

The Index Investor

Invest Wisely...Get an Impartial Second Opinion.

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This Month's Issue: Key Points

This month's economic update reviews the IMF's most recent World Economic Outlook. We continue to be pessimistic about what lies ahead for the world economy. That said, there remains substantial uncertainty about how events will unfold, and their eventual impact on different asset classes. We continue to believe that investors should ensure that they have adequate cash reserves (which can be increased, if necessary, by selling down overvalued asset classes) and have rebalanced their portfolios to overweight asset classes that appear undervalued today, and to underweight those that appear to be overvalued. Here is our view of different asset class valuations at the end of April 2008, in light of our outlook for the global economy:

| | |
|-----------------------------|---|
| Probably Overvalued | Commodities, Corporate Bonds/Credit Risk, Equity Markets in Canada, Japan, the U.S. and India |
| Likely Overvalued | Commercial Property except Australia |
| Possibly Overvalued | India, U.S., Canada and Eurozone Govt Bonds |
| Possibly Undervalued | Australian Dollar and UK Pound Govt Bonds; Australia Commercial Property; Non-U.S. Dollar Bonds |
| Likely Undervalued | Australian Dollar Real Return Bonds; U.K. Equity; Equity Volatility; Timber (in long run, if not short run given downward pricing pressure) |
| Probably Undervalued | |

This month's product and strategy notes review the conclusions from three new research studies: investing in companies you think you know well is often a mistake, people pay too little attention to expense charges when choosing index funds, and real estate agents don't add much value. All things your instincts were already telling you, and now confirmed by academics. We also review the growing amount of research into post retirement investing, and the challenge of balancing uncertain longevity, investment returns, and health. Finally, we review a number of recent product launches, including global commercial property ETFs (a good alternative for investors interested in "one stop shopping"), new ETFs that offer exposure to the Chinese Yuan and Indian Rupee, a heating oil ETF (which offers retail investors who heat with oil a new hedging alternative) and some rather exotic leveraged reverse commodity ETNs from Deutsche Bank (for those of you who have a taste for speculation). We also review new decumulation products from Russell and Vanguard which incorporate some of the approaches we have advocated for years.

This Month's Letters to the Editor

Could you please review again the difference between nominal and real calculations, and how you use them in your portfolios?

The real rate of return equals the nominal rate of return less inflation. Alternatively, the nominal return equals the real return plus inflation. In our modeling, we use real returns because they are what preserve purchasing power over time. We calculate real returns using changes in the Consumer Price Index published by the government of the different currency regions covered by our model portfolios. For example, a nominal return of 5% with CPI inflation of 7% generates a negative real return of (2%) and a decline in purchasing power. In contrast, a nominal return of 5% with inflation of 2% generates a positive real return of 3%. Our model portfolio generation model uses as one input an investor's target income, expressed in today's dollars as a percent of today's portfolio capital value. We assume that the investor wants to preserve the real value/purchasing power of this target income over time. Hence we use real returns in all our calculations. That said, if inflation is positive, the nominal amount of money withdrawn from the portfolio each year will change, as it is

adjusted for inflation. For example, if the initial target income is 50,000, it will rise to 55,000 after a year of 10% inflation, and then to 56,650 after a subsequent year of 3% inflation (note that in this case, we're basing the income/withdrawal adjustment on the past year's inflation, which may or may not be a good predictor of the coming year's inflation). This raises a final question that has come up before: whether changes in the CPI are an accurate measure of the changes in inflation experienced by actual consumers. In most cases, it is not, as specific individual's consumption patterns (e.g., the mix of food, entertainment, car payments, housing payments, energy payments, health care and pharmaceutical payments and the like) will differ from the standard weights used to calculate the CPI. For that reason, our use of CPI produces, at best, a noisy estimate of true real returns on a portfolio. To the extent that an investor believes the inflation he or she actually experiences is or will be higher than that captured by the CPI, he or she may want to aim for higher real returns calculated using the CPI (e.g., using a 5% target instead of a 3% target).

What is your opinion of Canadian oil trusts and oilsands as an asset class? Claymore has launched an ETF that tracks them – its ticker is ENY.

Let's start with some background. "Canadian oil trusts" were originally just a local version of a royalty or depletion trust. These were originally created by oil companies by spinning off their reserve assets into a separate master limited partnership, which paid out most of its free cash flow to the owners of the partnership units. Because these trusts retained the tax deduction for depletion of the reserves (like a depreciation charge), but avoided the double taxation of corporate dividends, they were more tax efficient than continuing to have the oil company own the reserves. In Canada, these tax benefits associated with so-called "income trusts" led to a rapid increase in corporate conversions to this legal form. The resulting reduction in tax revenues to the Federal Government led to a change in the rules which has since sharply reduced such conversions. A key point for investors to keep in mind is that this use of the "income trust" form went well beyond the original concept of a tax efficient vehicle for owning depleting natural resource reserves. "Income trusts" now include a large number of organizations for which ongoing capital investment is critical to maintaining competitiveness. This means that continued access to capital markets is critical, as most free

cash flow has to be paid out to comply with tax regulations. Hence, while their yields are high, there is often significant risk involved too.

The term “oilsands” refers to deposits of oil in northern Alberta and Saskatchewan that are not found in reservoirs, but are rather bound to sand deposits from which they must be separated. Two techniques are used to do this. One approach is to mine the sands and then mechanically and chemically separate the oil from the sand. The alternative approach is to inject steam into the ground to drive the separation reaction, and then pump the heavy oil to the surface (this is known as “SAGD” for “steam assisted gravity drainage”). While the cost to produce oil from oilsands (currently estimated at around \$50/barrel) is significantly higher than it is from reservoirs, the lack of easily exploited reservoir reserves in countries as politically stable as Canada has made investment in the oilsands attractive to the world’s major oil companies. The Claymore ETF (ticker ENY) is allocated 70% to oil trusts and 30% to stand alone oilsands plays. Claymore claims that, as oil prices rise, they will shift this mix towards the latter, and as oil prices fall they will shift it towards the former. We do not consider this product, or the oil trusts or the oilsands as a separate asset class, as the underlying return generating process is largely the same as it is for other oil companies. Moreover, as more and more standalone oilsands companies are purchased by global oil companies seeking more Canadian reserves, we believe that ENY’s dynamic reallocation strategy will become more difficult to execute. In sum, we view ENY as nothing more or less than a way to implement an active bet that oil income trusts and stand alone oilsands plays are currently undervalued.

I have come across the use of the so-called “Omega Function” in portfolio optimisation. Could you please write something about it?

As practical matter, optimisation attempts to combine investment in different assets so as to maximize the amount of return earned per unit of risk, in order to achieve a given goal or goals subject (e.g., a minimum estimated probability of achieving a target withdrawal and not exhausting one’s capital over a specified time horizon). If the returns on these assets are normally distributed (i.e., if they take the familiar “bell curve” shape when plotted), then two statistics can be used in this calculation – the mean (average) return and the standard deviation

of those returns. However, as we have repeatedly noted in our writing over the past ten years, the estimation of these two statistics inevitably involves error, whether because historical data do not cover the full range of outcomes the “true” return generating process can produce, or because your model of that process is inaccurate. Things get even more complicated when the returns on an asset class are not normally distributed. In quantitative terms, two other statistics are typically used to describe the shape of a “non-normal” distribution. “Skewness” measures the extent to which the distribution (when plotted) is “off-center” – that is, the extent to which are majority of its returns are above (positively skewed) or below (negatively skewed) the mean (average). “Kurtosis” measures the extent to which the tails of the distribution are fatter (i.e., contain a greater percentage of returns) than would be the case if it was normal. To put it differently, kurtosis measures the extent to which extreme returns are more or less likely than they would be in the case of a normal distribution. Traditional risk aversion measures get more complicated when returns are not normally distributed. In the latter case, higher aversion to risk can be taken to mean a preference for lower standard deviation of returns (or, in another variation of this approach, a preference for a lower semi-standard deviation, or returns below the average). With non-normally distributed returns, a risk averse investor would logically prefer a more positively skewed distribution (in which returns above the mean are more likely than returns below it). However, the investor’s preference for kurtosis (extreme returns) would logically be related to the extent of positive skewness and to the standard deviation. In short, things get quite complicated when distributions become significantly non-normal.

Fortunately, in the case of broadly defined asset classes, historical returns are, if not normally distributed, then generally sufficiently close to normal that the difference doesn’t have a large impact. However, that is not the case when the collection of active management strategies collectively known as “hedge funds” are added to a portfolio optimisation. Because of their use of leverage and derivatives, the returns from most hedge fund strategies significantly depart from the normal distribution. This makes optimizations that include them very hard problems to mathematically resolve. The Omega Function is an attempt to overcome this challenge. To simplify, it is, in essence, a ratio of wins to losses, with wins defined as returns above a specified threshold, and losses defined as returns below it. It was originally described by Keating and Shadwick in their 2002 paper “A Universal Performance

Measure” and has since been the subject of many other academic papers. Omega’s advantage is that it allows the comparison of two return distributions, even if they are very non-normal. However, as a number of researchers have found, while it is easy to calculate Omega from historical data as a measure of performance, using it in optimisation analyses presents a number of hard mathematical challenges (see, for example, “Optimizing Omega” by Kane, Bartholemew-Biggs, Cross and Dewar, and “Optimal Asset Allocation with the Omega Function” by Avouyi-Dovi, Morin and Neto). For that reason, competing approaches have come into use, such as regime switching models (the approach we have used) and Windham Capital’s “full scale optimization”. However, these too are computationally intensive. In sum, Omega is an interesting performance measure whose use we continue to study.

Global Asset Class Returns

| YTD 30Apr08 | <u>In USD</u> | <u>In AUD</u> | <u>In CAD</u> | <u>In EURO</u> | <u>In JPY</u> | <u>In GBP</u> | <u>In CHF</u> | <u>In INR</u> |
|------------------------|----------------------|----------------------|----------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|
| Asset Held | | | | | | | | |
| US Bonds | 1.76% | -5.56% | 3.75% | -4.72% | -5.13% | 2.26% | -6.95% | 4.48% |
| US Prop | 8.12% | 0.80% | 10.11% | 1.64% | 1.23% | 8.62% | -0.59% | 10.84% |
| US Equity | -4.95% | -12.27% | -2.96% | -11.43% | -11.84% | -4.45% | -13.66% | -2.23% |
| | | | | | | | | |
| AUS Bonds | 7.79% | 0.47% | 9.79% | 1.31% | 0.90% | 8.30% | -0.91% | 10.51% |
| AUS Prop | -7.94% | -15.26% | -5.95% | -14.42% | -14.83% | -7.44% | -16.65% | -5.22% |
| AUS Equity | -3.61% | -10.93% | -1.61% | -10.09% | -10.50% | -3.11% | -12.32% | -0.89% |
| | | | | | | | | |
| CAN Bonds | 1.54% | -5.79% | 3.53% | -4.95% | -5.36% | 2.04% | -7.17% | 4.25% |
| CAN Prop | -5.61% | -12.94% | -3.62% | -12.10% | -12.51% | -5.11% | -14.32% | -2.90% |
| CAN Equity | -1.99% | -9.32% | 0.00% | -8.48% | -8.89% | -1.49% | -10.70% | 0.72% |
| | | | | | | | | |
| Euro Bonds | 8.42% | 1.10% | 10.42% | 1.94% | 1.53% | 8.92% | -0.29% | 11.14% |
| Euro Prop. | 10.56% | 3.24% | 12.55% | 4.08% | 3.67% | 11.06% | 1.85% | 13.28% |
| Euro Equity | -5.18% | -12.50% | -3.19% | -11.66% | -12.07% | -4.68% | -13.89% | -2.46% |
| | | | | | | | | |
| Japan Bnds | 5.72% | -1.60% | 7.71% | -0.77% | -1.17% | 6.22% | -2.99% | 8.43% |
| Japan Prop | 0.52% | -6.80% | 2.51% | -5.96% | -6.37% | 1.02% | -8.19% | 3.24% |
| Japan Eqty | -0.08% | -7.40% | 1.92% | -6.56% | -6.97% | 0.43% | -8.78% | 2.64% |
| | | | | | | | | |
| UK Bonds | -1.45% | -8.78% | 0.54% | -7.94% | -8.35% | -0.95% | -10.16% | 1.26% |
| UK Prop. | -4.80% | -12.12% | -2.80% | -11.28% | -11.69% | -4.30% | -13.51% | -2.08% |
| UK Equity | -5.15% | -12.47% | -3.16% | -11.63% | -12.04% | -4.65% | -13.86% | -2.43% |
| | | | | | | | | |
| World Bnds | 3.94% | -3.39% | 5.93% | -2.55% | -2.96% | 4.44% | -4.77% | 6.65% |
| World Prop. | -0.74% | -8.06% | 1.25% | -7.22% | -7.63% | -0.24% | -9.45% | 1.98% |
| World Eqty | -4.26% | -11.58% | -2.27% | -10.74% | -11.15% | -3.76% | -12.97% | -1.54% |
| Commod | 14.05% | 6.73% | 16.04% | 7.57% | 7.16% | 14.55% | 5.34% | 16.77% |
| Timber | -10.26% | -17.58% | -8.27% | -16.74% | -17.15% | -9.76% | -18.97% | -7.54% |
| EqMktNtrl | -2.42% | -9.75% | -0.43% | -8.91% | -9.32% | -1.92% | -11.13% | 0.29% |
| Volatility | -7.60% | -14.92% | -5.61% | -14.08% | -14.49% | -7.10% | -16.31% | -4.88% |
| Currency | | | | | | | | |
| AUD | 7.32% | 0.00% | 9.32% | 0.84% | 0.43% | 7.83% | -1.38% | 10.04% |
| CAD | -1.99% | -9.32% | 0.00% | -8.48% | -8.89% | -1.49% | -10.70% | 0.72% |
| EUR | 6.48% | -0.84% | 8.48% | 0.00% | -0.41% | 6.99% | -2.22% | 9.20% |
| JPY | 6.89% | -0.43% | 8.89% | 0.41% | 0.00% | 7.40% | -1.81% | 9.61% |
| GBP | -0.50% | -7.83% | 1.49% | -6.99% | -7.40% | 0.00% | -9.21% | 2.21% |
| USD | 0.00% | -7.32% | 1.99% | -6.48% | -6.89% | 0.50% | -8.71% | 2.72% |
| CHF | 8.71% | 1.38% | 10.70% | 2.22% | 1.81% | 9.21% | 0.00% | 11.42% |
| INR | -2.72% | -10.04% | -0.72% | -9.20% | -9.61% | -2.21% | -11.42% | 0.00% |

Asset Class 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. For this variable, we use two different values, 1% or 2%. Third, we also use two different values for the equity risk premium required by investors: 2.5% and 4.0%. Different combinations of all these variables yield high and low scenarios for both the future returns the market is expected to supply (dividend yield plus growth rate), and the future returns investors will demand (real bond yield plus equity risk premium). 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 $(\text{Current Dividend Yield} \times 100) \times (1 + \text{Forecast Productivity Growth})$ divided by $(\text{Current Yield on Real Return Bonds} + \text{Equity Risk Premium} - \text{Forecast Productivity Growth})$. Our valuation estimates are shown in the following tables, where a value greater than 100% implies overvaluation, and less than 100% implies undervaluation. In our view, the greater the number of scenarios that point to overvaluation or undervaluation, the greater the probability that is likely to be the case.

Equity Market Valuation Analysis at 30 April 2008

| <i>Australia</i> | Low Demanded Return | High Demanded Return |
|-----------------------------|----------------------------|-----------------------------|
| High Supplied Return | 62% | 93% |
| Low Supplied Return | 93% | 129% |

| <i>Canada</i> | Low Demanded Return | High Demanded Return |
|-----------------------------|----------------------------|-----------------------------|
| High Supplied Return | 91% | 153% |
| Low Supplied Return | 169% | 247% |

| <i>Eurozone</i> | Low Demanded Return | High Demanded Return |
|-----------------------------|----------------------------|-----------------------------|
| High Supplied Return | 66% | 104% |
| Low Supplied Return | 106% | 149% |

| <i>Japan</i> | Low Demanded Return | High Demanded Return |
|-----------------------------|----------------------------|-----------------------------|
| High Supplied Return | 82% | 152% |
| Low Supplied Return | 170% | 263% |

| <i>United Kingdom</i> | Low Demanded Return | High Demanded Return |
|-----------------------------|----------------------------|-----------------------------|
| High Supplied Return | 35% | 70% |
| Low Supplied Return | 66% | 107% |

| <i>United States</i> | Low Demanded Return | High Demanded Return |
|-----------------------------|----------------------------|-----------------------------|
| High Supplied Return | 85% | 147% |
| Low Supplied Return | 161% | 239% |

| <i>Switzerland</i> | Low Demanded Return | High Demanded Return |
|-----------------------------|----------------------------|-----------------------------|
| High Supplied Return | 57% | 99% |
| Low Supplied Return | 100% | 236% |

| <i>India</i> | Low Demanded Return | High Demanded Return |
|-----------------------------|----------------------------|-----------------------------|
| High Supplied Return | 130% | 242% |
| Low Supplied Return | 336% | 519% |

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:

Bond Market Analysis as of 30Apr08

| | 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 | 2.46% | 2.96% | 5.42% | 6.28% | 0.86% | -7.78% |
| Canada | 1.74% | 2.40% | 4.14% | 3.61% | -0.53% | 5.20% |
| Eurozone | 2.13% | 2.37% | 4.50% | 4.12% | -0.38% | 3.72% |
| Japan | 1.25% | 0.77% | 2.02% | 1.63% | -0.39% | 3.86% |
| UK | 0.99% | 3.17% | 4.16% | 4.67% | 0.52% | -4.81% |
| USA | 1.59% | 2.93% | 4.52% | 3.75% | -0.77% | 7.68% |
| Switz. | 1.53% | 2.03% | 3.56% | 3.13% | -0.43% | 4.25% |
| India | 2.24% | 7.57% | 9.81% | 8.04% | -1.77% | 17.65% |

*Derived from ten year yield and forecast inflation

It is important to note some important limitations of this analysis. First, it uses the current yield on real return government bonds (or, in the cases of Switzerland and India, the implied real yield if those bonds existed). Over the past forty years or so, this has averaged around 3.00% in the United States. Were we to use this rate, the required rate of return would generally increase. Theoretically, the “natural” or equilibrium real rate of interest is a function of three variables: (1) the expected rate of multifactor productivity growth (as it

increases, so to should the demand for investment, which will tend to raise the real rate); (2) risk aversion (as investors become more risk averse they save more, which should reduce the real rate of interest, all else being equal); and (3) the time discount rate, or the rate at which investors are willing to trade off consumption today against consumption in the future. A higher discount rate reflects a greater desire to consume today rather than waiting (as consumption today becomes relatively more important, savings decline, which should cause the real rate to increase). These variables are not unrelated; a negative correlation (of about .3) has been found between risk aversion and the time discount rate. This means that as people become more risk averse, they also tend to be more concerned about the future (i.e., as risk aversion rises, the time discount rate falls).

All three of these variables can only be estimated with uncertainty. For example, a time discount rate of 2.0% and risk aversion factor of 4 are considered to be average, but studies show that there is wide variation within the population and across the studies themselves. The analysis in the following table starts with current real return bond yields and the OECD's estimates of multifactor productivity growth between 1995 and 2002 (with France and Germany proxying for the Eurozone). We then try to back out estimates for risk aversion and the time discount rate that would bring theoretical rates into line with those that have been observed in the market. Higher risk aversion factors and lower time discount rates indicate more conservative attitudes on the part of the average investor in a given currency zone. Increasing conservatism raises the risk of sharp downward price moves and increases in volatility when they occur at a time when many asset classes appear to be overvalued. If this conservatism becomes excessive (which is admittedly very hard to gauge), undervaluations may result. In contrast, falling risk aversion and rising time discount factors may indicate a rising danger of overvaluations occurring in asset markets. The real rate formula is [Time Discount Rate + ((1/Risk Aversion Factor) x MFP Growth)].

Real Interest Rate Analysis at 30Apr08

| Real Rate Analysis | AUD | CAD | EUR | JPY | GBP | USD |
|---------------------------|-------|-------|-------|-------|-------|-------|
| Risk Aversion Factor | 3.5 | 4.5 | 4.0 | 5.5 | 6.0 | 5.0 |
| Time Discount Rate | 2.00% | 1.50% | 1.75% | 1.00% | 0.75% | 1.25% |
| MFP Growth | 1.60% | 1.20% | 1.40% | 0.60% | 1.40% | 1.40% |
| Theoretical Real Rate | 2.46% | 1.77% | 2.10% | 1.11% | 0.98% | 1.53% |
| Actual Real Rate | 2.46% | 1.74% | 2.13% | 1.25% | 0.99% | 1.59% |

Our bond market analysis also uses historical inflation as an estimate of expected future inflation. This may not produce an accurate valuation estimate, if the historical average level of inflation is not a good predictor of average future inflation levels. For example, if expected future inflation is lower than historical inflation, required returns will be lower. All else being equal, this would reduce any estimated overvaluation or increase any estimated undervaluation. For example, 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 today.

Let us now turn to the subject of the valuation of non-government bonds. Some have suggested that it is useful to decompose the bond yield spread into two parts. The first is the difference between the yield on AAA rated bonds and the yield on the ten year Treasury bond. Because default risk on AAA rated companies is very low, this spread may primarily reflect prevailing liquidity and jump (regime shift) risk conditions (e.g., between a low volatility, relatively high return regime, and a high volatility, lower return regime). The second is the difference between BBB and AAA rated bonds, which may tell us more about the level of compensation required by investors for bearing credit risk. For example, between August and October, 1998 (around the time of the Russian debt default and Long Term Capital Management crises), the AAA-Treasury spread jumped from 1.18% to 1.84%, while the BBB-AAA spread increased by much less, from .62% to .81%. This could be read as an indication of investor's higher concern with respect to the systematic risk implications of these crises (i.e., their potential to shift the financial markets into the low return, high volatility regime), and lesser concern with respect to their impact on the overall pricing of credit risk.

The following table shows the average level of these spreads between January, 1970 and December, 2005 (based on monthly Federal Reserve data), along with their standard deviations and 67% (average plus or minus one standard deviation) and 95% (average plus or minus two standard deviations) confidence range (i.e., based on historical data, 95% of the time you would expect the current spreads to be within two standard deviations of the long term average).

| | AAA – 10 Year Treasury | BBB-AAA |
|--------------------|------------------------|--------------|
| Average | .97% | 1.08% |
| Standard Deviation | .47% | .42% |
| Avg. +/- 1 SD | 1.44% - .50% | 1.51% - .66% |
| Avg. +/- 2 SD | 1.91% - .03% | 1.93% - .23% |

At 30 April 2008, the AAA minus 10 year Treasury spread was 1.76%. This is was a significant decline from the previous month, which indicates some moderation in fixed income market jitters. However, it is still significantly above the long-term average compensation for bearing liquidity and jump risk (assuming our model is correct), and reflects a clear market reaction to the problems that have roiled the fixed income markets since August and have yet to fully abate.

At the end of the month, the BBB minus AAA spread was 1.36%. This is not significantly above the long-term average compensation for bearing credit risk. However, it still seems low given that conditions in the real economy continue to deteriorate. We still believe that it is more likely that credit risk is underpriced rather than overpriced today, and that corporate bonds remain overvalued rather than undervalued.

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, particularly in the short term. 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. According to theory, the currency with the relatively higher interest rates should depreciate versus the currency with the lower interest rates. Of course, in the short term this often doesn't happen, which is the premise of the popular hedge fund "carry trade" strategy of borrowing in low interest rate currencies, investing in high interest rate currencies, and, essentially, betting that the change in exchange rates over the holding period for the trade won't eliminate the potential profit. Because (as noted in our June 2007 issue) there are some important players in the foreign

exchange markets who are not profit maximizers, carry trades are often profitable, at least over short time horizons. Our expected medium to long-term changes in exchange rates are summarized in the following table:

Annual Exchange Rate Changes Implied by Bond Market Yields on 30Apr08

| | To AUD | To CAD | To EUR | To JPY | To GBP | To USD | To CHF | To INR |
|------------|--------|--------|--------|--------|--------|--------|--------|--------|
| From | | | | | | | | |
| AUD | 0.00% | -2.67% | -2.16% | -4.65% | -1.61% | -2.53% | -3.15% | 1.76% |
| CAD | 2.67% | 0.00% | 0.51% | -1.98% | 1.06% | 0.14% | -0.48% | 4.43% |
| EUR | 2.16% | -0.51% | 0.00% | -2.49% | 0.55% | -0.37% | -0.99% | 3.92% |
| JPY | 4.65% | 1.98% | 2.49% | 0.00% | 3.04% | 2.12% | 1.50% | 6.41% |
| GBP | 1.61% | -1.06% | -0.55% | -3.04% | 0.00% | -0.92% | -1.54% | 3.37% |
| USD | 2.53% | -0.14% | 0.37% | -2.12% | 0.92% | 0.00% | -0.62% | 4.29% |
| CHF | 3.15% | 0.48% | 0.99% | -1.50% | 1.54% | 0.62% | 0.00% | 4.91% |
| INR | -1.76% | -4.43% | -3.92% | -6.41% | -3.37% | -4.29% | -4.91% | 0.00% |

Our approach to valuing commercial property securities as an asset class is hindered by a lack of historical data about rates of dividend growth. To overcome this limitation, we have assumed that markets are fairly valued today (i.e., the expected supply of returns equals the expected returns demanded by investors), and “backed out” the implied future real growth rates for dividends (which over time should correlated with the real change in rental income) to see if they are reasonable in light of other evidence about the state of the economy (see below). This analysis assumes that investors require a 2.5% risk premium above the yield on real return bonds to compensate an investor for the risk of securitized commercial property as an asset class. The following table shows the results of this analysis:

Commercial Property Securities Analysis as of 30Apr08

| Country | Real Bond Yield | Plus Commercial Property Risk Premium | Less Dividend Yield on Commercial Property Securities | Equals Implied Rate of Future Real Dividend Growth |
|----------------|------------------------|--|--|---|
| Australia | 2.5% | 2.5% | 7.9% | -2.9% |
| Canada | 1.7% | 2.5% | 5.4% | -1.1% |
| Eurozone | 2.1% | 2.5% | 3.9% | 0.8% |
| Japan | 1.2% | 2.5% | 2.4% | 1.4% |
| Switzerland | 1.5% | 2.5% | 3.4% | 0.6% |
| United Kingdom | 1.0% | 2.5% | 3.2% | 0.3% |
| United States | 1.6% | 2.5% | 4.9% | -0.8% |

If you think the implied real growth estimates in the last column are too high relative to your expectation for the future real growth in average rents, this implies commercial property securities are overvalued today. On the other hand, if you think the implied growth rate is too low, that implies undervaluation. Since we expect a significant slowdown in the global economy over the next few years, we are inclined to view most of these implied real growth assumptions as too optimistic (with the possible exception of Australia), and therefore believe that the balance of business cycle and valuation evidence suggests that commercial property securities in many markets are likely overvalued today.

To estimate the likely direction of short term commodity futures price changes, we compare the current price to the historical distribution of futures index prices. Between 1991 and 2005 period, the Dow Jones AIG Commodities Index (DJAIG) had an average value of 107.6, with a standard deviation of 21.9. The 30 April 2008 closing value of 208.6 was more than four standard deviations above the long term average (assuming the value of the index is normally distributed around its historical average, a value greater than three standard deviations away from that average should occur less than 1% of the time). If history is any guide, mean reversion will eventually cause these prices to fall back toward their long-term average levels. That said, we are clearly in uncharted territory today, whether due to speculation, a collective fear of high future inflation and/or a substantial decline in the value of the U.S. dollar versus many other currencies, and/or fundamental structural changes in

supply and demand conditions in many commodity markets (e.g., the peak oil thesis, changing diets, and the increasing use of agricultural commodities for fuel as well as food). For a much more extensive review of the different explanations for why commodity prices are so high, see the April 2008 World Economic Outlook published by the International Monetary Fund. Until the underlying factors driving the DJAIG higher become clearer, we continue to believe that the probability of a near term decline in the spot price of the DJAIG still seems much higher than the probability of a substantial further increase. At any given point in time, the current price of a commodity futures contract should equal the expected future spot price less some premium (i.e., expected return) the buyer of the future expects to receive for bearing the risk that this forecasted future spot price will be inaccurate. However, the *actual* return realized by the buyer of the futures contract can turn out to be quite different from the expected return. When it occurs, this difference will be due to unexpected changes in the spot price of the contract that occur after the date on which the futures contract was purchased but before it is closed out. If the unexpected change in the spot price is positive, the buyer of the futures contract (i.e., the investor) will receive a higher than expected return; if the unexpected price change is negative, the buyer's return will be lower than expected. In a perfectly efficient market, these unexpected price changes should be unpredictable, and over time net out to zero. On the other hand, if the futures market is less than perfectly efficient – if, for example, investors' emotions cause prices to sometimes diverge from their rational equilibrium values – then it is possible for futures contracts to be over or undervalued.

Our approach to assessing the current valuation of timber is based on two publicly traded timber REITS: Plum Creek (PCL) and Rayonier (RYN). As in the case of equities, we compare the return these are expected to supply (defined as their current dividend yield plus the expected growth rate of those dividends) to the equilibrium return investors should rationally demand for holding timber assets (defined as the current yield on real return bonds plus an appropriate risk premium for this asset class). Two of these variables are published: the dividend yields on the timber REITS and the yield on real return bonds. The other two variables have to be estimated, which presents a particularly difficult challenge with respect to the rate at which dividends will grow in the future. A number of factors contribute to the expected future growth rate of timber REIT dividends. These are listed in the following table, along with the assumptions we make about their future values:

| Growth Driver | Assumption |
|----------------------------|---|
| Biological growth of trees | This varies widely according to the type and maturity a given timber property (and, |

| Growth Driver | Assumption |
|--|--|
| | indeed, biological growth doesn't directly translate into returns as different trees and growing arrangements also involve different costs. We assume 6% as the long term average. |
| Harvesting rate | In order to produce a timber REIT's dividend, a certain physical volume of trees must be harvested each year. This will vary over time; for example, when prices are high, a smaller volume will have to be cut to pay for a given level of dividends. As a long term average, we assume that 5% of tree volume is harvested each year. |
| In-growth of trees | This refers to the fact that as trees grow taller and wider, they are capable of producing products with substantially higher values. This so called "grade change" will cause an increase in value (and hence return) of timber even when prices within each product category are falling. We assume this adds 3% per year to the return on timber assets. |
| Change in prices of timber and land on which the trees are growing | We assume that over the long term prices will just keep pace with inflation. In the U.S. some data shows real price increases of 2% per year over the past 20 years; however, IMF data shows real price declines on a world timber price index. Hence, we assume the contribution of real timber price changes to long term timber returns is zero. That said, given housing market problems around the world, in the short term we may see substantial declines in timber prices. |
| Diversification across countries | As in the case of commodities, that an investor in an internationally diversified portfolio of timber assets should earn a diversification return, similar to the one earned by investors in a well diversified portfolio of commodity futures contracts. In the interest of conservatism, we assume that in the case of timber this equals zero. |
| Carbon credits | In the future, investors in timberland may |

| Growth Driver | Assumption |
|---------------|---|
| | earn additional returns from the receipt and resale of carbon credits. However, since the future value of those credits is so uncertain, we have assumed no additional return from this source. |

This leaves the question of the appropriate return premium to assume for the overall risk of investing in timber as an asset class. Historically, the difference between returns on the NCRIEF timberland index and those on real return bonds has averaged around six percent. However, since the timber REITS are much more liquid than the properties included in the NCRIEF index, we have used four percent as the required return premium for investing in liquid timberland assets.

Given these assumptions, our assessment of the valuation of the timber asset class at 30 April 2008 is as follows:

| | |
|---|---------------------|
| Average Dividend Yield | 4.40% |
| Plus Long Term Annual Biological Growth | 6.00% |
| Less Percent of Physical Timber Stock Harvested Each Year | (5.00%) |
| Plus Average Annual Increase in Stock Value due to Ingrowth | 3.00% |
| Plus Long Term Real Annual Price Change | 0.00% |
| Plus Other Sources of Annual Value Increase (e.g., Carbon Credits) | 0.00% |
| Equals Average Annual Real Return Supplied | <u>8.40%</u> |
| Real Bond Yield | 1.59% |
| Plus Risk Premium for Timber | 4.00% |
| Equals Average Annual Real Return Demanded | <u>5.59%</u> |
| Ratio of Returns Demanded/Returns Supplied Equals Valuation Ratio (less than 100% implies undervaluation) | <u>67.0%</u> |

Our approach to assessing the current value of equity market volatility (as measured by the VIX index, which tracks the level of S&P 500 Index volatility implied by the current pricing of put and call options on this index) is similar to our approach to commodities.

Between January 2, 1990 and December 30, 2005, the average value of the VIX Index was 19.45, with a standard deviation of 6.40. The one standard deviation (67% confidence interval) range was 13.05 to 28.85, and the two standard deviations (95% confidence) range was from 6.65 to 32.25. On 30 April 2008, the VIX closed at 20.79, slightly above its long term average value. However, we believe this level is too low in light of rising uncertainty in the world economy and continuing turmoil in financial markets. Hence, we conclude that equity volatility is likely still undervalued today.

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 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 rolling three month returns in the table give a rough indication of how investors 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. When the rolling returns on different strategies indicate different conclusions about the most likely direction in which the economy is headed, we place the greatest weight on bond market indicators. Why? We start from a basic difference in the psychology of equity and bond investors. The different risk/return profiles for these two investments produce a different balance of optimism and pessimism. For equities, the downside is limited (in the case of bankruptcy) to the original value of the investment, while the upside is unlimited. This tends to produce an optimistic view of the world. For bonds, the upside is limited to the contracted rate of interest and getting your original investment back (assuming the bonds are held to maturity). In contrast, the downside is significantly greater – complete loss of principal. This tends to produce a more pessimistic (some might say realistic) view of the world. As we have written many times, investors seeking to achieve a funding goal over a multi-year time horizon, avoiding big downside losses is arguably more important than reaching for the last few basis points of return. Bond market investors' perspective tends to be more consistent with this view than equity investors' natural optimism. Hence, when our rolling rotation returns table provides conflicting information, we tend to put the most weight on bond investors' implied expectations for what lies ahead.

Three Month Rolling Nominal Returns on Classic Rotation Strategies in the U.S. Markets

***Rolling 3 Month
Returns Through***

30Apr08

| | | | | |
|---------------------------------------|--|--|--|--|
| <i>Economy</i> | Bottoming | Strengthening | Peaking | Weakening |
| <i>Interest Rates</i> | Falling | Bottom | Rising | Peak |
| <i>Style and Size Rotation</i> | Small Growth (DSG) 1.43% | Small Value (DSV) 0.41% | Large Value (ELV) -0.74% | Large Growth (ELG) 3.65% |
| <i>Sector Rotation</i> | Cyclicals (IYC) -0.73% Technology (IYW) 3.77% | Basic Materials (IYM) 8.97% Industrials (IYJ) 2.38% | Energy (IYE) 17.81% Staples (IYK) 0.30% | Utilities (IDU) 2.07% Financials (IYF) -7.60% |
| <i>Bond Market Rotation</i> | Higher Risk (HYG) 2.36% | Short Maturity (SHY) 1.04% | Low Risk (TIP) -0.69% | Long Maturity (TLT) -0.84% |

The following table sums up our conclusions (based on the analysis summarized in this article) as to potential asset class under and overvaluations at the end of April 2008. The distinction between possible, likely and probable reflects a rising degree of confidence in our conclusion.

| | |
|-----------------------------|---|
| Probably Overvalued | Commodities, Corporate Bonds/Credit Risk, Equity Markets in Canada, Japan, the U.S. and India |
| Likely Overvalued | Commercial Property except Australia |
| Possibly Overvalued | India, U.S., Canada and Eurozone Govt Bonds |
| Possibly Undervalued | Australian Dollar and UK Pound Govt Bonds; UK Equity; Australia Commercial Property; Non-U.S. Dollar Bonds |
| Likely Undervalued | Australian Dollar Real Return Bonds; U.K. Equity; Equity Volatility; Timber (in long run, if not short run given downward pricing pressure) |
| Probably Undervalued | |

May 2008 Economic Update

Successful investing requires us to make sense of situations that are often characterized by rapid change, information overload, and time pressure to make high stakes decisions. Even

passive investors face this challenge, to the extent that they need to identify and limit their exposure to substantially overvalued asset classes, with their attendant potential for large losses. In our conception of this challenge, sensemaking is a circular process, characterized by multiple feedback loops, that is comprised of three stages:

1. Allocating our limited attention to obtaining certain types of information;
2. Identifying the most likely causes of the current situation; and,
3. Based on that understanding, forecasting the most likely ways the situation could evolve in the future, and deciding what action to take.

The circularity and complexity of this process manifests itself in many ways. Consider the first stage – the allocation of our scarce attention. To a great extent, this takes place outside of our conscious control, guided by our existing mental model (developed in stage 2) about the way the world works – the key variables to which we must pay attention, their normal range of values, and how they interact with each other to produce outcomes of interest (e.g., returns on our portfolio). We also have a natural tendency (which was no doubt useful eons ago when our ancestors lived on the East African plain) to attend to variables characterized by fast and/or large changes. To the extent that we are conscious of decisions regarding how we allocate our scarce attention, we are most often trying to check on how our previous forecasts matched up with actual results, rather than how well the indicators we used actually correlated with the eventual outcomes we were trying to forecast. However, when the gap between our forecasted outcomes and the actual result grows too wide, it can trigger a reexamination of our basic mental model of the situation. We also have a well-documented tendency to pay attention to information that others are also focusing on, regardless of its reliability and diagnostic value (i.e., its ability to help us determine which explanation or forecast is most likely to be accurate). To a greater extent than most of us acknowledge, the allocation of our scarce attention is socially driven.

In the second stage of this process, we try to construct a mental model to understand the situation we observe. Following the principle that humans always try to conserve the use of their scarce cognitive resources, we can think of this stage of the sensemaking process as follows. Our initial attempt at understanding a new situation is largely unconscious, and

based on the recall of mental models that we used in similar situations, or, at a more conscious level, situations that seem analogous to the one we face. Our ability to use these approaches is fundamentally dependent on the range of our experience and knowledge of history. If these are inadequate, and fail to provide a satisfactory understanding of the situation at hand, we typically proceed to a conscious attempt to recall and evaluate known theories that could explain what we observe. If this approach fails, we are forced to take the approach that requires the most mental energy: deliberate analysis of a truly novel situation on its merits, and the use of induction to create new generalized theories on the basis of the apparent causes and effects we observe. Human nature makes accurate induction particularly challenging when causes and effects are widely separated in time, and/or asymmetric and/or non-linear. It therefore comes as no surprise that humans tend to cling to their existing mental models until the evidence that they are outmoded becomes overwhelming, in order to avoid the heavy mental effort required to change them.

In the third stage, of the sensemaking process, we use our current mental model to deduce (forecast) how the situation is likely to evolve. In some cases, this includes an assessment of how any actions we could take would affect this evolution. To close the circle, implicit in the forecasts we make are judgments about where we should direct our scarce attention in the next stage of the cycle.

Clearly, sensemaking is not an easy task. Moreover, when the number of elements being forecast grows large (as is usually the case with active investment management) the cognitive challenges grow exponentially more difficult (which no doubt accounts for some of the attractiveness of both quantitative – model driven – active strategies, that remove human beings from the sensemaking loop, except when a modification of the model is required).

This description of sensemaking suggests that a broad perspective on economic and financial history, as well as familiarity with advances in investment theory should play important roles in investors' sensemaking process. Unfortunately, too often they don't – and investors are likely much poorer as a result. A number of recent papers help to illustrate why this is so.

Let's start with economic and financial history. In "This Time is Different: A Panoramic View of Eight Centuries of Financial Crises", Reinhart and Rogoff find the data show that "serial default is a nearly universal phenomenon as countries struggle to transform themselves

from emerging markets to advanced economies. Major default episodes are typically spaced some years (or decades) apart, creating an illusion that ‘this time is different’ among policymakers and investors.” They also provide fascinating and important evidence that “each lull has invariably been followed by a new wave of defaults” and “crises have frequently emanated from financial centers with transmission through interest rate shocks and commodity price collapses.” In particular, “over the period 1800 to 2006, peaks and troughs in commodity price cycles appear to be leading indicators of peaks and troughs in the capital flow cycle, with troughs typically resulting in multiple defaults.” The authors also show how “historically, significant waves of increased capital mobility are often followed by a string of domestic banking crises” and that “other crises, including inflation and exchange rate crashes” often accompany debt default. As they note, “the recent US sub-prime financial crisis is hardly unique.”

The second outstanding history paper is “Macroeconomic Crises Since 1870” by Barro and Urusa. Barro, as readers may recall, is the author of another famous paper (“Rare Events and the Equity Premium”) on the impact of rare but deep crises on investors’ required returns on real return bonds (it makes them lower) and equities (it makes them higher). The authors find, across 22 countries, 148 crises (defined as a peak to trough decline of 10% or more in GDP), “implying disaster probabilities of around 3.6% per year. The disaster size has a mean of 21% (decline in GDP) and an average duration of 3.5 years.”

The third history paper is published by the Bank for International Settlements. In “Growth Dynamics: The Myth of Economic Recovery”, Cerra and Saxena note that “crises, shocks and changes in policies can be ignored only if their output consequences are transitory.” Based on their study of data for a large number of countries, they critically find that “economic contractions are not followed by offsetting recoveries. Trend output lost is not regained, on average. Wars, crises and other negative shocks lead to absolute divergence and lower long-run growth.”

In sum, the main message of these three recent papers is clear: crises occur with depressing regularity, tend to follow common patterns, and have lasting negative effects. Keep that in mind the next time someone tells you, “this time is different.” Let us now move on to a short review of some of the excellent theoretical papers published recently, that can

expand the approaches an investor can use to understand a situation and forecast how it is likely to evolve.

The best of these, which we strongly recommend all our subscribers read, is “The Virtues and Vices of Equilibrium and the Future of Financial Economics” by Doyne Farmer and John Geanakoplos. The paper presents an extended review of the equilibrium and rational expectations models that underlie many of the most popular theories used in financial economics. The authors then provide an extended critique of the equilibrium approach, and the additional insights that come from the use of agent based and other behavioral models that assume that while markets may be attracted to equilibrium and rational pricing, they are seldom in this state. No summary can do this paper justice; it is worth your while to read it.

Three other new papers explore the implications of the risk of rare but serious disasters, as evidenced by the historical studies noted above. In “Variable Rare Disasters: An Exactly Solved Framework for Ten Puzzles in Macrofinance”, Xavier Gabaix, the author theorizes that, building on Barro’s work, “during a disaster, an asset’s fundamental value falls by a time varying amount, which in turn generates time varying risk premia and volatile asset prices.” He concludes that if his assumption of an “intensity of disaster” that varies over time is correct, it ties together and explains a range of apparent anomalies, including the relatively high equity risk premia, excess equity return volatility and low real interest rates we observe in historical data. Importantly, Gabaix notes that “the model is presented as fully rational, but [also] could be interpreted as a behavioral model. The changing [investor] beliefs about the intensity of possible [future] disasters are very close to what the behavioral finance literature calls “animal spirits” and the recent rational expectations literature calls “time varying risk aversion. The theory’s structure gives a consistent way to think about the impact of changing sentiment on prices.” More recently, Gabaix and Emmanuel Farhi have teamed up to write “Rare Disasters and Exchange Rates”, which offers a theory to explain the so-called “forward premium puzzle” where countries with relatively higher interest rates often see their currencies appreciate rather than depreciate as the uncovered interest parity (UIP) theory predicts. The authors also link exchange, interest rate and equity market conditions together: “high domestic interest rates imply high currency risk premia – an expected appreciation of the currency – and low equity risk premia.” The authors note, however, that “time varying

disasters are inherently difficult to assess. As such, they might be especially vulnerable to expectations errors.”

This is a point Martin Weitzman analyzes in depth in his paper, “Subjective Expectations and Asset Return Puzzles.” His starting point is the “big three” of financial anomalies: given the relatively low historical variability of consumption, historical equity risk premiums and volatility seem too high, and real interest rates too low. Weitzman’s key (and common sense) assumption is that the average investor does not accurately understand the structure of the underlying process generating changes in future consumption. Uncertainty about the true likelihood of bad events (e.g., a sharp decrease in consumption) changes the perceived distribution of future consumption growth from a normal distribution to a so-called “T-distribution” that has fatter tails – i.e., to a distribution in which substantial downside events have a higher probability than assumed in standard finance theories derived only from observing historical data (note that this is changing, as more historical research like the papers cited above is published). Weitzman concludes that “aversion to structural uncertainty increases both the equity risk premium [i.e., required returns on equity] and equity volatility, while simultaneously decreasing the risk free real interest rate” (for a practical application of this view to climate change, see Weitzman’s paper “The Role of Uncertainty in the Economics of Catastrophic Climate Change”).

Finally, another recent paper highlights the centrality of the credit cycle to patterns of equity returns over time. In “Asset Pricing and The Credit Market”, Longstaff and Wang begin by noting that the credit market facilitates borrowing by less risk averse investors from those who are more risk averse. When this process is constrained, the market impact of the former group declines relative to the latter. This causes an increase in the average required return on equity, and a consequent decline in equity prices.

In sum, the recent papers noted above provide investors with a wealth of historical patterns and theories that can help us to better understand the causes of the economic and market changes underway today, to make educated forecasts of where they could lead, and to understand the consequences of these scenarios. With that in mind, we will briefly review our basic economic scenarios and the critical uncertainties that underlie them, and then turn to the IMF’s most recent analysis of the global economic outlook.

The first branch of our scenario tree is between a mild global economic slowdown, and one that is deeper and more protracted. The resolution of two critical uncertainties will determine which of these develops over the next few months. The first question is whether the lagged impact of interest rate and tax cuts, the depreciation of the dollar versus the Euro, and the Federal Reserve's efforts to limit the contraction of market liquidity will be sufficient to prevent the development of a recession in the United States. The forces militating against the success of these moves are substantial. House price declines have been significant in many markets, and appear to be accelerating. Since, at more than 6% of GDP, the contribution of residential investment to demand growth was at an all time high in the United States, and since, at 70% of GDP, consumption spending was also near an all time high (with a considerable amount of this financed by loans secured against housing equity), the impact of falling house prices on U.S. demand is sure to be large. At the same time, U.S. businesses and consumers are facing substantially higher energy and food prices than a year ago, which is feeding into higher inflation which further contributes to the sense of economic uncertainty in the United States. It is also not at all clear that the "deleveraging" of the U.S. economy has come anywhere close to its logical conclusion. Moreover, due to higher oil import costs, and perhaps a scarcity of export capacity in certain industries (e.g., capital goods, where a lot of capacity has moved offshore over the past decade), the significant decline in the U.S. dollar versus the Euro and other currencies (but not, notably, against the Chinese renminbi) has had a relatively weak impact on the nation's net trade balance. As a result, the U.S. continues to be heavily dependent on foreign central banks for the financing of its still very large current account deficit (foreign private investors are no longer significant buyers of U.S. dollar denominated assets). Overall, the combined impact of all these negative factors on the psychology of American consumers cannot help but be significant. We have serious doubts that the monetary and fiscal stimulus now working its way through the U.S. economy will be sufficient to overcome these negative forces. The second major uncertainty is whether China will choose to make significant policy changes to further stimulate domestic demand growth in its economy, to pick up the slack left by consumer retrenchment in the United States and declining exports to that market. To some extent, this trend is already underway, with domestic demand growing at an increasing rate. However, there is still the perception (e.g., evidenced by the reluctance of the Chinese government to allow its exchange rate versus the

dollar to further appreciate) that this process is not taking place fast enough to offset the global impact of a slowing U.S. economy.

The most commonly proposed policy change is substantial reform of China's healthcare, education and retirement income security systems, which would (assuming Chinese consumers trust the long term viability of these new programs) reduce the need for savings and release funds for increased consumption spending.

Thus far, however, policy change in China has been slow, and more focused on reducing inflation which (due to rising commodity costs and growing skilled labor shortages) has recently passed 8%. This is a top priority issue for the Chinese government, because in the past high inflation has been associated with rising levels of social unrest (e.g., 1989). Given continued strong exports, any attempt to further stimulate domestic demand would only further aggravate this inflation problem. On the other hand, there remains a serious risk that, absent substantial policy changes to further stimulate domestic demand growth, the fall in exports caused by the slowing of the U.S. economy could set off a very dangerous process in China, as export oriented firms facing overcapacity default on loans (reducing confidence in the banking system where most consumer savings are held), layoff workers, and/or try to keep up capacity utilization by sharply cutting prices and trying to sell those goods in either the domestic market or in export markets. This latter move could set in motions deflationary forces that could further worsen already weak credit market conditions. To some extent, this process is already underway, as evidenced by the sharp drop in the domestic Shanghai exchange index this year, which must have dented consumer confidence (equally disturbing is a new paper, "Just How Capitalist is China?", by Yansheng Huang of M.I.T., who concludes that, beneath the surface, the country has been losing dynamism since the mid 1990s, when more state oriented urban interests gained the upper hand over more entrepreneurial rural interests). Given the reluctance of the Chinese government to take more aggressive policy measures, we cannot help but believe that they are waiting to see if U.S. stimulus measures will be sufficient and allow the current system to continue a bit longer, despite its increasing fragility. If this bet proves wrong, however, their delay in taking the policy steps needed to boost domestic demand may result in a sharp decline in the Chinese economy.

There is also an argument that the Chinese government may view a prolonged world recession as being in their best long term interests, provided that its domestic consequences

can be managed. As we noted in February, “a prolonged recession would further weaken the United States, and could strengthen China's relative position in the world. Moreover, a prolonged crisis in the capitalist economies of North America and Europe might also strengthen the Chinese regime's popular legitimacy at home, and help defuse some of the current political tensions caused by high levels of inequality and corruption. Last but not least, as a means of moderating the sharp rise in domestic inflation caused by the pegging of its currency to the U.S. dollar, a slowdown in growth (as would be caused by falling exports to the U.S., offset to some extent by increased domestic consumption) might be preferable to a sharp appreciation of the renminbi, which would trigger immediate, very large, and quite possibly politically costly losses on China's foreign exchange reserves. In sum, while we clearly see how an appreciation of the renminbi versus the U.S. dollar and increased Chinese domestic consumption could benefit the rest of the OECD, we cannot say the same for the benefits to the Chinese leadership in the short and medium term, unless they decide a global downturn would place the survival of the current government at an unacceptable level of risk.” Regarding the latter issue, the recent display of Chinese nationalism in the face of protests along the Olympic Flame route certainly cause one to wonder whether this powerful force might be harnessed (e.g., via a raising of tension with Taiwan) to support the survival of the Chinese government through a prolonged global economic downturn. And we also have to remember that the U.S. current account deficit today is being financed not by private investors, but by central banks – of which the Chinese People's Bank of China/State Administration for Foreign Exchange is by far the most important player. To be blunt, if the Chinese government wants to trigger a dollar crisis and global recession, it is well within its power to do so.

This brings us to the next branch in our scenario tree. Assuming the world enters a recession (based on how our U.S. and Chinese growth and political uncertainties turn out), we have two further scenarios about what will transpire next: either a deep and prolonged recession characterized by high levels of conflict and uncertainty, or one where heightened global cooperation limits its severity and duration. More specifically, we have pointed to the future actions of three different groups as central to whether the conflict or cooperative scenarios is likely to develop. The first is Chinese peasants, who seem to hold the key to domestic stability in China. If their resentments continue to build (e.g., over rising inflation

and falling standards of living, corruption, widening income gaps, continued land seizures, and poor health care, education and old age income security), and if they become better organized (e.g., through better use of technology, or by organizations like Falun Gong or disaffected former People's Liberation Army members), then the chances of serious instability in China and disruption to its (and, by extension, the world's) economy sharply increase. In this context, it will be interesting to see how the outrage provoked by the recent earthquakes in China plays out, particularly the grief and anger of so many families who lost their only children in the collapse of multiple poorly built schools. In the medium term, either improving conditions or diversion of the people's growing anger (e.g., into rising nationalism and international tensions) could be used to keep this powderkeg from exploding, as it has many times in China's past.

The second key group is Iranian youth. Two third's of that country's population is under thirty years old, and unemployment, by unofficial estimates, now stands at roughly 25 percent, while inflation approaches 20 percent. Political stability rests on government subsidies (e.g., for energy and imported food), which are financed with oil export earnings. On the positive side, the National Intelligence Estimate released last December by the United States seems to have reduced the tensions somewhat between Iran and the United States. Moreover, in recent parliamentary elections, reformists (despite the disqualification of many of their candidates) and so-called "pragmatic conservatives" did very well, and President Ahmadinejad's supporters suffered a significant setback. This seems to bode well for a reduction in the belligerent rhetoric that has characterized the Ahmadinejad regime. At this point, with Ahmadinejad the subject of growing criticism for his mismanagement of the economy (which has been amplified by the impact of international sanctions), a sharp fall in the price of oil, particularly if it was not matched with a fall in the price of imported food, could lead to significant unrest and perhaps a change to a more moderate government. Alternatively, rising unrest among young Iranians could cause President Ahmadinejad to force a confrontation with the West, in an attempt to harness Iranian nationalism to retain his political control.

The third group whose actions are central to the evolution of a cooperative or conflict driven scenario is the American middle class, and increasingly their peers in other Anglo Saxon countries. All of them have been coming under increasing economic pressure, made

worse by the ever widening gap between stagnant real wages for the middle class and significant increases for those at the top of the income and wealth distribution. This situation is only being made more difficult by falling house values and rising energy and food prices. The consequences of these unprecedented (at least for most Americans) pressures are currently on full display in the U.S. presidential primaries. As Douglas Schoen noted in the Washington Post, "Voters today aren't just fed up with the status quo; they're furious." The consequences of this rising anger are as yet unknown, and will undoubtedly depend on the quality of these nations' political leadership. On the upside, it could, in the presence of effective leadership, lead to the reestablishment of the political center and substantial progress towards resolving America's underlying economic tensions.

On the downside, significantly higher taxes on upper income taxpayers (with no accompanying changes in spending) and/or increased protectionism (even of the "cut your nose off to spite your face" variety) cannot be ruled out. Regarding the latter possibility, it is well to keep in mind one of the key conclusions in the 2007 Report of the Congressionally chartered U.S. – China Economic and Security Review Commission (www.uscc.gov): "China's mercantilist policies are taking a huge toll on small and medium sized manufacturing facilities and their workers in the United States. While U.S. – based multinationals can transfer and have transferred much of their production to China, small and medium sized manufacturers in the United States are not as mobile. They face the full brunt of China's unfair trade practices, including currency manipulation and illegal subsidies for Chinese exports. This is significant because small and medium enterprises represent sixty percent of the manufacturing jobs in America." With the middle class under increasing pressure and America in the throes of a presidential election year, the outlook is volatile indeed.

Finally, our basic framework for understanding the world economy and financial markets also includes two "wildcards" whose impacts, while impossible to predict, could easily be very substantial. The first is the continuing evolution of the H5N1 influenza virus. While the "pandemic flu" headline long ago disappeared from the world's headlines, the virus itself has continued to steadily evolve. Most recently, the World Health Organization warned in early May that the risk of a pandemic developing had grown, as the virus became entrenched in poultry populations around the world. On the positive side, we have not seen any sharp

increase in rates of human to human transmission, even in Egypt and Indonesia, the two countries where H5N1 seems to be most widespread and fastest evolving. On the other hand, H5N1 continues to be unusually lethal in those humans who become infected. If the past is any guide, then as evolution makes H5N1 easier to pass between humans, it should also become less lethal. If that doesn't happen, we are likely in for a very nasty stretch that could substantially reduce global growth rates.

The second wildcard is a major environmental incident that causes very substantial economic damage and/or widespread loss of life. In our view, most human beings have an innate desire for transcendent experience. Traditionally, this has been satisfied by the world's religions. However, in an increasingly secular world, their "market share", so to speak, has been falling, particularly in the West. What often seems to be taking the place of religion is a growing concern for the environment that at times borders on nature worship (i.e., animism), and is finding increasing expression in the political arena (e.g., the recent decision to name the polar bear as an endangered species, which seems likely to trigger a great burst of CO2 related litigation). Given these trends, it seems likely, in our view, that an extreme environmental event could trigger a rapid acceleration in efforts to limit CO2 and other emissions, which in turn would create new investment opportunities (e.g., in the so-called "cleantech" space) but also possibly slow down economic growth (at least in the short term) as taxes are imposed on CO2 emissions. If this environmental shock came in the middle of a global recession, its affect could be quite beneficial, in that it could trigger a wave of new investment; however, if it came in the middle of a period of strong economic growth, it might have a negative effect.

The following table sums up our three scenarios, including the indicators we watch to see if they are developing, as well as our assessment of their implications for different asset classes:

| | Short Shallow Recession | Prolonged Shallow Recession | Prolonged, Deep Recession |
|------------------------|--|---|---|
| Key Indicators: | <ul style="list-style-type: none"> • End of house price declines in U.S.; moderate declines in U.K. • Narrowing credit | <ul style="list-style-type: none"> • Continued falls in house values in multiple countries • Credit spreads | <ul style="list-style-type: none"> • Sharp falls in commodity prices • Credit market conditions |

| | Short Shallow Recession | Prolonged Shallow Recession | Prolonged, Deep Recession |
|--|--|--|--|
| | <p>spreads and improving liquidity</p> <ul style="list-style-type: none"> • Expansion of domestic demand in China • Commodity prices stay high; inflation remains above targets • Foreign central banks continue to finance U.S. current account deficit – sharp fall in dollar’s value avoided | <p>remain wide and liquidity tight</p> <ul style="list-style-type: none"> • Reduced consumption spending in U.S. and Europe • Falling exports in China with no offsetting rise in domestic demand • No sharp fall in U.S. dollar • Moderate fall in commodity prices; inflation at target levels • No major domestic unrest in China; new U.S. President able to build effective domestic and international coalitions; Ahmadinejad bypassed or replaced and move toward moderation of Iranian foreign policy | <p>worsen and liquidity becomes more scarce</p> <ul style="list-style-type: none"> • Sharp fall in inflation; possible appearance of deflation • Rising tensions between U.S. and China and/or Iran • Rising domestic unrest within China |
| <i>Implications for Asset Classes:</i> | | | |
| Real Return Bonds | Could lead to an increase in real rates, and negative return on RRBs | Further increases in risk aversion and falling investment cause real rates to | Further increases in risk aversion and falling investment cause real rates to |

| | Short Shallow Recession | Prolonged Shallow Recession | Prolonged, Deep Recession |
|--|---|--|---|
| | | fall further; positive returns on RRBs | fall further; positive returns on RRBs |
| Nominal Return Government Bonds | Yields could rise as economy recovers and/or due to inflation, producing negative returns | Flight to quality should bid prices up and yields down; returns will be positive | Falling inflation or deflation would produce strong returns |
| Exchange Rates and Gold | Commodity exporters (AUD, CAD) remain strong/gradually appreciating; CNY (China) appreciates; gold benefits from continued inflation concerns | Little change from current levels; perhaps some appreciation of USD as part of flight to quality | Sharp increase in U.S. dollar (could be temporarily offset by China selling US Govt bonds); sharp increase in gold (flight to quality) |
| Commercial Property | Could see rising returns as confidence grows that deep recession has been avoided; may also benefit from being a perceived inflation hedge | Continuing weakness and negative returns | Significant price falls and negative short term returns (which, looking further ahead, set the stage for substantial positive returns when the economy eventually recovers) |
| Commodities | Possibly high returns driven by combination of true scarcity in some cases, and growing speculative bubble in others | Falling returns | Sharply negative returns |
| Timber | Positive returns as investors look for inflation hedge | Flat to negative returns as falling construction causes downward price pressure | Positive returns as investors hedge deflation risk |
| Equity | Flat to positive | Negative returns | Very negative |

| | Short Shallow Recession | Prolonged Shallow Recession | Prolonged, Deep Recession |
|--------------------------------------|--|--|--|
| | returns, depending on degree of investor belief that deep recession has been avoided | | returns |
| Uncorrelated Alpha Strategies | Moderate positive returns | Negative returns for leverage based strategies | Very negative returns for leverage based strategies |
| Equity Market Volatility | Moderate positive return | Strong positive returns | A long deep recession could reduce volatility and returns. |

Obviously, the key question is which of these scenarios is most likely to develop. In this regard, it is worth quoting at length from the most recent (April 2008) World Economic Outlook published by The International Monetary Fund.

“The global expansion is losing speed in the face of a major financial crisis. The slowdown has been greatest in the advanced economies, particularly in the United States, where the housing market correction continues to exacerbate financial stress. Among the other advanced economies, growth in western Europe has also decelerated, although activity in Japan has been more resilient. The emerging and developing economies have so far been less affected by financial market developments and have continued to grow at a rapid pace, led by China and India, although activity is beginning to slow in some countries. At the same time, headline inflation has increased around the world, boosted by the continuing buoyancy of food and energy prices. In the advanced economies, core inflation has edged upward in recent months despite slowing growth. In the emerging markets, headline inflation has risen more markedly, reflecting both strong demand growth and the greater weight of energy and particularly food in consumption baskets. Commodity markets have continued to boom despite slowing global activity. Strong demand from emerging economies, which has accounted for much of the increase in commodity consumption in recent years, has been a driving force in the price run-up, while biofuel-related demand has boosted prices of major food crops. At the same time, supply adjustments to higher prices have lagged, notably for oil,

and inventory levels in many markets have declined to medium- to long-term lows. The recent run-up in commodity prices also seems to have been at least partly due to financial factors, as commodities have increasingly emerged as an alternative asset class.”

“The financial shock that erupted in August 2007, as the U.S. subprime mortgage market was derailed by the reversal of the housing boom, has spread quickly and unpredictably to inflict extensive damage on markets and institutions at the core of the financial system...One of the most dramatic aspects of this crisis has been an unprecedented loss of liquidity... The persistence of liquidity problems has been due in large part to increasing concerns about credit risks...The global economy is now facing a widespread deleveraging as mechanisms for credit creation have been damaged in both the banking system and the securities markets – that is, both of the financial system’s twin engines are faltering at the same time...Liquidity remains seriously impaired despite aggressive responses by major central banks... evidence is gathering of a broad credit squeeze—although not yet a full-blown credit crunch... The pressures on household finances in the United States are likely to be augmented by the correction in equity prices in early 2008, and by deteriorating labor market conditions...A protracted weakening of growth in the advanced economies would have negative effects on the growth prospects of emerging and developing economies. Significantly weaker global growth would likely slow their exports and trigger a decline in commodity prices, with knock-on effects on domestic demand and especially investment.”

“The overall balance of risks to the short-term global growth outlook remains tilted to the downside...Large global current account imbalances also remain a worrisome downside risk for the global economy...The disproportionate pattern of adjustment in exchange rates since the summer of 2007 means that certain emerging economy currencies remain overvalued and that new misalignments may be emerging. At the same time, there is a concern that financial market dislocations have reduced confidence in liquidity and risk-management characteristics of U.S. assets and institutions. Coming on top of prolonged weak returns in U.S. markets relative to those elsewhere, investors and fund managers (including of international reserves and sovereign wealth funds) may increasingly seek to diversify their portfolios. This would make it more difficult to obtain the flows needed to finance the U.S. current account deficits and may even trigger a disorderly adjustment. There are also concerns about increasing

protectionist sentiment in the advanced economies, particularly in the context of deteriorating labor market conditions.”

“To further explore the downside risks to the global economy, the IMF staff has constructed an alternative scenario based on a combination of negative shocks, using a new multicountry general equilibrium model. Assessing the impact of multiple shocks is difficult because of significant interactions between sectors within an economy, across economies, and over time. These interactions generate positive and negative feedback, leading to nonlinear reactions. A model-based approach allows a more systematic examination of these interactions and of the potential effects of alternative policy responses, although of course no single model can possibly capture all aspects of a situation. The downside scenario is based on a combination of three related shocks. First, it includes a temporary shock to consumption and investment from a further tightening of credit conditions while the financial system goes through a protracted rehabilitation period during which capital and credibility are repaired after extended financial turmoil. Equity and real estate prices would be reduced relative to baseline (by 30 percent and 20 percent, respectively). The economic impact of this shock is felt most directly in the United States and western Europe, but it also affects parts of the world that have heavily relied on borrowing. Second, the scenario builds in a permanent downward shift in expectations for long-term productivity growth in the United States, which would tend to raise the U.S. saving rate as households and businesses adjust their expectations for capital gains and lower investment. Third, the scenario incorporates a shift in investor preferences away from U.S. assets, raising their risk premiums and reflecting investors’ diminished confidence in the U.S. financial system and their downscaled expectations for U.S. potential growth. Under this scenario, the U.S. economy would experience a deeper and more extended recession as negative effects from lower asset prices and lower longer-term growth expectations continued to depress aggregate demand, even with a gradual improvement of credit availability and with substantial support from monetary easing and fiscal stabilizers. Slower domestic demand growth, together with exchange rate depreciation, would contribute to an improvement in the U.S. current account. The euro area would undergo an extended period of weakness, as the economy faces the negative financial shock and upward pressure does not build in the longer-term adverse shift included for the United States. The rest of the world would also experience a slowdown in the aggregate, albeit less

intense. Although the global model does not explicitly model housing markets or commodity prices and includes only limited country detail, the negative effects appear most intense in countries with particularly large exposure to house price and commodity cycles. Thus, countries in western Europe that have experienced rapid house price appreciation in recent years—such as Spain and the United Kingdom—as well as some emerging economies with booming housing markets—would be vulnerable to sustained housing corrections that would amplify their business cycles. Commodity prices would also be expected to weaken in the context of a global downturn that slowed growth in the large Asian emerging economies that have accounted for the bulk of the increase in demand for commodities in recent years. Such a shift would have consequences for exporters of food and metals in Africa and Latin America, as well as for oil exporters in the Middle East and elsewhere. This scenario is intended to be illustrative, but it underlines two key points. First, a downturn would be expected to have global consequences, leading to more moderate rates of growth in emerging and developing economies and exposing some of them to greater external financing strains. Second, a downturn could be followed by a slow rather than rapid recovery, as financial system constraints take time to dissipate and as negative wealth effects continue to dampen activity.”

In sum, we continue to be pessimistic about what lies ahead for the world economy. That said, there remains substantial uncertainty about how events will unfold, and their eventual impact on different asset classes. We continue to believe that investors should ensure that they have adequate cash reserves (which can be increased, if necessary, by selling down overvalued asset classes) and have rebalanced their portfolios to overweight asset classes that appear undervalued today, and to underweight those that appear to be overvalued. We emphasize that, given the incentive structure under which many investment managers operate, not to mention the difficulty of estimating fundamental asset values in rapidly changing environments, we believe there is a greater structural tendency towards herding and prolonged overvaluation in financial markets today than there was in the past. The fragility and risk this creates are only magnified when large amounts of leverage are added to the mix as they have been in recent years. As we have seen in the credit markets, this can cause savage falls in asset prices when liquidity contracts. Under these conditions, prudent investors need to redouble their efforts to identify and take steps to limit their exposure to substantial overvaluations. We recognize that this involves making judgments on the basis of imperfect

foresight, and occasionally feeling pangs of regret when it appears one has sold too soon (i.e., when an asset class an investor believes to be substantially overvalued keeps rising after he or she has reduced his or her exposure to it). Recognizing the powerful influence these emotions can have on our decisions, we remain more committed than ever to the discipline of grounding one's decisions in the outputs from a consistent set of valuation models. When one's emotions are in conflict with a model's results (as they may be today), an investor can then ask what valuation assumptions would make the two consistent with each other. More often than not, the end result of such an exercise is not favorable to an overly emotional approach to investing.

Here then, is our view of different asset class valuations at the end of April 2008, in light of our outlook for the global economy:

| | |
|-----------------------------|---|
| Probably Overvalued | Commodities, Corporate Bonds/Credit Risk, Equity Markets in Canada, Japan, the U.S. and India |
| Likely Overvalued | Commercial Property except Australia |
| Possibly Overvalued | India, U.S., Canada and Eurozone Govt Bonds |
| Possibly Undervalued | Australian Dollar and UK Pound Govt Bonds; Australia Commercial Property; Non-U.S. Dollar Bonds |
| Likely Undervalued | Australian Dollar Real Return Bonds; U.K. Equity; Equity Volatility; Timber (in long run, if not short run given downward pricing pressure) |
| Probably Undervalued | |

Product and Strategy Notes

Interesting New Research

Deciding whether to invest actively (either by directly picking securities, or by picking a manager whom you believe is skilled at this art) is, at one level, a decision on how confident you are in your own sense of expertise. While we can and do argue that there is a higher wisdom involved – that involves recognizing the limits of one's knowledge and the power of one's emotions – we also recognize how the investment management industry very effectively plays on our natural desire to feel confident in our own judgment. Passive investing is for wimps, “who wants to be just average?” and all that. Regular readers know this game well.

Two papers we read recently provide interesting food for thought on this issue. In “To Hold Familiar Assets or To Diversify? Keynes Meets Markowitz”, Boyle, Garlappi, Uppal, and Wang develop a theory of why, when the level of ambiguity about the economy is high, investors might prefer the apparent security of investing in assets they know well (e.g., stock in the company where they work). However, a more recent paper (“Expertise Bias” by Dskeland and Hvide) provides a well-documented cautionary note about the risks of this strategy. Using a very detailed Norwegian data set, they ask whether concentrated holdings are driven by investors’ possession of truly superior insight (which would tend to generate superior returns) or by behavioral factors (like ambiguity aversion) which would not. They conclude the latter is the most likely case, since, in their data set, these investments were far more likely to underperform. We should all keep in mind the famous Will Rogers quote: “It isn’t what we don’t know that gives us trouble, it’s what we know that ain’t so.”

Further testifying to Rogers’ insight is another paper, “Why Does the Law of One Price Fail? An Experiment on Index Mutual Funds” by Choi, Laibson and Madrian. Subjects in their experiment were asked to allocate \$10,000 across four index funds that track the S&P 500. The 730 subjects’ rewards were tied to the future performance of their portfolio. They were given fund prospectuses that differed in an important way: annualized historical returns for the four index funds were covered different periods of time (e.g., Fund A had an annualized return of 18% between x and y; Fund B had a 15% return between a and b). Assuming all funds had similar tracking errors versus the S&P 500 Index (which wasn’t reported, though these are typically small), the optimal decision in this experiment was to invest all the money in the fund that had the lowest expense ratio, as that would maximize realized returns. Yet almost none of the subjects made this choice, and most of them identified the differing reported historical returns for the funds as one of the top three factors that affected their allocation decision (apparently, few people realized the implications of the differing time periods). Amazing – and depressing.

On the other hand, we were heartened by a study by Bernheim and Meer provocatively titled, “How Much Value Do Real Estate Brokers Add?” Based on a high quality data set involving repeat sales over a 26 year period of houses located on the campus of Stanford University, the authors systematically examine the various potential sources of a real estate agent’s value added and “find no evidence that the use of a broker leads to higher average

selling prices or that it significantly alters average initial asking price. However, clients who use brokers sell their houses more quickly.” And we won’t even get into the differences in the legal requirements for truthful disclosure between the real estate and the securities industries. Let’s just say we remain amazed that real estate agents have been able to keep charging their 6% commissions long after they went the way of the dodo in the securities industry. Perhaps agents’ stellar contribution to the ongoing housing price collapse, and buyers’ collective anger at having been hoodwinked will finally bring about long overdue change in this area.

New Product Launches

Downturn? What downturn? This month has seen not one, but two new “one stop shopping” ETFs launched that cover the global listed commercial property securities market. The first is from State Street – the SPDR Dow Jones Wilshire Global Real Estate ETF. It contains about 240 different property company securities (a definition that is broader than simply REITs) and an annual expense charge of .50%. Its ticker is RWO. The second product is the Cohen and Steers Global Realty Majors ETF. Its expense load is .55%, and its ticker GRI. It includes a smaller number (about 75) of the largest commercial real estate companies around the world. These two new products join the previously launched First Trust EPRA/NAREIT Global Real Estate Index Fund (.60% expenses, ticker FFR, about 300 companies in the index). As we have noted before, we generally believe these “global asset class” products are most attractive to people with few funds to invest who also want to maximize the diversification benefits in their respective portfolios. In this case, we prefer RWO, because of the greater number of securities and the lower expense charge. Investors with more to invest generally benefit from being able to assign different domestic/foreign weights than those built into these “all in one” products. While many researchers have found a significant common “global” component in commercial property returns across different countries, they have also found significant region and country specific factors that generate varying diversification benefits (depending on domestic versus foreign property weighting) at both the asset class and more importantly at the portfolio level (see, for example, “Global Real Estate Markets: Cycles and Fundamentals” by Case, Goetzmann and Rouwenhorst; “International Real Estate Returns: A Multifactor,

Multicountry Approach” by Bond, Karolyi and Sanders; “What Factors Determine International Real Estate Security Returns?” by Hamelink and Hoesli; “Global Commercial Property Market Cycles” by Goetzmann, Wachter and Case; “Commercial Retail Estate Return Performance: A Cross Country Analysis” by Ling and Naranjo, and the Global Real Estate Study done by Ibbotson Associates for that National Association of Real Estate Investment Trusts).

Another interesting new product was a series of foreign currency (actually, short term money market) ETFs launched by WisdomTree. Of particular note is CYB, the WisdomTree Dreyfus Chinese Yuan Fund (.45% annual expense charge). For the first time, this makes it easier for investors to add this increasingly important currency to their portfolios, either in their passive allocation to foreign currency bonds, or, for the more actively inclined, as a dedicated bet on the appreciation of the yuan/renminbi. Another interesting product in this line up (ICN) will track the Indian Rupee (.45% expenses). This will make it much easier for an investor domiciled outside of India whose functional currency is still the Rupee (e.g., because of an intention of retiring there) to make an allocation to domestic Rupee fixed income.

With oil prices so high today, the launch of an ETF that tracks the percentage change in home heating oil prices could not be better timed. The United States Heating Oil Fund (ticker UHN). Like other commodity index products based on a continuously rolled portfolio of commodity futures contracts, UHN will earn interest income (since futures are purchased on margin, the balance of the fund’s cash can be invested in U.S. Treasury Bills), which is estimated at about 1.25% per year in its prospectus. This more than offsets the .60% annual expense charge. However, what we find particularly interesting about the fund is that it will, for the first time, put a hedging vehicle within the reach of the average retail investor who heats his or her home with oil. For example, assume an investor spent \$2,000 on home heating oil this year, wants to protect him or herself against spending any more than that next year. Investing this amount in UHN could, assuming the product performs as intended, provide this type of hedge. If the price of physical heating oil increased by 25% (so that the year’s heating bill was now \$2,500), the price of the ETF would also increase by this amount, and selling the EFT would enable the investor to pay his or her heating bill at the targeted

\$2,000 cash cost. Of course, there are transaction costs involved in buying and selling the EFT, particularly if the ETF is sold in small lots. Needless to say, we don't expect home heating oil companies to be trumpeting this product's virtues, as they appear to charge quite healthy fees for the underlying options they offer in the form of "price locks" and similar types of contracts.

Moving on to products that are notable for other reasons, we shook our head when we read about Deutsche Bank's launch of a series of leveraged reverse commodity Exchange Traded Note Products. Think about it: thanks to the miracle of leverage, you too can now easily take large speculative positions in commodities. Think DB's commodity index is going to rise still further? They make it easy to double up your long side bet with DYY. Think the index value is going to fall? Then double up on the downside with DEE. Too bad they didn't call these products "DUHs". We're not fans, as you may have guessed by now. The last thing the investment management industry should be doing now is encouraging speculation in commodities. Whatever happened to fiduciary duty and capital preservation? Dying virtues, it seems.

Imitation is the Sincerest Form of Flattery Department

Canadian company Jovian Capital has launched three new ETFs that are funds of ETFs (with another layer of brokerage commissions and fees added). They note that they "have developed a series of tactical asset allocation portfolios which provide the benefits of ETFs with an asset allocation platform managed by one of Canada's largest independent money managers." These new ETFs are "designed to provide exposure to a combination of global equity, commodities and fixed income markets." The new ETFs come in three flavors: "Conservative Tactical Asset Allocation", "Balanced Tactical Asset Allocation" and "Growth Tactical Asset Allocation", "which all have been constructed following a disciplined, diversified approach that takes into account an investor's risk profile and investment time horizon." Wow. Breakthrough stuff. Well worth the high fees, we're sure. But at least "asset allocation" seems to finally be getting some attention. Who knows, maybe it's even becoming sexy. Try talking about it at the next party you attend, and let us know...

On a more serious note, both Vanguard and Russell have recently introduced specialized products aimed at retired investors who are trying to manage their decumulation

strategy. Russell calls their offering the LifePoints Target Distribution Strategies. They note that it is designed to “provide a steady, but not guaranteed annual distribution.” Their pitch is that “the funds leverage a unique, dynamic asset allocation strategy designed to provide retirees with an ongoing, reliable way to replace pre-retirement income; for certain funds, the potential to preserve some savings, and the flexibility to make changes throughout retirement” [take that, those of you pitching annuities!]. The funds come in two classes (the “S” Class charges 1% per year for “advice”), two target dates (2017 and 2027 – i.e., 10 and 20 year horizons), and high and low annual income targets.

Vanguard calls its offering “Managed Payout Funds.” They come in three flavors: “Growth Focus”, “Growth and Distribution Fund” and “Distribution Focus.” Annual real payouts (which are not guaranteed), as a percentage of capital, are targeted at 3%, 5% and 7% (sounds familiar), and annual expenses are .57%. We find it interesting, and heartening, that these funds not only focus on a constant real payout, but also that they can invest in a wide range of asset classes, including domestic, foreign and real return bonds, domestic, international and emerging market equities, commercial property, and commodities. Frankly, this sounds like a big step in the right direction for the decumulation market. It is about time they caught up with us!

New Research on Investing After Retirement

While the new products from Russell and Vanguard are clearly improvements over what preceded them, they do not yet incorporate the full range of findings from the explosion of recent academic research into decumulation problems (i.e., investing after retirement). The starting point for much of this research has been the observed facts that take up of annuities has been low, and that (as Love, Palumbo and Smith note in “The Trajectory of Wealth in Retirement”) “in real terms, the median household’s wealth declines more slowly than its remaining life expectancy, so that real annualized wealth actually tends to rise with age during retirement.” The key hypotheses that have been explored involve uncertain longevity, uncertain investment returns, uncertain exposure to future uninsured medical expenses, and intended bequests, either individually or interacting with each other.

Three early papers (which in this context means before 2006) in this area are “Annuities and Individual Welfare” by Davidoff, Brown; Diamond and “Health Shocks and

the Demand for Annuities” by Sinclari and Smetters; and “Differential Mortality, Uncertain Medical Expenses and the Savings of Elderly Singles” by De Nardi, French and Jones. Both found that precautionary saving for uncertain future health expenses (also known, in the U.S. papers, as “aversion to Medicaid”, which is the federal health assistance program for the poor) provided a good explanation for the low take up of annuities (which insure against outliving one’s assets, though at the cost, in many cases, of foregoing a bequest).

In “Elderly Asset Management”, Feinstein and Lin focus on how the utility of a retiree’s bequest motive changes over time, with attendant implications for asset allocation. For example, an investor’s willingness to take risk in order to provide a bequest is likely to be higher than willingness to take risk with respect to his or her annual income. This will also be affected by the amount of relatively illiquid housing equity that the investor plans to include in the bequest. In short, like health, the bequest motive is a moving target that is likely to evolve over a retiree’s lifetime.

In “Optimizing the Retirement Portfolio: Asset Allocation, Annuitization and Risk Aversion”, Horneff, Maruer, Mitchell and Dus find that while fixed percentage of capital withdrawal strategies work quite well, investor’s welfare can be enhanced if the decision to annuitize part of their savings can be made at multiple points in the future when more information is available about his or her health condition and likely longevity (a point we have made in our writing too). Finally, two papers published this year attempt to take an even more comprehensive approach, by incorporating uncertain future health as well as annuitization in their respective models. In “Optimizing the Equity-Bond-Annuity Portfolio in Retirement”, Pang and Warshawsky find that “the presence of health spending risk drives households to shift their portfolios from risky equities to safer assets and works to enhance the demand for annuities due to their increasing-with-age superiority over bonds as a hedge over health spending and longevity risks. The safe and higher return annuities in turn provide greater leverage for equity investments in the remaining asset portfolios” to help satisfy bequest motives. In “Portfolio Choice in Retirement: Health Risk and the Demand for Annuities, Housing and Risky Assets”, Motohiro Yogo of the University of Pennsylvania finds that these decisions evolve over time, and that the welfare gain from annuitization is highest for retirees in the best health. Finally, in the previously mentioned paper by Love, Palumbo and Smith (“The Trajectory of Wealth in Retirement”) the authors calibrate a model

that incorporates actual portfolio data as well as uncertainty about longevity, asset returns, and health as well as annuitization, household equity and a bequest motive. They find that their model appears to explain most of the observed portfolio data.

All of this research points to the conclusion that there is still much work to be done on the product development side, not only in the development of better decision support tools for retired investors (a subject near and dear to our hearts), but also in the development of new offerings that integrate the management of longevity and health risks. In “The Life Care Annuity”, Mark Warshawsky from Watson Wyatt proposes a product that combines long-term care and longevity risk protection. In “Annuity Valuation, Long-Term Care, and Bequest Motives”, Ameriks, Laufer and Van Nieuwerburgh make a similar recommendation, as well as the creation of more contingent payout annuities that would be linked to various life changes during retirement. All of this research is very promising; we expect that Vanguard and Russell’s new offerings are just the beginning of a wave of interesting new product offerings targeted at the needs of retired investors.

Model Portfolios Update

Our model portfolios are constructed using a simulation optimization methodology. They assume 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 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 six different compound annual real return targets: 7%, 6%, 5%, 4%, 3%, and 2%. We produce two sets of these portfolios: one assumes only investments in broad asset class index funds. These are our “all beta” portfolios. The second set of model portfolios includes equity market neutral (uncorrelated alpha) funds as a possible investment. These assume that an investor is primarily investing in index funds, but is willing to allocate up to ten percent of his or her portfolio to equity market neutral investments.

We use two benchmarks to measure the performance of our model portfolios. The first is cash, which we define as the yield on a one year government security purchased on the last trading day of the previous year. For 2008, our Euro cash benchmark is 4.50% (in nominal terms). The second benchmark we use is a portfolio equally allocated between the ten asset classes we use (it does not include equity market neutral). This portfolio assumes that an investor believes it is not possible to forecast the risk or return of any asset class. While we disagree with that assumption, it is an intellectually honest benchmark for our model portfolios' results.

The year-to-date nominal returns for all these model portfolios can be found here:

<http://www.indexinvestor.com/Members/YTDReturns/Europe.php>