The Index Investor

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This Month's Issue: Key Points

This month's year-end issue covers a wide range of topics. Our lead article features three follow-ups from last month's asset allocation update. While we know that the distribution of some asset classes' returns are not normal (i.e., in the shape of the familiar bell curve), the extent to which use of other distributions will affect asset class weights is an unresolved issue among academic researchers. We analyze the impact of using non-normal distributions, and find that, except for our 7% target real return portfolios (where it leads to a higher allocation to domestic equity), it is not significant. On the other hand, we find that the constraints on asset allocation created by defined contribution pension plans' often limited range of asset classes can have a significant impact on an investor's asset allocation and probability of achieving his or her goals. Following up on an earlier article, we also analyze the impact of substituting a buy/write equity fund for a broad based domestic equity index fund. Once again, it only has a major impact in the case of our 7% target real return portfolios. We find that use of the buy/write fund leads to a significantly higher allocation to domestic equity

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when historical returns data are used to generate asset class risk and return assumptions. However, since the high risk adjusted historical returns on the buy/write strategy effectively amount to a free lunch, we are skeptical they will continue in the future.

Our next set of articles cover a range of product and strategy issues. While new sub-sector ETFs now being introduced have some potentially interesting uses, they may also tempt individual investors to pursue active trading strategies, which research shows lose money in the aggregate. We next review a recent IRS ruling that, in the short term at least, creates frustration for investors in commodity index funds. We strongly recommend that readers join us in writing to the U.S. Congress to urge changes in the relevant legislation by June 30, 2006.. Commodity index funds are too important a source of diversification benefits to have them derailed by the IRS. We next move on to a discussion of new ETF products in Canada, and, in particular, one that tracks Canadian income trusts (which have been growing rapidly, and today account for ten percent of the market cap of the Toronto Stock Exchange). Converting a corporation into an income trust offers substantial tax advantages, provided the organization pays out virtually all of its earnings in excess of its annual depreciation charge. The high yields that result make these products popular with many investors. However, we identify two issues they raise. The first is the valuations companies receive upon their initial conversion from corporate to income trust status. In some cases, they appear to be higher than the tax advantages would warrant. The second issue is the fact that income trusts are not without risk. It may well be the case that the requirement that they pay out most of their earnings makes it harder for them to make the investments needed to maintain or improve their long-term competitive advantage.

Our next product and strategy note focuses on new funds from PowerShares and PIMCO that both aim to exploit Bob Arnott's finding that, historically, portfolios of companies weighted by revenue, cash flow, or book asset value have outperformed those weighted by the market capitalization of their equity. We explore the possible causes of this "fundamental indexation" anomaly, and whether it is likely to continue to exist in the future. In a market that is strongly attracted to efficiency, we suspect it won't, which makes us skeptical about the alleged benefits of these new funds.

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Our last note summarizes a recent Financial Times analysis of the pros and cons of investing in private equity. Like us, The FT concludes that "fans of private equity argue it is a superior form of ownership. Skeptics, rightly, point out that it has no clear advantages."

The last article in this month's issue is our regular quarterly economic warning indicators update. We conclude that while we successfully muddled through 2005 without a major crisis, the underlying imbalances in the world economy continued to worsen. Global economic growth remains dangerously dependent on the continued willingness of lenders to finance the U.S. housing and Chinese investment booms (or, perhaps, bubbles). When the day of reckoning comes, as we believe it must, we expect it will include a sharp drop in the U.S. dollar, a prolonged global economic slowdown, and, eventually, a substantial increase in inflation (with the U.S. leading the way). We also highlight three "unpredictable but potentially significant" developments that we could see in 2006. If nothing changes, the Iranian nuclear program may reach a critical point around March. Al Quaeda has apparently shifted its targeting to the world's oil industry. And H5N1 influenza appears to be slowly improving its human-to-human transmissibility.

This Month's Letters to the Editor

Why can't I just do a multiyear asset allocation using mean variance optimization, but substituting the geometric return for an asset class for the annual return?

Your question is one which reasonable people can and do argue about. For a single period optimization problem, the arithmetic average is the right one to use, and mean variance optimization produces a good answer. However, MVO falls short in multiyear problems, in which variance/standard deviation becomes relatively more important, as a number of below average returns in early years can sharply reduce the probability of achieving a long term goal, which is usually specified as a compound rate of return (i.e., either a geometric average for an accumulation problem, or an internal rate of return for a decumulation problem).

One way people have approached this problem is to substitute a geometric average return for an asset class for the arithmetic average, and then continuing to use mean variance optimization to derive an optimal asset allocation. The problem here is that while the

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combination of an arithmetic average and a standard deviation (which measures the dispersion of returns around the arithmetic average) makes theoretical sense, the combination of a geometric average and the same standard deviation does not. At best, this approach preserves the ease of use of MVO models (which are basically simple linear optimization methodologies), while generating an answer that, one hopes, is "in the right ballpark." Given the prevalence of estimation errors in the input assumptions, some will argue that this is a reasonable trade-off. On the other hand, our approach -- simulation (or, as it is also known, stochastic) optimization produces results that are theoretically more defensible, if computationally more difficult and time consuming to generate.

Can you explain again how rebalancing works in your model portfolios?

In our asset allocation model, when the rebalancing trigger is exceeded (e.g., if the trigger is 10% and an asset class with a target weight of 15% is at 26%), a general rebalancing ensues, in which all asset classes are rebalanced back to their target weights, subject to the over/under adjustment (if any) on those asset classes whose weights are farthest away from their targets. For example, if the adjustment factor was 2.5%, and at 26% the aforementioned asset class was the farthest above its target weight, it would be rebalanced back to 12.5% (15% less 2.5%).

Why have you changed from a broad hedge fund index to equity market neutral?

In our 2003 asset allocation review, we used a general hedge fund index, since the few then-available index-like hedge fund products contained a broad mix of hedge fund types. At that time, we also noted that both our analysis and a number of academic papers had found that a mix of EMN and Global Macro funds was superior to a broad hedge fund index, especially in a portfolio containing other asset classes. This year we have moved more explicitly toward the alpha/beta separation approach, in which EMN best represents uncorrelated alpha (Global Macro is, as you would expect, quite correlated with returns on many asset classes, although these correlations aren't stable over time). The appearance in recent years of more mutual funds that use hedge fund like approaches (and seek to be close to market neutral) has made

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this easier to implement. In addition, our use of a dynamic rebalancing strategy (e.g., a 10% trigger and 2.5% over/under adjustment) to some extent captures the underlying approach used by Global Macro funds. That being said, we're not uncomfortable with the same mix of EMN and Global Macro we have used in the past. As we note, the assumptions we use in our analysis (like everyone else's) contain estimation errors of unknown sizes. As such, it is hard to say with any confidence that a 50/50 mix of EMN and Global Macro is inferior or superior to using EMN on its own.

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Global Asset Class Returns

YTD 30Dec05	In USD	In AUD	In CAD	In EURO	In JPY	In GBP
Asset Held						
US Bonds	2.40%	8.85%	-0.65%	15.30%	15.52%	12.78%
US Prop.	11.90%	18.35%	8.85%	24.80%	25.02%	22.28%
US Equity	6.00%	12.45%	2.95%	18.90%	19.12%	16.38%
AUS Bonds	-5.31%	1.15%	-8.35%	7.59%	7.81%	5.07%
AUS Prop.	1.53%	7.98%	-1.52%	14.42%	14.64%	11.91%
AUS Equity	16.63%	23.08%	13.58%	29.53%	29.74%	27.01%
CAN Bonds	10.02%	16.47%	6.97%	22.92%	23.14%	20.40%
CAN Prop.	25.58%	32.04%	22.54%	38.48%	38.70%	35.96%
CAN Equity	27.52%	33.98%	24.48%	40.42%	40.64%	37.91%
Euro Bonds	-8.71%	-2.26%	-11.76%	4.19%	4.41%	1.67%
Euro Prop.	11.96%	18.41%	8.91%	24.86%	25.08%	22.34%
Euro Equity	8.78%	15.23%	5.73%	21.67%	21.89%	19.16%
Japan Bonds	-12.48%	-6.03%	-15.53%	0.42%	0.64%	-2.10%
Japan Prop.	51.33%	57.78%	48.28%	64.23%	64.45%	61.71%
Japan Equity	24.34%	30.79%	21.30%	37.24%	37.46%	34.72%
UK Bonds	-3.38%	3.07%	-6.43%	9.52%	9.74%	7.00%
UK Prop.	8.18%	14.63%	5.13%	21.08%	21.30%	18.56%
UK Equity	5.91%	12.36%	2.86%	18.81%	19.03%	16.29%
World Bonds	-2.90%	3.55%	-5.95%	10.00%	10.22%	7.48%
World Prop.	14.79%	21.24%	11.74%	27.69%	27.91%	25.17%
World Equity	10.80%	17.25%	7.75%	23.70%	23.92%	21.18%
Commodities	19.00%	25.45%	15.95%	31.90%	32.12%	29.38%
Timber	6.65%	13.11%	3.61%	19.55%	19.77%	17.03%
Hedge Funds	2.28%	8.73%	-0.77%	15.18%	15.40%	12.66%
Volatility	-9.18%	-2.73%	-12.23%	3.72%	3.94%	1.20%
A$ Currency	-6.45%	0.00%	-9.50%	6.44%	6.66%	3.93%
C$	3.05%	9.50%	0.00%	15.94%	16.16%	13.43%
Euro	-12.90%	-6.44%	-15.94%	0.00%	0.22%	-2.52%
Yen	-13.12%	-6.66%	-16.16%	-0.22%	0.00%	-2.73%
UK£	-10.38%	-3.93%	-13.43%	2.52%	2.73%	0.00%
US$	0.00%	6.45%	-3.05%	12.90%	13.12%	10.38%

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Equity and Bond Market Valuation Update

Our market valuation analyses are based on the assumption that markets are not perfectly efficient and always in equilibrium. This means that it is possible for the supply of future returns a market is expected to provide to be higher or lower than the returns investors logically demand. In the case of an equity market, we define the future supply of returns to be equal to the current dividend yield plus the rate at which dividends are expected to grow in the future. We define the return investors demand as the current yield on real return government bonds plus an equity market risk premium. As described in our May, 2005 issue, people can and do disagree about the "right" values for these variables. Recognizing this, we present four valuation scenarios for an equity market, based on different values for three key variables. First, we use both the current dividend yield and the dividend yield adjusted upward by .50% to reflect share repurchases. Second, we define future dividend growth to be equal to the long-term rate of total (multifactor) productivity growth, which is equal to either 1% or 2%. Third, we use two different values for the equity risk premium required by investors: 2.5% and 4.0%. Different combinations of these variables yield high and low scenarios for both the future returns the market is expected to supply, and the future returns investors will demand. We then use the dividend discount model to combine these scenarios, to produce four different views of whether an equity market is over, under, or fairly valued today. The specific formula is (Current Dividend Yield x 100) x (1+ Forecast Productivity Growth) divided by (Current Yield on Real Return Bonds + Equity Risk Premium - Forecast Productivity Growth). Our valuation estimates are shown in the following tables, where a value greater than 100% implies overvaluation, and less than 100% implies undervaluation:

Australia	**Low Demanded Return**	**High Demanded Return**
High Supplied Return	62%	96%
Low Supplied Return	97%	136%

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Canada	Low Demanded Return	High Demanded Return
High Supplied Return	92%	162%
Low Supplied Return	183%	276%

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Eurozone	Low Demanded Return	High Demanded Return
High Supplied Return	60%	109%
Low Supplied Return	112%	171%

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Japan	Low Demanded Return	High Demanded Return
High Supplied Return	91%	204%
Low Supplied Return	273%	459%

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United Kingdom	Low Demanded Return	High Demanded Return
High Supplied Return	46%	88%
Low Supplied Return	88%	137%

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United States	Low Demanded Return	High Demanded Return
High Supplied Return	114%	180%
Low Supplied Return	207%	294%

Our government 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:

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	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	2.22%	2.96%	5.18%	5.21%	0.03%	-0.32%
Canada	1.46%	2.40%	3.86%	3.98%	0.12%	-1.15%
Eurozone	1.32%	2.37%	3.69%	3.30%	-0.39%	3.88%
Japan	0.71%	0.77%	1.48%	1.48%	0.01%	-0.05%
UK	1.16%	3.17%	4.33%	4.09%	-0.24%	2.30%
USA	2.05%	2.93%	4.98%	4.40%	-0.58%	5.69%

It is important to note some important limitations of this analysis. First, it uses the current yield on real return government bonds. Over the past forty years or so, this has averaged around 3.00%. Were we to use this rate, bond markets would generally look even more overvalued. It also uses historical inflation as an estimate of expected future inflation. This may not produce an accurate estimate, if the historical average level of inflation is not a good predictor of average future inflation levels.

Second, 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). Today, in many markets credit spreads are at the low end of their historical ranges, which would make non-government bonds appear even more overvalued.

Third, if one were to assume a very different scenario, involving a prolonged recession, accompanied by deflation, then one could argue that government bond markets are actually undervalued.

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.

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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%	-1.23%	-1.91%	-3.73%	-1.12%	-0.81%
C$	1.23%	0.00%	-0.68%	-2.50%	0.11%	0.42%
EU	1.91%	0.68%	0.00%	-1.82%	0.79%	1.10%
YEN	3.73%	2.50%	1.82%	0.00%	2.61%	2.92%
GBP	1.12%	-0.11%	-0.79%	-2.61%	0.00%	0.31%
US$	0.81%	-0.42%	-1.10%	-2.92%	-0.31%	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. This table assumes that active investors are trying to earn high returns by investing today in the styles and sectors that will perform best in the next stage of the economic cycle. The logic behind this is as follows: Theoretically, the fair price of an asset (also known as its fundamental value) is equal to the present value of the future cash flows it is expected to produce, discounted at a rate that reflects their relative riskiness.

Current economic conditions affect the current cash flow an asset produces. Future economic conditions affect future cash flows and discount rates. Because they are more numerous, expected future cash flows have a much bigger impact on the fundamental value of an asset than do current cash flows. Hence, if an investor is attempting to earn a positive return by purchasing today an asset whose value (and price) will increase in the future, he or she needs to accurately forecast the future value of that asset. To do this, he or she needs to forecast future economic conditions, and their impact on future cash flows and the future discount rate. Moreover, an investor also needs to do this before the majority of other

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investors reach the same conclusion about the asset's fair value, and through their buying and selling cause its price to adjust to that level (and eliminate the potential excess return).

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 just 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 rough indication of how investors employing different strategies expect the economy and interest rates 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 (e.g., if long maturity bonds have the highest year to date returns, a plurality of bond investor opinion expects rates to fall in the near future). Comparing returns across strategies provides a rough indication of the extent of agreement (or disagreement) investors about the most likely upcoming changes in the state of the economy.

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

YTD 30Dec05

Economy	Bottoming	Strengthening	Peaking	Weakening
Interest Rates	Falling	Bottom	Rising	Peak
Style Rotation	Growth (IWZ) **5.01%**	Value (IWW) **6.52%**	Value (IWW) **6.52%**	Growth (IWZ) **5.01%**
Size Rotation	Small (IWM) **4.40%**	Small (IWM) **4.40%**	Large (IWB) **6.25%**	Large (IWB) **6.25%**
Style and Size Rotation	Small Growth (DSG) **8.75%**	Small Value (DSV) **5.16%**	Large Value (ELV) **4.96%**	Large Growth (ELG) **2.75%**
Sector Rotation	Cyclicals (IYC) **-2.33%** Technology (IYW) **2.75%**	Basic Materials (IYM) **4.06%** Industrials (IYJ) **4.03%**	Energy (IYE) **34.61%** Staples (IYK) **1.50%**	Utilities (IDU) **13.63%** Financials (IYF) **5.17%**
Bond Market Rotation	High Risk (VWEHX) **2.70%**	Short Maturity (VBISX) **1.30%**	Low Risk (VIPSX) **2.60%**	Long Maturity (VBLTX) **5.30%**

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Asset Allocation: Uncertain Distributions, Additional Constraints, and BXM

In our writing about asset allocation, we frequently note the impact of parameter uncertainty on the strength of the conclusions we reach. Parameter uncertainty refers to the estimates we make about the future risk and return of an asset class, and the nature of the relationship (correlation) between the returns on different asset classes. When we are using historical data to make these estimates, there is the risk that the sample we are using is not representative of the true values for risk, return and correlation. When we are using a forward looking model to make these estimates, there is the risk that our model does not accurately represent the return generating process for one or more asset classes.

In both of these cases, we assume that asset class returns are normally distributed – that is, when plotted over time they form the familiar "bell curve" shape. We have also noted that, particularly when measured over shorter time intervals, the returns on most asset classes are not normally distributed. Rather, actual distributions tend to have more extreme returns than a normal distribution, and to be tilted slightly off center. However, in formulating our model portfolios, we have treated asset class returns as normally distributed variables, for two reasons. First, some analyses have concluded that, given the process through which most investors derive satisfaction (technically "utility") from their investments, departures from normality do not matter (see, for example, "Optimal Hedge Fund Allocations: Do Higher Moments Matter?" by Jan-Hein Cremers, Mark Kritzman, and Sébastien Page).

Second, other analyses have reached widely varying conclusions about the potential improvement in investor satisfaction when non-normal distributions are used to describe asset class returns. For example, in "Asset Allocation under Distribution Uncertainty," Marcin Kacperczyk finds that lower allocations to equities result (at least in the two asset class, one period example he uses), while Billio, Casarin and Toniolo show that Kacperczyk's conclusion critically depends on the type of risk constraint used in the analysis. In particular, a relatively loose downside risk constraint (e.g., at least a 95% probability of achieving a target) can result in a higher, not lower allocation to equity when non-normal distributions are used.

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Finally, yet another paper ("Data Generating Process Uncertainty: What Difference Does it Make in Portfolio Decisions?" by Tu and Zhou) concluded that while using non-normal distributions can lead to different portfolio weights on different asset classes, the net impact of these changes on investor satisfaction (versus the result when normal distributions are used) is relatively small.

Still, we thought it would be interesting to use our own simulation optimization model to test the impact of using non-normal distributions. Our first step was to identify asset classes whose returns were, in fact, non-normally distributed over rolling twelve month holding periods. Using historical U.S. real returns between 1989 and 2004, we identified three: real return bonds, timber, and domestic equity. Our next step was to fit a non-normal distribution to these data. Technically, we used "Student's T" distributions. Rather than using two variables (mean and standard deviation) to describe a distribution, Student's T uses three: two that are roughly equivalent to mean and standard deviation, and another that controls the "fatness" of the distribution's tails. This produced a finding noted by others. When a normal distribution is fit to a set of non-normally distributed data with fatter than normal tails, it causes the standard deviation to be higher than would be under a Student's T distribution. This can cause the asset class in question to appear more risky than it really is (and therefore underweighted), at least to the extent that risk is measured by standard deviation. We next substituted these new distributions into our optimization model, and re-ran them (only for historical data; we did not attempt to forecast future returns based on a non-normal distribution). We performed nine optimizations, our 3%, 5%, and 7% U.S. dollar target real return portfolios, using our basic ten asset classes, then adding equity market neutral and then equity market neutral and equity volatility as possible asset classes.

The use of non-normal distributions had no significant impact on any of our 3% or 5% target real return portfolios. However, in the 7% target real return, ten-asset class case, the allocation to domestic equity rose by 20%, offset by an equal drop in the allocation to foreign bonds. Nevertheless, the increase in the estimated probability of achieving the real return target was only 5%. Not trivial, but not overwhelming either. Moreover, when equity market neutral and equity volatility were added as possible asset classes, the "non-normality" asset allocation effect disappeared. On balance, we conclude that using normal distributions in our analysis, even when they were not the best possible description of the asset class returns in

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question, did not result in great opportunity costs in terms of reduced probability of achieving our return targets.

We have also explored another question that frequently comes up: the impact of constraints caused by the limited range of asset classes offered in defined contribution pension plans. Consider this example(which was sent to us by a subscriber): assume eighty percent of an investor's financial assets are in her tax exempt defined contribution (e.g., 401k) pension plan, and twenty percent are in a taxable investment account. Further assume that the defined contribution pension only offers investments in the real return bonds, domestic bonds, domestic equity, foreign equity, and equity market neutral (uncorrelated alpha) asset classes, while all asset classes are available in the taxable account. To simplify this problem, we imposed, in addition to our normal asset class restrictions, an additional constraint: holdings of real return bonds, domestic bonds, domestic and foreign equity and equity market neutral had to account for 80% of the total portfolio. We ran this analysis using historical and forecast assumptions, for our 7% target real return U.S. dollar portfolio. As shown in the table below, this results in significantly different results in the final (historical and forecast, 50/50 weighting) portfolio:

Asset Class	**Base Case Weights**	**Constrained Weights**	**Difference**
Foreign Commercial Property	7.5%	0%	(7.5%)
Commodities	12.5%	5%	(7.5%)
Timber	7.5%	10%	2.5%
Domestic Equity	52.5%	55%	2.5%
Foreign Equity	5.0%	15%	10.0%
Emerging Equity	10.0%	5%	(5.0%)
Equity Market Neutral	5.0%	10%	5.0%

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Overall, we estimate that the constrained portfolio has a six percent lower chance (45% versus 51%) of achieving the 7% real return target over the next twenty years. While one can argue about whether this difference is significant (given the irreducible uncertainty associated with our asset class risk, return and correlation estimates), at the very least it suggests that pension fund trustees should strongly consider offering as many asset classes as possible in their defined contribution plans. Not doing so risks reducing the probability that pension savers will achieve their long-term accumulation (and, eventually) post-retirement income and bequest goals.

Last but not least, we also conducted further analysis of a topic we wrote about earlier this year: the use of a so-called "buy/write" or covered call option writing (selling) strategy. To briefly summarize, this strategy attempts to reduce the risk associated with investing in equities by continuously writing (selling) call options against the equity index fund owned by the investor. In exchange for the option premium received, the investor foregoes some potential upside price appreciation (when the index price rises above the option strike price). In the United States, the historical returns from this strategy are tracked by the BXM index (which tracks the result of a buy/write strategy on the S&P 500 Index), and new closed end funds using this approach (e.g., ETV, the Eaton Vance Tax Managed Buy Write Opportunities Fund) raised over $9 billion in 2005.

Before discussing the results of our analysis, we should stress the same point we made in our previous article on these funds: the fact that the BXM has, in the past, delivered returns approximately equal to those on the broad equity market, but with about five percent lower standard deviation (risk) is no guarantee that these same results will continue into the future. In fact, in a reasonably efficient market, one might reasonably expect the returns from a buy/write strategy to be lower than those on a broad equity index fund, and more commensurate with the buy/write strategy's lower risk. Once discovered, strategies that appear to deliver "something for nothing" do not keep working for long.

Now, with that health warning, let us look at the impact of substituting the buy/write strategy (as measured by the return on the BXM index) for domestic equity in the United States, using asset class risk and return assumptions derived from 1989 to 2004 historical data. As was true with the use of non-normal distributions, the use of the BXM strategy has little or no impact on asset allocations for our 3% and 5% target real return portfolios.

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However, as shown in the following table, the impact on the 7% target real return portfolios is substantial.

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	7% Historical 10 Classes	7% Hist 10 BXM	7% Historical with EMN	7% Hist EMN BXM	7% Historical 12 Classes	7% Hist 12 BXM
Trigger	15.0%	20%	10%	20%	0%	0%
Adjust	2.5%	2.5%	0%	2.5%	0%	0%
Real Bonds	0%	0%	0%	0%	0%	
Dom. Bonds	0%	0%	0%	0%	5%	
For. Bonds	20%	5%	0%	5%	0%	5%
Dom. Comm Property	0%	0%	0%	0%	0%	
For. Comm Prop.	0%	0%	5%	0%	0%	
Commodities	20%	10%	10%	10%	10%	
Timber	0%	10%	10%	10%	10%	10%
Domestic Eq	60%	75%	55%	75%	45%	75%
Foreign Eq	0%		0%		0%	
Emerg. Eq	0%		10%		10%	
Eq. Mkt. Neutral			10%		10%	
Eq. Volatility					10%	10%
Total	100%	100%	100%	100%	100%	100%
Target Return Probability	70%	90%	80%	90%	92%	97%

Impressive though these simulations may be, the fact that the historical BXM results give the appearance of providing the proverbial free lunch suggests that one should be very cautious indeed about substituting a buy/write fund for a broad based domestic equity index fund in one's portfolio.

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The Uses and Misuses of Subsector Index ETFs

The end of 2005 saw the introduction of a slew of new index products around the world, particularly those using an exchange traded fund (ETF) structure. In theory, giving consumers more choice is usually a good thing. However, there are times when additional choice can cause consumer confusion, leading to either additional costs (paying for advice on the right choice to make), or, worse, inferior decisions. We have an uneasy feeling that some of the latest index product introductions fall into this latter category. Specifically, the U.S. market has recently seen the launching or registration of new "sub-sector" ETFs, focused, for example, on insurance, oil and gas exploration and production, or biotech companies.

Let's start with the strongest positive argument for using these new sub-sector products. In the past, we have written about the relationship of an investor's labor income and the allocation of financial assets in his or her portfolio. In theory, the introduction of sub-sector ETFs should make it easier to construct an allocation to domestic equity that avoids "double exposure" to the industry sub-sector in which an investor generates his or her labor income (e.g., the case of an employee at ExxonMobil). This includes a situation in which part of an investor's compensation includes restricted shares (which cannot be sold) in his or her company.

A less convincing, though still positive argument in favor of sub-sector ETFs is that they make it easier for an investor to (legally) take advantage of active investment insights he or she may develop in the course of his or her work. It stands to reason that the area in which most people are most likely to develop an active management insight is the industry where they work. It is the one where they start with the deepest knowledge base, and add to it the most timely information. Clearly, some of this is "material, price sensitive, non-public" so-called "insider" information that it is illegal to trade on (e.g., information that your company is about to make an acquisition). But some of it is not; often this takes the form of a conclusion (e.g., "this industry's profit outlook is improving -- or worsening -- faster than most people realize") that results from the combination of different small bits of information. In these cases, a sub-sector ETF may make it easier to profit from that active management insight (i.e., from the fact that your forecast differs from the apparent "market consensus" forecast).

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However, this also raises a strong argument against sub-sector ETFs – their existence may also tempt more investors to become active traders, in the belief that they can earn higher risk adjusted returns than those on a broad-based index fund. Consider a simple, but telling example. Your Uncle Carl calls you up and tells you he's "going to beat the market by investing in these new biotech ETFs." Does that make sense?

As always, it depends. First, you have to clarify whether "beat the market" simply means "earn a higher return than a broad market index fund" or "earn a higher risk adjusted return." As readers of *The Index Investor* know, it isn't hard to earn higher (or lower) than average market returns if you take on higher (or lower) than market risk. Unfortunately, too many investors don't consider the amount of risk they are taking on when they are trying to "beat the market."

But let's say that Uncle Carl claims that he plans on beating the market on a risk adjusted basis. This implies that Carl believes that he is in possession of a forecast that is superior to the market's consensus forecast. Broadly speaking, he must have superior insight into either the rate at which biotech cash flows will grow in the future, and/or into the relative riskiness of those cash flows. Assuming Carl believes he will beat the market because the biotech ETFs are undervalued, he must believe that biotech cash flows will grow faster than expected, and/or they are less risky than most people think.

Let's further assume that Carl believes that biotech cash flows will grow faster than the market's consensus forecast. You should then ask him, "by how much, and why?" If Carl is a punter, and simply says, "I have a good feeling about this one," you might want to think twice about taking investment advice from him. On the other hand, if Carl has a PhD. in molecular biology and works in the biotech industry, you might want to consider his arguments. But here is the key point: there are a lot of uncle Carls out there. But very few of them work in the biotech industry. And even fewer of them can answer the all important (to truly skilled active investors) "by how much, and why" questions. Everyone else is a speculator, pure and simple.

The negative effects of this behavior have been amply detailed in a series of outstanding research papers by Professors Brad Barber and Terrance Odean. In their paper "All that Glitters," Barber and Odean show that in the United States, "individual investors are net buyers of attention grabbling stocks – e.g., stocks in the news, stocks experiencing

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abnormal trading volume, and stocks with extreme one day returns." They also find that "stocks bought by individual investors on high-attention days tend to subsequently underperform stocks sold by those investors."

In their paper "Systematic Noise" (co-authored with Ning Zhu), Barber and Odean "document that the trading of individuals is more coordinated than one would expect by mere chance", and show that they tend to "buy stocks with strong past returns, concentrate their buying in relatively few stocks, and buy stocks with unusually high trading volume."

Of course, this might all make sense if the data showed that individual investors were herding behind some insightful "lead investors." Unfortunately, In "Do Noise Traders Move Markets?" Barber, Odean and Zhu show that this is not the case. In fact, they find that "among stocks heavily traded by individual investors, the spread in returns between stocks bought and stocks sold is [negative] 13.5 percent the following year." This finding is confirmed by Braber and Odean (along with Yi-Tsung Lee and Yu-Jen Liu) using a separate (and very rich) set of data covering the trading history of all investors in Taiwan. In "Who Loses from Trade? Evidence from Taiwan", the authors find that, as a result of their trading, "the aggregate portfolio of [all] individual investors suffers an annual performance penalty of 3.8 percent – an amount equal to 2.8 percent of Taiwan's total GDP."

In sum, while under certain circumstances sub-sector ETFs may play a sensible role in a long-term asset allocation, their existence may also tempt individual investors to engage in additional active trading, which, in aggregate, will almost certainly reduce their long-term portfolio returns. The bottom line: think long and hard before you use them.

Did the IRS Just Kill Commodity Index Funds?

Well, if you listen to some commentators, that is what you might think. But it's not true. Here's the real story. On December 16th, 2005 the U.S. Internal Revenue Service recently issued its first "Revenue Ruling" of 2006 (don't ask us about the dating issue!). It deals with a very narrowly defined issue: does income from a specific type of derivative contract count as "qualifying income" for a Registered Investment Company (a legal term for a mutual fund) under IRS regulations?

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The derivative contract in question is a commodity swap. Broadly speaking, in a swap contract, two counterparties agree to exchange payments with each other on certain dates for an agreed length of time. These payments are based on some "notional principal" amount of money. Here is an example. The earliest swap contracts were based on interest rates, with one party (say, Company A that had issued fixed rate bonds, but thought that rates were going to decline) exchanging interest payments with another (say, Company B that had issued floating rate loans, but thought interest rates were going to increase). These two would enter into a swap agreement, according to which each quarter Company A would pay LIBOR (the London Interbank Offer Rate, a basic floating reference rate) times $500 million to Company B, and receive 8% (the fixed rate) times $500 million. In practice, the amounts these companies owed to each other were netted, and only a single payment was made to the party owed money.

Now let's move on to one of the first examples of a commodity swap, which our editor worked on a long time ago in a galaxy far, far away. This time, Company One is a copper producer that has financed its mine with floating rate loans. Since the price of copper fluctuates, its CFO worries that the price of copper will fall faster than interest rates, resulting in a decline in profits (or worse). Company Two operates in a very competitive industry, and uses a lot of copper to produce its products. Its biggest fear is a rise in the price of copper that will (because it cannot easily raise its own prices) cause its profits to fall. And Company Three has issued fixed rate debt, but believes interest rates will fall in the future. In this case, given their respective fears, a three-way swap can make all three companies better off.

Here's how the deal works. Company One makes payments (to the bank arranging the swaps) that are based on the floating price of copper (times a notional principal amount of the metal). In return, its payments are based on a floating interest rate times a notional principal amount of money). Company Two receives a payment based on the floating price of copper, and makes a payment based on a fixed rate of interest. And Company Three (entering into a classic interest rate swap) receives a payment based on a fixed rate of interest, while making a floating rate based payment.

Now that you understand how commodity swaps work in principle (and I have compressed about five years of corporate finance history into a few paragraphs), let's move on to the IRS Revenue Ruling that is causing all the trouble.

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PIMCO operates a commodity index fund (PCRDX) that tracks the performance of the Dow Jones AIG Commodities Index. As we have discussed in the past, commodities index funds invest in derivative contracts tied to the performance a given commodities index. However, because these contracts can be purchased on margin (that is, for an initial amount less to their full face value), commodity index funds invest the balance of their money in bonds. At PIMCO, they usually use real return bonds, which is consistent with their overall view of commodities index funds as an inflation hedge. The IRS Ruling turns on the question of the type of commodities derivative contract used by PIMCO. One option would be to invest in exchange traded futures contracts based on the Dow Jones AIG index. The basic problem here is that the trading volume in these futures contracts has been growing more slowly than the inflow of money into PCRDX. If there was no other way to obtain exposure to the Dow Jones AIG index, a rising demand for the DJ AIG futures contracts relative to their supply would force up their price, and drive down returns for investors in PCRDX. Because they are a first-class operation, PIMCO logically looked for other options that would impose a lower cost on investors in PCRDX. Commodity swaps were the answer, because the market for them is much deeper (and therefore cheaper to access) than the market for exchange traded futures contracts. Specifically, PCRDX entered into swaps where it made payments based on a floating interest rate, and received payments based on changes in the Dow Jones AIG Commodities Index. So far, so good.

However, these swap contracts raised a legal question, as to whether the payments received by PCRDX were "qualified income" that counted towards its ability to be classified as a Registered Investment Company for tax purposes. Not meeting this requirement would cause adverse tax consequences for PCRDX and its investors. In its Revenue Ruling, the IRS essentially decided that, because the commodity swap contracts were not tied to the underlying securities (real return bonds) held by PCRDX, the income from them was not "qualified income." Fortunately, the IRS decided that this ruling would only start to apply on July 1, 2006, and that it would have no retroactive effect. In other words, if you own PCRDX today, there is no adverse tax consequence.

So where does this leave matters? PIMCO (and anyone else considering the launch of a commodities index fund) has three non-exclusive options. The first (and least likely) is to persuade the IRS to change their ruling. The second (which would, as noted above, increase

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costs and decrease investor returns) would be to switch from commodity index swaps to the use of commodity index futures contracts (on which profits and losses are considered "qualifying income" by the IRS). The third (which we support) would be to lobby for the passage of new legislation that makes income from commodity index swaps "qualifying income" under IRS regulations. To this end, we will be writing to the chairmen of the U.S. Senate Finance and U.S. House of Representatives Ways and Means Committees to register our opinion that, in light of the considerable diversification benefits commodity index funds offer to individual investors (who, after all, are being asked to bear more of the risk associated with retirement saving), it is imperative that the IRS regulations be changed before the July 1, 2006 deadline. We hope that you will join us in writing these letters. The relevant addresses are as follows:

Representative Bill Thomas
Chairman
Committee on Ways and Means
U.S. House of Representatives
Washington, DC 20515
(202) 225-3625

Senator Chuck Grassley
Chairman
Committee on Finance
United States Senate
Washington, DC 20510
(202) 224-4515

And What's Up with Canadian Income Trusts?

In late December, Barclays Global Investors announced the launch of four new Canadian exchange traded funds. They include one (XMA) based on the materials sector of the Toronto Stock Exchange Index, one (XDV) based on the Dow Jones Canadian Select Dividend Index, one (XRB) based on the Scotia Capital Markets Real Return Bond Index, and the subject of this article, XTR, which is based on the Toronto Stock Exchange Income Trust Sector Index (and which carries a not inexpensive annual charge of .55%).

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Let's start with the basics: what is a Canadian Income Trust? It is a legal form of organization very similar to a U.S. Real Estate Investment Trust, which provides substantial tax benefits to corporations and individuals, provided the former pays out substantially all of its earnings (except for an amount equal to depreciation) to investors. The ancestors of today's income trusts were so-called "royalty" and "depletion" trusts, which were used by companies to fund the exploitation of natural resource deposits (e.g., an oil reservoir) whose life was limited. Not that these were without risk. In order to value them, you had to estimate the amount of the resource left in the ground, the future cost of extracting it, future prices for it, and future interest rates and equity risk premia (to determine the rate at which future cash flows should be discounted to their present value). Rather than reducing risk, what these trust structures really provided was a way to reduce taxes. Today's income trusts are no different. A recent analysis by the C.D. Howe Institute ("Unfinished Business: Achieving Neutral Taxation of Corporations and Index Trusts") showed how, under the current Canadian tax regime, conversion from corporate status to an income trust could, due to tax benefits, raise a company's market value by 48%. Moreover, even under proposed new corporate tax laws, the valuation advantage of income trust status is still estimated to be on the order of 35%. Given the size of this potential benefit, it is no surprise that Canada has recently seen a wave of income trust conversions, to the point that they now represent about ten percent of the total capitalization of the Toronto Stock Exchange. Given the high yields that result from income trusts' required earnings payouts, as well as the appreciating value of the Canadian dollar (or Petro-Loonie, as it is know to its fans), it also no surprise that we have seen rising interest in them by foreign investors (often retirees), and now a new ETF.

However, in the midst of all this excitement, a couple of very important points may have been overlooked by many investors. As was true of royalty and depletion trusts, and is still true of REITS, income trusts' attractive tax treatment does not mean they are without business risk. A struggling company that converts from a corporate structure to an income trust is still a struggling company. In fact, it may face an even bigger struggle after the conversion. Why? Because of the tax rules that force it to payout the majority of its earnings to investors. In the aggregate, Canada's productivity growth has lagged behind many other OECD countries, in no small part due to underinvestment in information and communication technology. Forcing a substantial portion of Canada's companies to payout most of their

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earnings will not help to change this. Why? Income trusts can only retain earnings equal to their depreciation, which is generally reinvested to maintain the productive capacity of their existing assets. Financing new investments would require them to issue new debt or equity. And as anyone who has had to approve information technology investments can tell you, the expected returns on many of them are at best uncertain, and often can only be fully appreciated in hindsight. In other words, they are not ones easily explained to people from whom you are trying to raise money, and are much easier to finance out of internal cash flow. But since income trusts have to payout most of their earnings, is it reasonable to expect them to make these kinds of productivity enhancing investments? There is an analogy here to the old depletion trusts, where you could never be sure how much oil could be recovered from the reservoir you owned, and how much it would cost. Given the incentive for an income trust to underinvest in its business, how long can you expect it to stay competitive (apart from cutting price, and therefore your earnings)?

The second worrisome issue raised by Canadian income trusts is the valuations many of them have received upon their conversion from corporate status. To put it simply, in many cases, they have appeared excessive in light of the potential tax benefits on offer (which themselves are a function of the company's expected future competitiveness and earnings power). There's an old saying: when the sell-side loves a product, it usually pays the buy-side to be wary of it. We don't think the current craze for Canadian income trusts is an exception to this rule.

New Products Based on Bob Arnott's Fundamental Indexing Theory

Bob Arnott is a very smart man. He edits the Financial Analysts Journal, and manages the PIMCO All Asset Fund (PASAX), which seeks to earn high real returns by tactically shifting between most of the asset classes we use in our model portfolios (e.g., real return bonds, foreign bonds, commercial property and commodities). In many ways, it is as close as a retail investor can come to a global macro-style hedge fund. However, in 2005, Bob Arnott was best known for the turmoil he created in the indexing industry with the publication of his paper on "Fundamental Indexation" (co-authored by Jason Hsu and Phillip Moore). In essence, Arnott found that a portfolio of companies weighted by various measures of size

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(e.g., revenues, cash flows, book asset value) outperformed (in the past, at least) a portfolio weighted by companies' equity market capitalization. Arnott's findings imply that, in aggregate, investors have been systematically undervaluing large companies (based on sales, assets, and/or cash flow) relative to small companies.

However, if one believes that financial markets are generally efficient, this shouldn't happen, as market capitalization based weighting should provide the best estimate of future returns. So what is going on? In our search for potential explanations for the phenomenon (or "anomaly") identified by Arnott, we'll start with the basic valuation equation. The market price of a company's stock is a function of (a) the current dividend (or, if you prefer, cash flows to equity holders), (b) the rate at which these cash flows are expected to grow in the future; (c) expected future risk free interest rates; and (d) expected future equity risk premiums (for the overall market and for the company relative to the market). Since the current dividend and risk free rate are known, the most likely sources of valuation errors are estimates the future growth rate of a company's cash flow, and/or estimates of the relative riskiness of those cash flows. This leads to four (not mutually exclusive) possible sources of the systematic valuation error captured by Arnott's fundamental indexation approach: (1) overestimate of smaller companies' future growth rates; (2) underestimate of larger companies future growth rates; (3) overestimate of larger companies' relative risk; and/or (4) underestimate of smaller companies' relative risk.

While there is, as yet, no definitive answer as to the relative importance of these four possible explanations, we have a hunch that the first two are the most important. In another excellent paper ("Bad Beta, Good Beta") Campbell and Vuolteenaho have shown how a company's sensitivity to news about future growth rates and future discount rates can be distinguished. They found that the value effect reflects the higher sensitivity of these companies to news about future cash flow growth rates. In other words, the value premium provides compensation for taking on higher risk. And in "The Level and Persistence of Growth Rates", Chan, Karceski and Lakonishok showed how it was extremely difficult to forecast future growth with any accuracy beyond pure chance. Under the latter condition, normal human over-optimism and overconfidence should have an affect on growth estimates. More specifically, it may well have been the case that they combined with a broadly held investor belief that large companies find it harder to grow than smaller companies (beliefs that

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many corporate managers might challenge). This would have produced relatively higher market capitalizations for smaller companies relative to larger ones. However, it may also have been the case that, thanks to the pressures of globalization, demanding shareholders, aggressive acquirers and visionary leaders like Jack Welch, more than a few large companies have, especially in recent times, exceeded investors growth expectations. If this, in fact, has been what has happened, it would have produced the relatively higher returns for larger companies that Arnott found. But, as we said, this is only one possible explanation; surely, there are others.

However, from an investor's point of view, this is not the really important question. In December, a new ETF was launched in the United States (ticker PRF, annual expenses .60%) that tracks Bob Arnott's Fundamental Index. This follows the launch of an "enhanced index fund" by PIMCO (ticker PIXAX; annual expenses 1.14%) that obtains exposure to the Fundamental Index using derivative contracts, and then attempts to add extra return by actively trading an intermediate term bond portfolio. Should you invest in these products?

Here is our take. While it is clear that Bob Arnott, with hindsight, has discovered a theoretically profitable anomaly, what basis is there for assuming it will continue in the future, now that it has been publicized? In order to believe that PRF will outperform the S&P 500 (its stated benchmark), you have to believe in two assumptions: (a) that whoever has been making the valuation errors that gave rise to the superior historical returns will continue making them, and (b) other investors will not arbitrage away the potential excess returns by bidding up the price of larger companies' stocks. While we have often stated that we don't believe financial markets are perfectly efficient, we believe they are strongly attracted to efficiency. If this were not the case, we would not see so many hedge funds – run by smart people with very strong financial incentives to deliver excess returns – going out of business each year. For this reason, we do not believe that, in the future, Bob Arnott's Fundamental Index will deliver the superior performance it has in the past.

The Financial Times Shares Our Skepticism About Private Equity

Earlier this year we noted our doubts about the widely claimed virtues of investing in private equity. In its December 23, 2005 issue, the Financial Times reached a similar conclusion.

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The FT's views are worth quoting at length: "The data are murky, but private equity may account for a fifth of the equity capital employed in Europe and the United States…This shift from public to private ownership will accelerate. The industry has raised $250 billion this year…Serially acquiring public companies at premiums [over market value] without industrial synergies is a textbook strategy for value destruction. Should private equity be any different?" The FT notes the two advantages claimed by private equity funds: the stronger performance incentives (relative to public companies) they provide for managers in the companies they acquire, and the higher amounts of debt they use to capitalize these companies. The FT notes that the potential tax benefits of using more debt are not large relative to the premiums often paid by private equity acquirers. The FT concludes that "fans of private equity argue it is a superior form of ownership. Skeptics, rightly, point out that it has no clear advantages." In fact, 2006 "could see a reckoning. Leverage has reached new highs. Debt repayment schedules may begin to bite. [And] some valuations are becoming circular – premised on selling out to other private equity funds on an ever higher multiple of capital employed." If this conclusion is correct – and we have no reason to disagree with it – look for more "private equity" vehicles to be offered to retail investors in 2006.

December, 2005 Quarterly Warning Indicators Update

By Tom Coyne
Editor

We are the first to admit that the performance of the global economy and most financial markets in 2005 was a pleasant, and rather (for us at least) an unexpected surprise. But then again, so was the performance of the U.S. equity market in 1999. To make a long story short, rather than seeing the beginning of a correction, 2005 saw a further expansion of the imbalances that plague the global economy. The world remained overly dependent on U.S. consumption, and, ultimately, on the growing bubble in U.S. house prices that was financing it. It also remained overly dependent on Chinese investment, and the continuing lack of credit skills and discipline displayed by that country's (state owned) banking system (did they go to a U.S. mortgage bankers course?). To be sure, there were further analyses presented in 2005 that tried to make the case that "this time it's different." Some suggested that the de facto

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existence of a "Bretton Woods II" arrangement, whereby Asian countries would continue to finance the U.S. current account deficit in order to ensure continued markets for their exports, which drive their own economic growth and help ensure their political stability (see "The Revived Bretton Woods System: Alive and Well" by Dooley, Folkerts-Landau, and Garber). Others suggested that, if the U.S. expected to increase its share of world output in the years ahead, perhaps its large current account deficit could be justified (see "The U.S. Current Account Deficit: a Re-Examination of the Role of Private Saving" by Charles Engel).

Still, in our opinion, the analyses on the other side of the argument – that an adjustment of global imbalances is inevitable, and it will be a painful one – still seem more compelling (see, for example, "Will the Bretton Woods II Regime Unravel Soon?" by Roubini and Stetser, and "Is the U.S. Current Account Deficit Sustainable?" by Sebastian Edwards).

To be sure, there have recently been some positive developments. The Japanese economy is showing more vitality than it has in years. However, it is still heavily dependent on exports, including a large proportion of capital goods that are dependent on Chinese demand. And it is still among the fastest aging of the world's developed countries, which must eventually have a negative impact on economic vitality. Similarly, the Eurozone appears, once again, to be making tentative moves toward reforms that could increase domestic efficiency and demand. Yet it too remains very dependent on exports for overall economic growth.

Absent faster growth in domestic demand in Japan and the Eurozone, the world economy remains heavily dependent on the United States and China. Over the last quarter of 2005, it became increasingly apparent that strains in the latter are growing more severe. The shooting of protesting Chinese villagers in Shanwei by Chinese security forces marked the first time since Tiananmen Square in 1989 that this had happened. As has often been the case, the apparent cause of the protest was the seizure of farmers' land for industrial development (in this case, a power project) without compensation being paid. Earlier in 2005, the Chinese government admitted that around 75,000 similar demonstrations had been recorded in the country in recent years. Apparently, money is allocated to compensate people for the loss of their land, but it ends up being siphoned off by corruption at various levels of government, to the point that little or nothing is left for its intended beneficiaries. On the other hand, growth

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continues unabated, financed with a mounting pyramid of bad loans to many projects of questionable economic viability. Such growth is necessary to provide jobs and rising incomes to the increasing number of workers leaving the land for the cities, and their promise of rising standards of living. Externally, the accumulation of such projects leads to oversupply and declining prices in many industries, along with substantial job losses at competitors located in developed countries. It is, to put it simply, an explosive mixture. Clearly, China needs to keep growing to maintain what remains of its political stability. To do so, it will probably remain quite willing to continue recycling its export earnings to finance the U.S. current account deficit. But the key point is this: China cannot bear this burden alone. Indeed, the surpluses of all the Asian countries together are insufficient to the financing task. Continued financing of the U.S. current account deficit by investors in other developed countries (e.g., Europe and the U.K.) are also needed to keep the current "Bretton Woods II" system afloat. The real question, and the ultimate uncertainty, is when these investors will decide that they've had enough, and stop the music.

And then what happens? Sebastian Edwards' paper concludes that a substantial decline in global GDP is inevitable, in addition to a sharp depreciation of the U.S. dollar. In the past, we have noted our conclusion that this could easily trigger widespread deflation, which in turn would stimulate move by the United States to reflate. This belief is based on analysis that shows the political benefits that such a renewed period of inflation would have. As described by Doepke and Schneider in their paper "Real Effects of Inflation Through the Redistribution of Nominal Wealth", "the middle class would gain at the cost of the rich and the poor. In addition, inflation would favor the young over the old, and hurt foreigners" who now hold large amounts of fixed rate U.S. dollar denominated debt. The authors conclude that "financial innovation and foreign borrowing have recently increased the potential welfare gains from inflation, to the point that these gains are now substantially larger than conventional estimates."

The last quarter of 2005 has also seen a number of worrying developments in the category of "uncertain but potentially very significant" issues. Iran's nuclear program seems to be a lot further along than anyone had realized; some estimates suggest uranium enrichment facilities will reach a critical stage of development around March 2006. Given the radical pronouncements of Iranian president Mahmoud Ahmadinejad, we suspect that a crisis

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of some sort could occur around this date. This crisis may be complemented by Deputy Al Quaeda head Ayman al-Zawahiri's apparent call on his organization in late 2005 to focus their efforts on the world's oil infrastructure. Given the lack of slack in the world oil market today (amply demonstrated by Hurricane Katrina), any disruption would further increase prices and take even more steam out of a global economy already slowing due to interest rate rises throughout 2005 by the U.S. Federal Reserve and more recently by the European Central Bank.

Finally, in yet another "unpredictable but very likely significant" development, we note recent indications from Indonesia and Turkey that H5N1 avian influenza may be increasing its capability for human-to-human transmission. There are two critical uncertainties here. The first is whether and when H5N1 will develop into a full-fledged global pandemic. The second is how severe will be that pandemic's effects. The U.S. Congressional Budget Office recently produced an analysis of this second question. It based its "severe pandemic" scenario on assumptions it believes reflect the impact of the 1918 pandemic: 30% of the population would become infected, and 2.5% of infected population would die. Up to now, the death rate for people infected with H5N1 has been higher than this; however, implicit in the CBO's analysis is the assumption (also made by other researchers) that there is a trade-off between an influenza strain's transmissibility and its deadliness. As the former increases, the latter declines. It remains to be seen whether that is indeed the case with H5N1. Assuming the CBO's severe pandemic scenario develops, it concludes "it would produce a short-run impact on the worldwide economy similar in depth and duration to that of an average post-war recession in the United States. However, it also notes "there is little evidence available to use to determine which theoretical prediction best describes the long-term impact of an influenza pandemic."

On balance, our fundamental view of the world remains the same as those discussed in our March, June, and September 2005 economic outlooks. While we may continue to muddle through for some time, the day of economic reckoning seems inevitable, and will be more severe the longer imbalances grow larger without a substantial adjustment occurring. Neither we nor anyone else can conclusively forecast which asset classes will do best in future years. Our best estimate today is that real equity returns will be substantially lower than those in recent years. Due to the likely depreciation of the dollar (except, perhaps, in the case of a

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severe bird flu pandemic or wider Middle East war), for U.S. investors, foreign bonds seem likely to do relatively well. On the other hand, for non-U.S. investors U.S. bonds are likely to disappoint. If one assumes a return to high inflation at some point in the future, then inflation hedges like timber and commodities should do well. Both, however, should suffer in the short term as real economic demand declines. There is also an important question about the extent to which speculative activity has driven the price of commodity index funds in particular above reasonable valuation levels.

Domestic commercial property will also provide, to some degree, a hedge against the eventual inflation we expect, but is likely to suffer in the intervening economic downturn. Again, for U.S. investors, foreign commercial property looks potentially attractive, given our estimate of future dollar depreciation. Historically, this asset class has provided higher returns than foreign currency bonds, without too much additional risk. On the other hand, looking to the future, foreign commercial property may not perform as well as foreign government bonds in a worldwide economic downturn.

With the exception of Australia, real return bonds today present a clear dilemma. Real yields are at extremely low levels, reflecting the imbalance between high global saving and low global investment demand. Neither a global recession nor a global influenza pandemic (which, by reducing the size of the labor force, would potentially increase the return to labor, and reduce the return to capital) would improve this situation. On balance, given a choice, we would underweight real return bonds today relative to their target portfolio weights, while favoring intermediate term nominal return government bonds.

Equity market neutral – our proxy for investments in uncorrelated alpha strategies – is also problematic, given our outlook. We are of an age that understands the meaning of the old saying "don't confuse investment skill with a bull market." We don't believe that many of today's hedge funds will perform well if our downside scenario comes to pass. So we wouldn't be overweighting EMN either. Finally, the equity volatility asset class presents yet another dilemma. In a largely uneventful market, it earned negative returns for U.S. investors, and slightly positive ones for those foreign investors who benefited from the U.S. dollars unexpected appreciation (thanks to the Federal Reserve's raising rates faster than those in other countries). Still, its role in a portfolio is not to be a source of steady returns. Rather, its role is to provide a cushion that protects capital against a sudden drop in multiple markets. It

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is, in essence, crisis insurance, along with domestic and foreign currency government bonds. For that reason, investors who can access it should keep it in their portfolios (sadly, there are, as yet, no retail index funds available that invest in this asset class).

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2004 - 2005 Model Portfolios Update

We produce three different types of model portfolios. Each of these is based on a different portfolio construction methodology.

We use a "rule of thumb" approach (or, to use the more formal term, a "heuristic approach") to construct our benchmark portfolios. More specifically, we use three "rules of thumb" that are often cited in news stories 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 implement these three rules of thumb in two different ways (to construct six different benchmark portfolios). The first uses just two asset classes: domestic investment grade bonds and domestic equity. The second uses a broader mix of asset classes: domestic and foreign investment grade bonds, and domestic and foreign (including emerging market) equity. In addition to these 80/20, 60/40, and 20/80 portfolios, we also provide our "couch potato" portfolio. This portfolio is equally allocated to all of the asset classes we use. More formally, this is known as the "1/N heuristic," which research has shown is an approach used by a significant proportion of retirement plan investors. This portfolio implicitly assumes that it is impossible to accurately forecast future asset class risk and return; consequently, the best approach is to equally divide one's exposure to different sources of return (and risk). While we disagree with this assumption, intellectual honesty compels us to include the "couch potato" portfolio as one of our benchmarks. Finally, each year we also benchmark all our portfolios against the return from holding cash. We define this return as the yield to maturity on a one-year government security purchased at the end of the previous year. For 2005, the Yen cash benchmark return is 0.02% (nominal).

The goal of our second set of model portfolios is to either deliver more return than the domestic benchmark portfolios, while taking on no more risk, or to deliver the same level of return while taking on less risk. To develop these model portfolios, we use a methodology known as "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

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per unit of risk (another way of looking at this is that they minimize risk per unit of return). The MVO technique 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. Given these limitations, our MVO portfolios are most appropriate for managers whose performance is evaluated on an annual basis in comparison to one of our benchmarks.

Our third set of model portfolios uses a simulation optimization methodology. It assumes that an investor understands the long-term compound real rate of return he or she needs to earn on his or her portfolio to achieve his or her long-term financial goals. We use SO to develop a multi-period asset allocation solutions that are “robust”. They are intended to maximize the probability of achieving an investor’s compound annual return target under a wide range of possible future asset class return scenarios. More information about the SO methodology is available on our website. Using this approach, we produce model portfolios for three different compound annual real return targets: 7%, 5%, and 3%. We produce two sets of these portfolios: one includes hedge funds as a possible asset class, and one does not.

The year-to-date results for all these model portfolios are shown in the tables on the following pages.

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Model Portfolios Year-to-Date Performance

These portfolios seek to maximize return while matching their benchmark's risk (standard deviation)			
	YTD 30Dec05	**Weight**	**Weighted Return**
	in Yen		In Yen
High Risk Portfolio			
Asset Classes			
Japan Benchmark			
Japan Equity	37.5%	**80%**	**30.0%**
Japan Bonds	0.6%	**20%**	**0.1%**
		100%	**30.1%**
Global Benchmark			
U.S. Equity	19.1%	**40%**	**7.6%**
Non-U.S. Equity	28.7%	**40%**	**11.5%**
U.S. Bonds	15.5%	**10%**	**1.6%**
Non-U.S. Bonds	4.9%	**10%**	**0.5%**
		100%	**21.2%**
Recommended			
Foreign Equity (US)	19.1%	**50%**	**9.6%**
Foreign Equity (UK)	19.0%	**10%**	**1.9%**
Foreign Equity (Eurozone)	21.9%	**13%**	**2.8%**
Japan Bonds	0.6%	**7%**	**0.0%**
Emerging Mkts. Equity	45.2%	**10%**	**4.5%**
Commodities	32.1%	**10%**	**3.2%**
		100%	**22.1%**

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These portfolios seek to maximize return while matching their benchmark's risk (standard deviation)			
	YTD 30Dec05	**Weight**	**Weighted Return**
	in Yen		In Yen
Medium Risk Portfolio			
Asset Classes			
Japan Benchmark			
Japan Equity	37.5%	**60%**	**22.5%**
Japan Bonds	0.6%	**40%**	**0.3%**
		100%	**22.7%**
Global Benchmark			
U.S. Equity	19.1%	**30%**	**5.7%**
Non-U.S. Equity	28.7%	**30%**	**8.6%**
U.S. Bonds	15.5%	**20%**	**3.1%**
Non-U.S. Bonds	4.9%	**20%**	**1.0%**
		100%	**18.4%**
Recommended			
Foreign Equity (US)	19.1%	**46%**	**8.8%**
Foreign Equity (UK)	19.0%	**9%**	**1.7%**
Foreign Equity (Eurozone)	21.9%	**12%**	**2.6%**
Emerging Mkts. Equity	45.2%	**5%**	**2.3%**
Japan Bonds	0.6%	**18%**	**0.1%**
Commodities	32.1%	**10%**	**3.2%**
		100%	**18.7%**

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These portfolios seek to maximize return while matching their benchmark's risk (standard deviation)			
	YTD 30Dec05	**Weight**	**Weighted Return**
	in Yen		In Yen
Low Risk Portfolio			
Asset Classes			
Japan Benchmark			
Japan Equity	37.5%	**20%**	**7.5%**
Japan Bonds	0.6%	**80%**	**0.5%**
		100%	**8.0%**
Global Benchmark			
Foreign Equity (US)	19.1%	**10%**	**1.9%**
Non-U.S. Equity	28.7%	**10%**	**2.9%**
U.S. Bonds	15.5%	**40%**	**6.2%**
Non-U.S. Bonds	4.9%	**40%**	**2.0%**
		100%	**13.0%**
Recommended			
Foreign Equity (US)	19.1%	**26%**	**5.0%**
Foreign Equity (UK)	19.0%	**5%**	**1.0%**
Foreign Equity (Eurozone)	21.9%	**7%**	**1.5%**
Japan Bonds	0.6%	**34%**	**0.2%**
Global Bonds	10.2%	**18%**	**1.8%**
Commodities	32.1%	**10%**	**3.2%**
		100%	**12.7%**
Global Bond Index = 50% US$ plus 50% Non-US$ Bonds			

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These portfolios seek to maximize the probability of achieving at least the target real return over twenty years, at the lowest possible risk.			
	YTD 30Dec05	**Weight**	**Weighted Return**
	In Yen		In Yen
7% Target Real Return	*YTD Returns are Nominal*		
Asset Classes			
Japan Bonds	0.6%	0%	**0.0%**
Global Bonds	10.2%	37%	**3.8%**
Commercial Property	64.4%	0%	**0.0%**
Commodities	32.1%	20%	**6.4%**
Japan Equity	37.5%	20%	**7.5%**
Foreign Equity (US)	19.1%	9%	**1.7%**
Foreign Equity (UK)	19.0%	2%	**0.4%**
Foreign Equity (Eurozone)	21.9%	2%	**0.4%**
Emerging Equity	45.2%	10%	**4.5%**
Hedge Funds	15.4%	0%	**0.0%**
		100%	**24.8%**
	YTD 30Dec05	**Weight**	**Weighted Return**
	In Yen		In Yen
5% Target Real Return	*YTD Returns are Nominal*		
Asset Classes			
Japan Bonds	0.6%	20%	**0.1%**
Global Bonds	10.2%	32%	**3.3%**
Commercial Property	64.4%	0%	**0.0%**
Commodities	32.1%	20%	**6.4%**
Japan Equity	37.5%	3%	**1.1%**
Foreign Equity (US)	19.1%	8%	**1.5%**
Foreign Equity (UK)	19.0%	2%	**0.4%**
Foreign Equity (Eurozone)	21.9%	2%	**0.4%**
Emerging Equity	45.2%	13%	**5.9%**
Hedge Funds	15.4%	0%	**0.0%**
		100%	**19.2%**

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	YTD 30Dec05	Weight	Weighted Return
	In Yen		In Yen
3% Target Real Return	*YTD Returns are Nominal*		
Asset Classes			
Japan Bonds	0.6%	38%	**0.2%**
Global Bonds	10.2%	30%	**3.1%**
Commercial Property	64.4%	5%	**3.2%**
Commodities	32.1%	12%	**3.9%**
Japan Equity	37.5%	5%	**1.9%**
Foreign Equity (US)	19.1%	3%	**0.6%**
Foreign Equity (UK)	19.0%	0%	**0.0%**
Foreign Equity (Eurozone)	21.9%	0%	**0.0%**
Emerging Equity	45.2%	7%	**3.2%**
Hedge Funds	15.4%	0%	**0.0%**
		100%	**16.0%**

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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 30Dec05	Weight	Weighted Return
	In Yen		In Yen
7% Target Real Return		*YTD Returns are Nominal*	
Asset Classes			
Japan Bonds	0.6%	2%	**0.0%**
Global Bonds	10.2%	15%	**1.5%**
Commercial Property	64.4%	0%	**0.0%**
Commodities	32.1%	10%	**3.2%**
Japan Equity	37.5%	27%	**10.1%**
Foreign Equity (US)	19.1%	11%	**2.1%**
Foreign Equity (UK)	19.0%	2%	**0.4%**
Foreign Equity (Eurozone)	21.9%	3%	**0.7%**
Emerging Equity	45.2%	13%	**5.9%**
Hedge Funds	15.4%	17%	**2.6%**
		100%	**26.5%**

	YTD 30Dec05	Weight	Weighted Return
	In Yen		In Yen
5% Target Real Return		*YTD Returns are Nominal*	
Asset Classes			
Japan Bonds	0.6%	27%	**0.2%**
Global Bonds	10.2%	18%	**1.8%**
Commercial Property	64.4%	0%	**0.0%**
Commodities	32.1%	17%	**5.5%**
Japan Equity	37.5%	6%	**2.2%**
Foreign Equity (US)	19.1%	8%	**1.5%**
Foreign Equity (UK)	19.0%	2%	**0.4%**
Foreign Equity (Eurozone)	21.9%	2%	**0.4%**
Emerging Equity	45.2%	15%	**6.8%**
Hedge Funds	15.4%	5%	**0.8%**
		100%	**19.6%**

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	YTD 30Dec05	Weight	Weighted Return
	In Yen		In Yen
3% Target Real Return	*YTD Returns are Nominal*		
Asset Classes			
Japan Bonds	0.6%	62%	**0.4%**
Global Bonds	10.2%	3%	**0.3%**
Commercial Property	64.4%	0%	**0.0%**
Commodities	32.1%	8%	**2.6%**
Japan Equity	37.5%	8%	**3.0%**
Foreign Equity (US)	19.1%	3%	**0.6%**
Foreign Equity (UK)	19.0%	2%	**0.4%**
Foreign Equity (Eurozone)	21.9%	2%	**0.4%**
Emerging Equity	45.2%	7%	**3.2%**
Hedge Funds	15.4%	5%	**0.8%**
		100%	**11.6%**

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	In Yen	Weight	Weighted Return
	In Yen		In Yen
Equally Weighted Portfolio	*YTD Returns are Nominal*		
Asset Classes			
Japan Real Return Bonds	0.1%	12.5%	**0.0%**
Japan Bonds	0.6%	12.5%	**0.1%**
Global Bonds	10.2%	12.5%	**1.3%**
Commercial Property	64.4%	12.5%	**8.1%**
Commodities	32.1%	12.5%	**4.0%**
Japan Equity	37.5%	12.5%	**4.7%**
Foreign Equity (US)	19.1%	8.6%	**1.6%**
Foreign Equity (UK)	19.0%	1.7%	**0.3%**
Foreign Equity (Eurozone)	21.9%	2.2%	**0.5%**
Emerging Equity	45.2%	12.5%	**5.7%**
		100.0%	**26.2%**

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