign Equity (UK)	6.4%	2%	0.1%
Foreign Equity (Eurozone)	6.1%	2%	0.1%
Emerging Equity	7.3%	13%	0.9%
Hedge Funds	-0.3%	0%	0.0%
		100%	6.6%

	YTD 29Oct04	Weight	Weighted Return
	In Yen		In Yen
3% Target Real Return	<i>YTD Returns are Nominal</i>		
<i>Asset Classes</i>			
Japan Bonds	0.2%	38%	0.1%
Global Bonds	3.0%	30%	0.9%
Commercial Property	17.3%	5%	0.9%
Commodities	20.8%	12%	2.5%
Japan Equity	1.6%	5%	0.1%
Foreign Equity (US)	2.3%	3%	0.1%
Foreign Equity (UK)	6.4%	0%	0.0%
Foreign Equity (Eurozone)	6.1%	0%	0.0%
Emerging Equity	7.3%	7%	0.5%
Hedge Funds	-0.3%	0%	0.0%
		100%	5.0%

These portfolios seek to maximize the probability of achieving at least the target real return over twenty years, at the lowest possible risk.

These portfolios are the same as our other target return portfolios, except that they allow investment in hedge fund index products.

	YTD 29Oct04	Weight	Weighted Return
	In Yen		In Yen
7% Target Real Return			
<i>YTD Returns are Nominal</i>			
<u>Asset Classes</u>			
Japan Bonds	0.2%	2%	0.0%
Global Bonds	3.0%	15%	0.4%
Commercial Property	17.3%	0%	0.0%
Commodities	20.8%	10%	2.1%
Japan Equity	1.6%	27%	0.4%
Foreign Equity (US)	2.3%	11%	0.2%
Foreign Equity (UK)	6.4%	2%	0.1%
Foreign Equity (Eurozone)	6.1%	3%	0.2%
Emerging Equity	7.3%	13%	0.9%
Hedge Funds	-0.3%	17%	0.0%
		100%	4.4%

	YTD 29Oct04	Weight	Weighted Return
	In Yen		In Yen
5% Target Real Return			
<i>YTD Returns are Nominal</i>			
<u>Asset Classes</u>			
Japan Bonds	0.2%	27%	0.1%
Global Bonds	3.0%	18%	0.5%
Commercial Property	17.3%	0%	0.0%
Commodities	20.8%	17%	3.5%
Japan Equity	1.6%	6%	0.1%
Foreign Equity (US)	2.3%	8%	0.2%
Foreign Equity (UK)	6.4%	2%	0.1%
Foreign Equity (Eurozone)	6.1%	2%	0.1%
Emerging Equity	7.3%	15%	1.1%
Hedge Funds	-0.3%	5%	0.0%
		100%	5.7%

	YTD 29Oct04	Weight	Weighted Return
	In Yen		In Yen
3% Target Real Return			
<u>Asset Classes</u>			
		<i>YTD Returns are Nominal</i>	
Japan Bonds	0.2%	62%	0.1%
Global Bonds	3.0%	3%	0.1%
Commercial Property	17.3%	0%	0.0%
Commodities	20.8%	8%	1.7%
Japan Equity	1.6%	8%	0.1%
Foreign Equity (US)	2.3%	3%	0.1%
Foreign Equity (UK)	6.4%	2%	0.1%
Foreign Equity (Eurozone)	6.1%	2%	0.1%
Emerging Equity	7.3%	7%	0.5%
Hedge Funds	-0.3%	5%	0.0%
		100%	2.8%