

# The Index Investor

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

## Contents

<i>August 2009 Issue: Key Points</i> .....	<i>1</i>
<i>Global Asset Class Returns</i> .....	<i>3</i>
<i>Uncorrelated Alpha Strategies Detail</i> .....	<i>4</i>
<i>Table: Market Implied Expectation of Most Likely Economic Regime</i> .....	<i>4</i>
<i>Table: Asset Class Valuation Conclusions and 3 Month Return Momentum</i> .....	<i>6</i>
<i>This Month's Letters to the Editor</i> .....	<i>8</i>
<i>August 2009 Economic Update</i> .....	<i>12</i>
<i>Global Asset Class Valuation Updates Detail</i> .....	<i>18</i>
<i>Feature Article: A Letter to the New Graduate</i> .....	<i>45</i>
<i>Product and Strategy Notes</i> .....	<i>53</i>
<i>Model Portfolios Update</i> .....	<i>69</i>
<i>Appendix: Economic Scenarios and Accumulated Evidence</i> .....	<i>71</i>

## August 2009 Issue: Key Points

This month we are launching a new format for our publications. Our objective is to make them more user-friendly for subscribers who would like easier access to the tables summarizing our analyses, while still providing the information that enables new subscribers to quickly get up to speed on our methodologies and views. We welcome your comments and suggestions.

Our economic update summarizes the continuing lack of significant progress towards resolving the three obstacles that stand in the way of a return to a normal regime of sustained economic growth: high levels of household debt across much of the Anglosphere, continued weaknesses in the financial system, and the inability or unwillingness of Asian countries, and China in particular, to reduce international imbalances by stimulating higher levels of personal consumption spending. As problems continue to build in these areas, and as the H1N1 influenza virus continues

to evolve in a more deadly direction (based on the latest reports from Argentina and Brazil), we conclude that the market (as evidenced by rolling 3 month asset class returns) continues to underestimate the probability of a sharp increase in uncertainty over the next twelve months, despite the positive impact of continued fiscal and monetary stimulus.

This month's feature article is a letter to a recent university graduate, offering some important lessons that probably weren't taught in school. They include how to cope in an age of information overload, acknowledging the role of randomness (luck), how to make good decisions in the face of uncertainty, and how to have a fulfilling career in what promises to be a prolonged period of unpredictable change.

In this month's AUD, CAD, CHF and GBP editions, we continue our analysis of risk/return regimes between 1991 and 2008, and the factors that drove asset class performance between 2006 and 2008. Across all four currencies, we find strong evidence for significant variation in asset class performance across the high volatility, high inflation and normal regimes. Our principal components analyses find that the 2007-2008 volatility/liquidity/solvency shock was the main driver of recent asset class performance. Over a longer period, we find that broadly similar factors drove asset class performance in these four regions, including changes in commodity prices, real interest rates, inflation expectations and real economic growth.

In our product and strategy notes, we take an extended look at the importance of speculative behavior in the determination of asset prices. We distinguish between trend following (buying winners) and momentum (a market neutral position where one is long recent winners and short recent losers). We conclude that there is a strong case for passive investing even when market prices are inefficient. We also examine recent "momentum" funds launched by AQR Capital in the United States. While there is growing interest in finding ways to invest in a "momentum index", we find that the AQR offerings are really trend following products that only invest in recent winners, rather than the market neutral uncorrelated alpha products that we would recommend for inclusion in investor portfolios. We suspect that, smart quants that they are, the product designers at AQR realized that high turnover and shorting costs would keep

the actual results that could be earned by a true momentum fund well below the estimates that have appeared in many academic research papers.

## Global Asset Class Returns

<b>YTD 31 Jul 09</b>	<b>In USD</b>	<b>In AUD</b>	<b>In CAD</b>	<b>In EURO</b>	<b>In JPY</b>	<b>In GBP</b>	<b>In CHF</b>	<b>In INR</b>
Asset Held								
<b>USD Bonds</b>	3.55%	-15.68%	-10.65%	1.56%	9.60%	-11.76%	4.66%	1.94%
<b>USD Prop.</b>	-2.29%	-21.52%	-16.49%	-4.28%	3.76%	-17.60%	-1.18%	-3.90%
<b>USD Equity</b>	12.57%	-6.66%	-1.63%	10.58%	18.62%	-2.74%	13.68%	10.96%
<b>AUD Bonds</b>	5.00%	-14.23%	-9.19%	3.01%	11.05%	-10.30%	6.11%	3.40%
<b>AUD Prop.</b>	8.63%	-10.60%	-5.57%	6.64%	14.68%	-6.68%	9.74%	7.02%
<b>AUD Equity</b>	35.36%	16.13%	21.17%	33.37%	41.41%	20.05%	36.47%	33.75%
<b>CAD Bonds</b>	13.90%	-5.34%	-0.30%	11.90%	19.94%	-1.41%	15.00%	12.29%
<b>CAD Prop.</b>	35.62%	16.39%	21.43%	33.63%	41.67%	20.31%	36.73%	34.01%
<b>CAD Equity</b>	36.65%	17.42%	22.46%	34.66%	42.70%	21.35%	37.76%	35.05%
<b>CHF Bonds</b>	9.89%	-9.34%	-4.30%	7.90%	15.94%	-5.42%	11.00%	8.28%
<b>CHF Prop.</b>	0.00%	-19.23%	-14.20%	-1.99%	6.05%	-15.31%	1.11%	-1.61%
<b>CHF Equity</b>	6.96%	-12.27%	-7.23%	4.97%	13.01%	-8.34%	8.07%	5.36%
<b>INR Bonds</b>	-5.72%	-24.96%	-19.92%	-7.71%	0.32%	-21.03%	-4.61%	-7.33%
<b>INR Equity</b>	64.04%	44.81%	49.84%	62.05%	70.09%	48.73%	65.15%	62.43%
<b>EUR Bonds</b>	-1.16%	-20.39%	-15.35%	-3.15%	4.89%	-16.47%	-0.05%	-2.76%
<b>EUR Prop.</b>	14.51%	-4.72%	0.31%	12.52%	20.56%	-0.80%	15.62%	12.90%
<b>EUR Equity</b>	6.06%	-13.18%	-8.14%	4.06%	12.10%	-9.25%	7.16%	4.45%
<b>JPY Bonds</b>	-8.39%	-27.62%	-22.59%	-10.38%	-2.34%	-23.70%	-7.28%	-10.00%
<b>JPY Prop.</b>	0.00%	-19.23%	-14.20%	-1.99%	6.05%	-15.31%	1.11%	-1.61%
<b>JPY Equity</b>	3.55%	-15.69%	-10.65%	1.56%	9.60%	-11.76%	4.66%	1.94%
<b>GBP Bonds</b>	12.15%	-7.09%	-2.05%	10.15%	18.19%	-3.16%	13.25%	10.54%
<b>GBP Prop.</b>	7.99%	-11.24%	-6.20%	6.00%	14.04%	-7.31%	9.10%	6.39%
<b>GBP Equity</b>	20.20%	0.97%	6.01%	18.21%	26.25%	4.90%	21.31%	18.60%
<b>1-3 Yr US Govt</b>	-0.18%	-19.41%	-14.38%	-2.17%	5.87%	-15.49%	0.93%	-1.79%
<b>World Bonds</b>	3.84%	-15.39%	-10.35%	1.85%	9.89%	-11.46%	4.95%	2.24%
<b>World Prop.</b>	7.35%	-11.89%	-6.85%	5.35%	13.39%	-7.96%	8.45%	5.74%
<b>World Equity</b>	17.74%	-1.50%	3.54%	15.75%	23.78%	2.43%	18.84%	16.13%
<b>Commod Long</b>	8.75%	-10.48%	-5.45%	6.76%	14.80%	-6.56%	9.86%	7.14%
<b>Commod L/Shrt</b>	-12.91%	-32.15%	-27.11%	-14.91%	-6.87%	-28.22%	-11.81%	-14.52%
<b>Gold</b>	7.89%	-11.34%	-6.30%	5.90%	13.94%	-7.41%	9.00%	6.29%
<b>Timber</b>	-3.00%	-22.23%	-17.20%	-4.99%	3.05%	-18.31%	-1.89%	-4.61%

<b>YTD 31 Jul 09</b>	<b>In USD</b>	<b>In AUD</b>	<b>In CAD</b>	<b>In EURO</b>	<b>In JPY</b>	<b>In GBP</b>	<b>In CHF</b>	<b>In INR</b>
<b>Uncorrel Alpha</b>	6.58%	-12.65%	-7.62%	4.59%	12.63%	-8.73%	7.69%	4.97%
<b>Volatility VIX</b>	-35.20%	-54.43%	-49.40%	-37.19%	-29.15%	-50.51%	-34.09%	-36.81%
<b>Currency</b>								
<b>AUD</b>	19.23%	0.00%	5.04%	17.24%	25.28%	3.93%	20.34%	17.63%
<b>CAD</b>	14.20%	-5.04%	0.00%	12.20%	20.24%	-1.11%	15.30%	12.59%
<b>EUR</b>	1.99%	-17.24%	-12.20%	0.00%	8.04%	-13.32%	3.10%	0.38%
<b>JPY</b>	-6.05%	-25.28%	-20.24%	-8.04%	0.00%	-21.35%	-4.94%	-7.65%
<b>GBP</b>	15.31%	-3.93%	1.11%	13.32%	21.35%	0.00%	16.42%	13.70%
<b>USD</b>	0.00%	-19.23%	-14.20%	-1.99%	6.05%	-15.31%	1.11%	-1.61%
<b>CHF</b>	-1.11%	-20.34%	-15.30%	-3.10%	4.94%	-16.42%	0.00%	-2.71%
<b>INR</b>	1.61%	-17.63%	-12.59%	-0.38%	7.65%	-13.70%	2.71%	0.00%

## Uncorrelated Alpha Strategies Detail

<b>YTD 31 Jul 09</b>	<b>In USD</b>	<b>In AUD</b>	<b>In CAD</b>	<b>In EURO</b>	<b>In JPY</b>	<b>In GBP</b>	<b>In CHF</b>	<b>In INR</b>
----------------------	---------------	---------------	---------------	----------------	---------------	---------------	---------------	---------------

### **Eq Mkt Neutral**

HSKAX	-1.59%	-20.82%	-15.78%	-3.58%	4.46%	-16.89%	-0.48%	-3.19%
OGNAX	0.79%	-18.44%	-13.40%	-1.20%	6.84%	-14.51%	1.90%	-0.81%

### **Arbitrage**

ARBFX	6.43%	-12.80%	-7.77%	4.44%	12.48%	-8.88%	7.54%	4.82%
ADANX	6.20%	-13.03%	-8.00%	4.21%	12.25%	-9.11%	7.31%	4.59%

### **Currency**

DBV	13.39%	-5.85%	-0.81%	11.40%	19.43%	-1.92%	14.50%	11.78%
ICI	0.34%	-18.89%	-13.85%	-1.65%	6.39%	-14.96%	1.45%	-1.26%

### **Equity L/S**

HSGFX	7.85%	-11.38%	-6.35%	5.86%	13.90%	-7.46%	8.96%	6.24%
PTFAX	9.89%	-9.34%	-4.31%	7.90%	15.94%	-5.42%	11.00%	8.28%

### **GTAA**

MDLOX	10.96%	-8.28%	-3.24%	8.96%	17.00%	-4.35%	12.06%	9.35%
PASAX	11.55%	-7.68%	-2.64%	9.56%	17.60%	-3.75%	12.66%	9.95%

## Table: Market Implied Expectation of Most Likely Economic Regime

We use the following table to provide insight into the weight of market views about which of three regimes – high uncertainty, high inflation, or normal growth – is developing. The asset classes we list under each regime should deliver relatively high returns when that regime develops. We assume that the rolling three month return on these asset classes is a useful indicator of the market's conventional wisdom about the regime that is most likely to develop within the next twelve months.

<i>Rolling Three Month Returns in USD</i>			30-Jun-09
<i>High Uncertainty</i>	<i>High Inflation</i>	<i>Normal Growth</i>	
Short Maturity US Govt Bonds (SHY) <b>0.07%</b>	US Real Return Bonds (TIP) <b>2.27%</b>	US Equity (VTI) <b>13.48%</b>	
1 - 3 Year International Treasury Bonds (ISHG) <b>7.81%</b>	Long Commodities (DJP) <b>14.89%</b>	EAFE Equity (EFA) <b>22.51%</b>	
Equity Volatility (VIX) <b>-28.99%</b>	Global Commercial Property (RWO) <b>20.06%</b>	Emerging Equity (EEM) <b>25.66%</b>	
Gold (GLD) <b>6.97%</b>	Long Maturity Nominal Treasury Bonds (TLT)* <b>-2.41%</b>	High Yield Bonds (HYG) <b>13.39%</b>	
<b>Average</b> <b>-3.53%</b> <b>Last Month:</b> <b>-8.20%</b>	<b>Average (with TLT short)</b> <b>9.91%</b> <b>Last Month:</b> <b>13.66%</b>	<b>Average</b> <b>18.76%</b> <b>Last Month:</b> <b>23.22%</b>	

\* falling returns on TLT indicate rising inflation expectations

As you can see, the conventional wisdom still seems to favor a relatively quick return to normal times (though with an undercurrent of worry about higher inflation). However, based on our current economic scenario analysis, we conclude that these expectations are quite likely wrong. If anything, it seems to us that the probability of a return to higher uncertainty (and stronger deflation) has risen again over the past month. Hence, we believe the risk of “normal regime” asset classes (such as those shown in the table) being overvalued has increased, as has the probability that asset classes that will perform relatively well in the “uncertainty regime” are undervalued.

---

## **Table: Asset Class Valuation Conclusions and 3 Month Return Momentum**

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 **July 2009**. Our starting point is that asset class valuations evolve in response to three forces. The first is fundamental valuation, as reflected in the balance between the expected supply of and demand for returns. The second is investor behavior, which results from a complex mix of cognitive, emotional and social inputs – the latter two comprising Keynes’ famous “animal spirits”. The third force is the ongoing evolution of political and economic conditions, and the degree of prevailing uncertainty about their future direction. We capture these longer term forces in our economic scenarios. This asset class valuation update contains an extensive discussion of fundamental valuation issues. Our current fundamental valuation estimates are summarized in the following table. The distinction between possible, likely and probable under or overvaluation reflects an increasing degree of confidence in our estimate. We stress that these conclusions represent our assessment of quantitative valuation indicators at a given point in time, which implies no forecast as to when any over and undervaluations will be reversed. Indeed, before this reversal occurs current over and undervaluations could actually become more extreme. That said, common sense suggests that more extreme situations are more likely to be recognized and reversed.

To aid in that assessment, for each asset class we have also included the most recent three month rolling return (in local currency), as a means of capturing the direction and force of investor behavior. We believe that the likelihood and expected size of a reversal increase when fundamental over or undervaluation becomes more extreme (e.g., moves from possible to likely to probable) and there is evidence of strong returns momentum in the opposite direction (e.g., strong positive returns in the case of an asset class that is probably overvalued). However, conclusions about potential reversals and their likely durability also have to be tested against the likely evolution of future political/economic scenarios and their implications for asset class

valuation and investor behavior over a longer time frame (see, for example, our March 2009 Economic Update). This is an important third input into investment decisions, as we do not believe that the full implications of these scenarios are typically reflected in current valuations and investor behavior.

<i>Valuation at 31 July 09</i>	<i>Fundamental Valuation Estimate</i>	<i>Rolling 3 Mos Return in Local Currency</i>
<b>AUD Real Bonds</b>	Neutral	-3.62%
<b>AUD Bonds</b>	Neutral	-13.90%
<b>AUD Prop.</b>	Neutral	-10.60%
<b>AUD Equity</b>	Possibly Undervalued	26.69%
<b>CAD Real Bonds</b>	Neutral	11.52%
<b>CAD Bonds</b>	Neutral	1.30%
<b>CAD Prop.</b>	Probably Undervalued	22.02%
<b>CAD Equity</b>	Likely Overvalued	27.24%
<b>CHF Bonds</b>	Likely Overvalued	2.30%
<b>CHF Property</b>	Neutral	5.10%
<b>CHF Equity</b>	Likely Overvalued	15.34%
<b>EUR Real Bonds</b>	Neutral	5.98%
<b>EUR Bonds</b>	Possibly Overvalued	0.29%
<b>EUR Prop.</b>	Probably Undervalued	12.10%
<b>EUR Equity</b>	Possibly Undervalued	4.88%
<b>GBP Real Bonds</b>	Likely Overvalued	1.34%
<b>GBP Bonds</b>	Neutral	1.65%
<b>GBP Property</b>	Neutral	19.17%
<b>GBP Equity</b>	Probably Undervalued	16.11%
<b>INR Bonds</b>	Probably Overvalued	-5.08%
<b>INR Equity</b>	Probably Overvalued	66.26%
<b>JPY Real Bonds</b>	Neutral	4.19%
<b>JPY Bonds</b>	Possibly Overvalued	-1.28%
<b>JPY Property</b>	Likely Undervalued	19.79%

<i>Valuation at 31 July 09</i>	<b>Fundamental Valuation Estimate</b>	<b>Rolling 3 Mos Return in Local Currency</b>
<b>JPY Equity</b>	Probably Overvalued	25.90%
<b>USD Real Bonds</b>	Neutral	4.61%
<b>USD Bonds</b>	Possibly Overvalued	4.30%
<b>USD Property</b>	Likely Undervalued	18.28%
<b>USD Equity</b>	Probably Overvalued	22.71%
<b>Following in USD:</b>		
<b>Credit (HYG)</b>	Likely Overvalued	13.39%
<b>Emerging Market Equity</b>	Probably Overvalued	65.06%
<b>Commodities Long</b>	Likely Overvalued	14.62%
<b>Commodities Long/Short</b>	Not Applicable	-12.00%
<b>Gold</b>	Possibly Undervalued	2.23%
<b>Timber</b>	Probably Undervalued	13.80%
<b>Uncorrelated Alpha</b>	Not Applicable	7.77%
<b>Volatility (VIX)</b>	Likely Undervalued	-42.19%
<b>Return in Local for holding USD:</b>		
<b>USD per AUD</b>	Positive	-25.76%
<b>USD per CAD</b>	Neutral	-14.57%
<b>USD per EUR</b>	Neutral	-9.09%
<b>USD per JPY</b>	Negative	7.06%
<b>USD per GBP</b>	Neutral	-15.08%
<b>USD per CHF</b>	Negative	-6.64%
<b>USD per INR</b>	Positive	-1.93%

## This Month's Letters to the Editor

*I imagine that the 3% dividend yield on the Swiss equity market may have a different meaning in a valuation calculation than a 3% yield, on, say, the Dutch equity market, which has a greater percentage of resource companies. Do you somehow correct for that in your analysis?*

We agree with your point that, because of underlying differences in industry sector weights, the overall yields from different equity markets will never be strictly an “apples to apples” comparison. However, there is no easy way to adjust for that, and the

“impact of country versus industry factors” debate continues to rage on. We admit to being torn between two possible approaches. On the one hand, we could re-define the asset class as “developed market equity”, as measured by a broad FTSE, MSCI, or DJ Wilshire index. This would be consistent with the sharp increase in the globalization of competition in many industries over the past 10 to 20 years, as well as growth in cross-border investing and the increased investor focus on global sectors rather than nation-states or regions. On the other hand, research has also shown that country, region, and/or currency zone effects have not disappeared with the rise of higher sector globalization. Indeed, a prolonged period of global economic weakness could easily lead to country and regional factors becoming even more important if stubbornly high unemployment leads to rising barriers to trade flows and perhaps capital flows too. Yet the counter to this argument is that these conflicts seem less likely to occur within the OECD, which strengthens the argument for a broader developed markets equity asset class.

A further dimension of the argument about how best to define the broad equity asset class (or classes) relates to rates of total factor productivity growth, which we use as our long-term real growth rate for equity market distributions (dividends plus buybacks). There is clear evidence that country factors have an important impact on TFP differentials (e.g., differences in R+D support, or barriers to the organizational changes required to derive maximum benefit from investments in new technology). Indeed, we have noted in our writing that New Zealand and Switzerland have both suffered “hidden depressions” over the past decade, as their TFP growth rates have lagged behind the rest of the OECD. It may also be the case that different rates of workforce ageing also have an impact on this, although the evidence on this point is far from clear. After taking all these issues into consideration, our current plan is to replace the “domestic” and “foreign developed market” equity asset classes with a single “developed market equity” asset class as we review and update our model portfolios’ asset allocations.

---

*While I admire the excellent market calls you made in March 2000 and May 2007, as a practical matter it remains very hard for an investment committee or financial advisor to take decisive action in the face of apparently extreme overvaluations. If your timing is off, you expose yourself to public ridicule, loss of assets under management and quite possibly your job. How do you respond?*

For better or worse, I have had more than a few experiences in my career with telling people what they didn't want to hear because they were paying me to act in their best interest. And I well understand the consequences of those actions. So I start with a lot of empathy with your question. I think it can be addressed on two levels. The first is the establishment of performance metrics and incentives, which in turn implies a client selection and/or education issue. If your performance is reviewed annually versus an external benchmark, be it a published index (or weighted combination thereof) or a peer group, and if that drives your compensation, then you have very strong incentives to stay invested. Of course, this isn't a new insight; back in the thirties, Keynes observed that in a market dominated by professional investors and speculation, it was much less risky to fail conventionally than to succeed unconventionally. I would also add that these incentives also create a strong temptation towards the overuse of active strategies, particularly those based on trend following. In contrast, if I am being evaluated and paid based on my ability to achieve at least minimum long-term rate of return over a multiyear period (i.e., against a liability driven benchmark) and avoid large drawdowns, then it is much easier to act in the face of what appears to be substantial overvaluation in one or more asset classes. At worst, I either reduce my positions too soon or act in the face of a "false alarm." In the former case, the impact on goal achievement is minimal, and quite possibly positive (assuming I get back into the overvalued asset class after it has crashed, when its long-term return outlook is most promising). In the latter case, while there are definitely costs involved (from either buying puts or other insurance or moving into cash or allocating more to undervalued asset classes) that can reduce the probability of achieving my minimum return goal, they can be minimized by setting the overvaluation "action trigger" at a

---

sufficiently high level (and I note here that in the almost thirteen years we have been publishing, we have issued only two warnings that valuations were so extreme as to warrant taking extraordinary action beyond normal rebalancing).

However, I also recognize that it is hard to change human nature, and even clients and plan sponsors who claim to be interested only in achieving liability funding objectives will naturally compare their results with those achieved by others. For this reason, we have been placing a great deal of emphasis on new approaches to structuring portfolios so that hedging downside risk exposure is directly built into them, and does not require an excessive degree of career risk for managers. This is the basis for our use of a multi-regime, scenario based approach to asset allocation, and our exploration of how newly investable asset classes, such as volatility, can be used to limit tail risk exposure. In sum, I think that both approaches offer potential answers to the question you raised, although I suspect that better portfolio construction techniques will prove to be more popular with many of our readers.

*Thanks to Index Investor I was selling most of my equity positions throughout 2007 and therefore avoided the market sell offs of late 2008 and early 2009. Since then I have been mostly holding cash in money market mutual funds. But what now? As you write in the July issue, the economy is in uncertain times on one hand but certain sectors are "probably undervalued", such as Timber, on the other. Are the risks still too high to exercise your portfolio recommendations? If so, is it reasonable to expect the current problems of bank solvency, high government and consumer debt and trade imbalances ever to be corrected? I find myself in a conundrum between measly money market returns and the risk of a new market bottom in the future. Your thoughts?*

Thank you for an excellent – and difficult -- question that is no doubt on the mind of many readers today. The good news is that expected long-term returns on an asset class are above average when a crash creates significant undervaluation. As a practical matter, this means that an investor seeking to get back in can miss the bottom and still expect to earn above average long-term returns, provided he or she

invests when the asset class still appears undervalued. In other words, even with less-than-perfect timing, you can still come out ahead. The bad news, however, is a point we frequently stress: valuation is both an art and a science, with the latter approach only becoming more important as an investor's time horizon lengthens (on the assumption that while asset prices are attracted to fundamental values over the long term, in the short term they can substantially deviate from them). Hence, it is entirely possible to reinvest in an asset class that appears fundamentally undervalued, only to watch its price decline further due to the herding of uncertain and fearful investors and those who seek to accentuate and exploit their mistakes. While we continue to evaluate and report on research that can help us better understand and anticipate these developments (e.g. neurobiology, complex adaptive systems, and behavioral finance), accurately forecasting investor behavior – and most importantly, its turning points -- remains an extremely difficult challenge.

This means that the reinvestment decision becomes increasingly difficult as you shorten the time frame over which you will evaluate its results, and as you move from using an internal, liability driven performance metric (e.g., achieving your portfolio's minimum long term real return target) to using external benchmarks (e.g. the results delivered by an index, or achieved by a peer group). We provide our monthly asset class valuation analyses and economic updates to provide investors with the information and insight they need to make good decisions in the face of uncertainty, and maximize the probability they will achieve their long-term portfolio return targets. We also provide three month rolling returns for different asset classes, to highlight possible conflicts and complementarities between our fundamental valuation views and short term trends in investor behavior. Overall, we support the approach advocated by Jeremy Grantham of GMO, who is one of the great asset allocators of his generation – take a disciplined but gradual approach to reinvesting after a sharp price decline, stop when overvaluation returns, and start taking money off the table when overvaluations cross into extreme territory.

## **August 2009 Economic Update**

---

---

Our economic analysis methodology utilizes two alternative scenarios that are based on traditional attractors for complex social systems operating in far from equilibrium conditions. The first is enhanced cooperation and the second is higher levels of conflict. Realization of the cooperative scenario should result in a higher level of stability and predictability in the system's operations, while development of the conflict scenario will prolong and quite possibly worsen the system's instability. These scenarios are described in more detail in our previous issues, which (as you go back in time), also describe the scenarios that preceded them. Overall, our economic analysis process is best characterized as a rolling sequence of two alternative scenarios, one which is eventually discarded as the other develops and provides the starting point for two new scenarios that describe the ways events could evolve in the future.

We further assume that financial market returns reflect the complex interplay between political and economic conditions, which in turn reflect the actions of key groups (i.e., networks), which in turn are comprised of individuals whose behavior is based on an evolving mix of cognitive, informational, emotional and social factors. In our analysis, we use both bottom up and top down approaches to develop our scenarios and guide our search for information that provides insight about which of them is developing.

With respect to the situation we face today, we believe three issues must be resolved in order for the current "high uncertainty regime" to be replaced by a "normal growth regime" – (1) high levels of household debt across much of the Anglosphere; (2) a deeply weakened world financial system; and (3) unsustainable structural imbalances in the economies of the United States and China, and in these countries' current account balances. We further believe that the actions of three groups – middle class Americans, Chinese peasants, and Iranian youth, are linchpins that could have an outsized impact on the future evolution of political and economic events, and, through them, on the resolution of the three critical issues we face and on future asset class valuations and returns.

Over the past month, we observed the following significant developments. With respect to overleveraged consumers, the U.S. Treasury called a meeting with the

heads of major banks to urge them to more aggressively pursue mortgage modifications and limit foreclosures and the downward pressure they cause on housing prices (and thus on consumer and ultimately business confidence). Thus far, lenders have been very reluctant to modify mortgages, apparently for a number of reasons, including the desire to avoid “self-cures” (where borrowers fall behind in their payments, but then find the money to catch up), reluctance to enter into “extend and pretend” arrangements that fail to cut the amount of outstanding debt, and instead reduce monthly payments while increasing the principal owed (and hence often only delay subsequent “redefaults” and foreclosures) and the alleged legal obstacles to reducing principle on loans that have been securitized into mortgage backed bonds, and then often resecured into collateralized debt obligations.

However, at almost the same time the Treasury was trying to exercise its persuasive power over the mortgage lenders, the Federal Reserve Bank of Boston published another in its insightful series of studies into the true root causes of the mortgage debt problem. In “Why Don’t Lenders Renegotiate More Home Mortgages?”, Adelino, Gerardi and Willen find lenders’ perception of the probabilities of self-cure and re-defaults as much more important obstacles to greater volumes of mortgage renegotiation than the terms and conditions of securitization agreements. This paper builds on a previous one (“Reducing Foreclosures” by Foote, Gerardi, Goette and Willen) that finds that the main reasons borrowers default on their mortgages “appear to be a combination of household income shocks [e.g., job losses] and an unprecedented fall in house prices.” These factors explain far more defaults than the popular view that the borrowers simply entered into unaffordable loans. This leads the authors to a conclusion that matches our own views: “An important implication of our analysis is that policies designed to reduce foreclosures should focus on ameliorating the immediate effects of job loss and other adverse life events, rather than modifying loans to make them more ‘affordable’ on a long-term basis.”

However, apart from a flailing attempt to reform the United States’ healthcare system, and the beginnings of a more aggressive approach to improving America’s public school education, we have seen precious little in the way of other attempts to

---

reverse the twenty year decline in middle class economic security. Not that it is hard to think of some possible approaches, including an integrated federal approach to wage insurance, retraining and reemployment (at a time when a rapidly rising number of households are facing the end of temporary unemployment benefits); conversion of some portion of mortgage debt into equity; a new approach to retirement income security (e.g., a mandatory funded defined contribution plan like Australia's, with some government backstopping to ensure a minimum level of retirement income); and a new approach to funding university education (e.g., with repayment schedules for student loans tied to income and collected through the tax system). It is not that there is a shortage of good ideas for ways to shore up the economic prospects for America's middle class. Rather, the problem seems to be an administration that, despite the worst economic crisis since the Great Depression, still seems more interested in promoting the ideas of the ideologically pure and protecting the interests of creditors than with spending political capital on approaches that would more to reverse the economic decline of the Main Street middle class.

Of course, the alternative to such programs is more foreclosures and/or consumer bankruptcies, and a heightened risk of a prolonged period of stagnation, in which economic growth is heavily dependent on continued spending by an increasingly indebted federal government. Unfortunately, the Treasury's meeting with the mortgage servicers seems to have had little impact, and, in the absence of new initiatives (which thus far do not appear to be on the horizon), we expect to see the grinding pressure on the house-owning middle class to continue unabated in the United States. This will keep uncertainty and unemployment high, consumption spending low, and, via the impact of job losses on heavily leveraged two income families (which describes a substantial number of Anglosphere households), will also cause worsening problems in the banking system. Even more dangerous, if difficult to forecast, is the potential impact of the continuing buildup of social and political tensions as a result of these trends. History suggests that if they are not reversed, they will not stay contained forever, and that governments siding with creditors against the interests of a large number of indebted citizens a recipe for trouble.

The past month also saw little in the way of good news with respect to the health of the financial system (apart from Goldman Sachs and its well-publicized record-setting bonus accruals). New evidence pointed to a further decline in the quality of commercial mortgages and construction and development loans, which is leading to a rising number of bank failures in the United States. Other reports suggest that more than a few European banks find themselves facing similar problems. The good news, however, was that the Wall Street Journal published an extremely good article about what it will take to begin to unravel the complex mess created by the securitization (and re-securitization) of so many loans. In “Why Toxic Assets Are So Hard to Clean Up” (WSJ 20 July 09), Kenneth Scott and John Taylor succinctly show the root causes and mind-numbing extent of the complexity that currently prevents accurate valuation of so many asset-backed securities. As they note, “the fundamental problem has remained untouched: insufficient information to permit estimates prices that both buyers and sellers find credible.” With so many CDOs having been sold as private placements, the authors believe the necessary information will not be made available unless the SEC mandates its disclosure. Granted, that would almost certainly cause further capital adequacy problems for some banks, when their valuations of some assets now on their books is exposed as far too optimistic. However, the alternative to transparency is a decade or more of Japan-style “zombie banks” limping along on one form or another of life support – and in the meantime, limiting the availability of credit in the economy. Hence, painful though it may be in the short term, the path advocated by Scott and Taylor seems to be the way in which events must eventually unfold.

With respect to the resolution of international imbalances, the *Times* quite accurately summed up the current state of play with this headline: “The West Can’t Spend. China Won’t Spend.” On personal consumption that is. While increased spending by overleveraged, house-poor Anglosphere consumers seems out of the question, that isn’t obviously the case in China. However, rather than aggressively promoting higher personal consumption expenditure, the government there has mandated the banks to aggressively expand lending to boost investment spending and

---

maintain employment and, they hope, social peace and continued political legitimacy and power. The response has been an unprecedented increase in lending that seems to have had two main effects: adding capacity to industries already suffering from an excess, and financing increased speculation in a range of asset classes, including property, equities and commodities. Having realized the magnitude of the non-performing loan problem that was rapidly developing, this past month the Chinese government explicitly warned banks about the need to maintain credit quality and avoid financing of speculation. However, faced with the choice between less lending and rising social instability, or more lending with social peace (or, to continue the previous analogy, between the interests of creditors or debtors), we have no doubt which way the chips will fall in China. Any doubts about that seem to have been dispelled this past month after the murder of a steel plant's manager by an angry mob of workers quickly brought an end to plans to improve its efficiency.

Another paper published last month provided further evidence of the enormous challenges the Chinese government faces in trying to increase domestic consumption spending. In "The Competitive Saving Motive: Evidence from Rising Sex Ratios and Savings Rates in China", Wei and Zhang note that existing explanations for the high level of savings in China are incomplete. The explanation they propose may be considered one of the unintended consequences of the "one child" policy: the substantial surplus of single males relative to single females forces the former (and their families) to save considerable amounts in order to accumulate the wealth needed to attract a bride. The authors conclude that "this factor can account for about half the actual increase in the household savings rate during 1990 and 2007."

Finally, let it never be said that the Chinese leadership doesn't appreciate irony: at the end of July, the government announced that it would file complaints with the World Trade Organization over countries raising barriers to Chinese exports. Coming from a government with an explicit "Buy China" policy and a spotty record (to put it politely) on contract rights and intellectual property protection, this is rich stuff indeed! On the other hand, the "Strategic and Economic Dialogue" meeting between Chinese and U.S. officials (which some have termed the "G2") went off without a hitch, and the

---

past month saw a considerable “toning down” of Anti-American rhetoric that had previously been rising in intensity. Unfortunately, we suspect that the underlying cause of this development was the Chinese leaders’ realization that, largely due to domestic developments, they are holding weaker cards in this poker game than they had originally assumed. However, whether this development means a higher probability of our cooperative or our conflict scenario coming to pass remains unclear.

Finally, events in Iran continue to develop in a fast and confusing manner. On the one hand, the opposition seems to have solidified and broadened to include at least some of the clerical leadership. The past month also saw splits developing in the Khamenei/Ahmadinejad “hardliner” block, and, despite his alleged election win, the latter has yet to be sworn in for a second presidential term. On the other hand, trials have begun for a number of moderate leaders who were arrested as the post-election protests grew in strength. In sum, this situation can still break either way – if Ahmadinejad is toppled, it would raise the probability of our cooperative scenario developing. However, if Ahmadinejad retains his power, he will undoubtedly be more hostile towards the United States, which he believes (along with the UK) provided support for the post-election protests in Iran. The first flash point for this heightened level of conflict has been set by the Obama administration, with their demand that Iran return to the nuclear negotiating table before the G8 meetings in Pittsburgh on September 24<sup>th</sup> and 25<sup>th</sup>. If this doesn’t happen, the U.S. could ask the U.N. for much tougher sanctions (e.g., on imported gasoline). However, it seems more than 50% likely that either China or Russia would veto such a resolution in the Security Council. That would leave the Obama administration with a choice of being seen to back down, or finding another way – likely military – to ratchet up the pressure on Iran (for more detail on key scenario-related evidence accumulated over the past three months, please see the Appendix).

## **Global Asset Class Valuation Updates Detail**

Our asset class valuation analyses are based on the belief that financial markets are complex adaptive systems, in which prices and returns emerge from the

interaction of multiple rational, emotional and social processes. We further believe that while this system is attracted to equilibrium, it is generally not in this state. To put it differently, we believe 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, resulting in over or undervaluation. The attraction of the system to equilibrium means that, at some point, these situations are likely to reverse in the direction of their fundamental valuation. However, the complex adaptive nature of the system means that it is difficult if not impossible to accurately forecast how and when such reversals will occur. Yet this does not mean that valuation analyses are a fruitless enterprise. Far from it. For an investor trying to achieve a multiyear goal (e.g., accumulating a certain amount of capital in advance of retirement, and later trying to preserve the real value of that capital as one generates income from it), avoiding large downside losses is mathematically more important than reaching for the last few basis points of return. Investors who use valuation analyses to help them limit downside risk when an asset class appears to be substantially overvalued can substantially increase the probability that they will achieve their long term goals. This is the painful lesson learned by too many investors in the 2001 tech stock crash, and then learned again in the 2007-2008 crash of multiple asset classes.

We also believe that the use of a consistent quantitative approach to assessing fundamental asset class valuation helps to overcome normal human tendencies towards over-optimism, overconfidence, wishful thinking, and other biases that can cause investors to make decisions they later regret. Finally, we stress that our monthly market valuation update is only a snapshot in time, and says nothing about whether apparent over and undervaluations will in the future become more extreme before they inevitably reverse. That said, when momentum is strong and quickly moving prices far away from their fundamental values, it is usually a good indication a turning point is near.

### Equity Markets

---

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. While this approach emphasizes fundamental valuation, it does have an implied linkage to the investor behavior factors that also affect valuations. On the supply side of our framework, investors under the influence of fear or euphoria (or social pressure) can deflate or inflate the long-term real growth rate we use in our analysis. Similarly, fearful investors will add an uncertainty premium to our long-term risk premium, while euphoric investors will subtract an “overconfidence discount.” As you can see, euphoric investors will overestimate long-term growth, underestimate long-term risk, and consequently drive prices higher than warranted. In our framework, this depresses the dividend yield, and will cause stocks to appear overvalued. The opposite happens under conditions of intense fear. To put it differently, in our framework, it is investor behavior and overreaction that drive valuations away from the levels warranted by the fundamentals. As described in our November 2008 article “Are Emerging Market Equities Undervalued?”, people can and do disagree about the “right” values for the variables we use in our fundamental analysis. 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 (Current Yield on Real Return Bonds + Equity Risk Premium - Forecast Productivity Growth). Our valuation estimates are shown in the following tables, where a value greater than 100% implies overvaluation, and less than 100% implies undervaluation. 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 31 July 2009*

<i>Australia</i>	<b>Low Demanded Return</b>	<b>High Demanded Return</b>
<b>High Supplied Return</b>	62%	88%
<b>Low Supplied Return</b>	88%	116%

<i>Canada</i>	<b>Low Demanded Return</b>	<b>High Demanded Return</b>
<b>High Supplied Return</b>	73%	122%
<b>Low Supplied Return</b>	128%	187%

<i>Eurozone</i>	<b>Low Demanded Return</b>	<b>High Demanded Return</b>
<b>High Supplied Return</b>	51%	83%
<b>Low Supplied Return</b>	82%	118%

<i>Japan</i>	<b>Low Demanded Return</b>	<b>High Demanded Return</b>
<b>High Supplied Return</b>	104%	158%
<b>Low Supplied Return</b>	174%	241%

<i>United Kingdom</i>	<b>Low Demanded Return</b>	<b>High Demanded Return</b>
<b>High Supplied Return</b>	30%	62%
<b>Low Supplied Return</b>	59%	95%

---

<i>United States</i>	<b>Low Demanded Return</b>	<b>High Demanded Return</b>
<b>High Supplied Return</b>	95%	154%
<b>Low Supplied Return</b>	170%	244%

<i>Switzerland</i>	<b>Low Demanded Return</b>	<b>High Demanded Return</b>
<b>High Supplied Return</b>	81%	130%
<b>Low Supplied Return</b>	138%	247%

<i>India</i>	<b>Low Demanded Return</b>	<b>High Demanded Return</b>
<b>High Supplied Return</b>	90%	182%
<b>Low Supplied Return</b>	222%	356%

<i>Emerging Markets</i>	<b>Low Demanded Return</b>	<b>High Demanded Return</b>
<b>High Supplied Return</b>	100%	184%
<b>Low Supplied Return</b>	139%	224%

In our view, the key point to keep in mind with respect to equity market valuations is the level of the current dividend yield (or, more broadly, the yield of dividends and buybacks), which history has shown to be the key driver of long-term real equity returns in most markets. The rise in uncertainty that accompanied the 2007-2008 crisis undoubtedly increased many investors' required risk and uncertainty premium above the long-term average, while simultaneously decreasing their long-term real growth forecasts. The net result was a fall in equity prices that caused dividend yields to increase. From the perspective of an investor with long-term risk and growth assumptions in the range we use in our model, in some regions this increase in dividend yields more than offset the simultaneous rise in real bond yields, and caused the equity market to become undervalued (using our long-term valuation assumptions). On the other hand, in a still weak economy, many companies have been cutting dividends at a pace not seen since the 1930s. Hence the numerator of

our dividend/yield calculation may well further decline in the months ahead, which, all else being equal, should further depress prices. Despite this, the past few months have seen a very strong rally develop in many equity markets, which, in some cases, has caused our valuation estimates to rise into the “overvalued” region. Given the absence of progress in reducing the three main obstacles that block a return to sustainable economic growth (see our Economic Update), we believe that these rallies reflect investor herding (and the incentives of many professional investment managers to deliver positive returns on 2008’s disastrous end-of-year base), rather than any improvement in the underlying fundamentals.

### Government Bond Markets

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 historical average inflation between 1989 and 2003. We use the latter as a proxy for the average rate of inflation likely to prevail over a long period of time. 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 31 July 09*

	<b>Current Real Rate*</b>	<b>Average Inflation Premium (89-03)</b>	<b>Required Nominal Return</b>	<b>Nominal Return Supplied (10 year Govt)</b>	<b>Yield Gap</b>	<b>Asset Class Over or (Under) Valuation, based on 10 year zero</b>
Australia	3.12%	2.96%	6.08%	5.69%	-0.39%	3.73%
Canada	1.73%	2.40%	4.13%	3.46%	-0.67%	6.62%

	<b>Current Real Rate*</b>	<b>Average Inflation Premium (89-03)</b>	<b>Required Nominal Return</b>	<b>Nominal Return Supplied (10 year Govt)</b>	<b>Yield Gap</b>	<b>Asset Class Over or (Under) Valuation, based on 10 year zero</b>
Eurozone	1.89%	2.37%	4.26%	3.28%	-0.98%	9.91%
Japan	2.36%	0.77%	3.13%	1.42%	-1.71%	18.15%
UK	0.93%	3.17%	4.10%	3.80%	-0.30%	2.89%
USA	1.93%	2.93%	4.86%	3.48%	-1.38%	14.18%
Switz.	1.99%	2.03%	4.02%	2.00%	-2.02%	21.68%
India	1.99%	7.57%	9.56%	7.11%	-2.45%	25.43%

\*For Switzerland and India, we use the average of real rates in other regions with real return bond markets

It is important to note some important limitations of this analysis. Our bond market analysis 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 future average inflation levels. This is especially true today, when a period of deflation is a distinct possibility in many countries. In this case, many nominal return bonds might in fact be undervalued today. However, this raises the issue of how long a period of deflation might last, and how deep it might be, particularly given the unprecedented levels of monetary and fiscal deficit expansion that have been undertaken in many countries in response to the worst downturn since the Great Depression. History suggests that over the long-term, they are likely to result in higher rates of inflation. The following table, shows historical average inflation rates (and their standard deviations) for the U.K. and U.S. over longer periods of time, and helps to put our valuation analysis (and inflation assumptions) into context:

	<i>U.K.</i>	<i>U.S.</i>
<i>Avg. Inflation, 1775-2007</i>	2.19%	1.62%
Standard Deviation	6.60%	6.51%
<i>Avg. Inflation, 1908-2007</i>	4.61%	3.29%
Standard Deviation	6.24%	5.03%

---



---

<i>Avg. Inflation, 1958-2007</i>	5.98%	4.11%
Standard Deviation	5.01%	2.84%

In this regard, the difference between yields on ten year U.S. government nominal and inflation linked bonds is a rough proxy for the expected future rate of inflation (we say rough because it technically includes not only the expected inflation rate, but also a further premium for inflation risk). In general, these implied future rates are currently well below the average historical rates of inflation we have used in our analysis (although the implied rates have been increasing in recent months). In sum, there is currently a high level of uncertainty associated with our assessment of current valuation levels in the market for nominal return government bonds.

### Real Return Bonds

Let us now move on to a closer look at the current level of real interest rates. In keeping with our basic approach, we will start by looking at the theoretical basis for determining the rate of return an investor should demand in exchange for making a one year risk free investment. The so-called Ramsey equation tells us that this should be a function of a number of variables. The first is our “time preference”, or the rate at which we trade-off a unit of consumption in the future for one today, assuming no growth in the amount of goods and services produced by the economy. As is often the case, the correct value for this parameter is the subject of much debate. For example, this lies at the heart of the debate over how much we should be willing to spend today to limit the worst effects of climate change in the future. In our analysis, we assume the average time preference is two percent per year. However, it is not the case that the economy does not grow; hence, the risk free rate we require should reflect the fact that there will be more goods and services available in the future than there are today. Assuming investors try to smooth their consumption over time, the risk free rate should also contain a term that takes the growth rate of the economy into account. Broadly speaking, this growth rate is a function of the increase in the labor supply and the increase in labor productivity. However, the latter comes from both growth in the

amount of capital per worker and from growth in “total factor productivity”, which is due to a range of factors, including better organization, technology and education. Since capital/worker cannot be increased without limit, over the long-run it is growth in total factor productivity that counts. Hence, in our analysis, we assume that future economic growth reflects the growth in the labor force and TFP. However, this future growth is not guaranteed; rather, there is an element of uncertainty involved. Hence we also need to take investor’s aversion to risk and uncertainty into account when estimating the risk free rate of return they should require in exchange for letting others use their capital for one year. There are many ways to measure this, and unsurprisingly, many people disagree on the right approach to use. In our analysis, we have used Constant Relative Risk Aversion with an average value of three (see “How Risk Averse are Fund Managers?” by Thomas Flavin). The following table brings these factors together to determine our estimate of the risk free rate investors in different currency zones should logically demand in equilibrium (for an excellent discussion of the issues noted above, and their practical importance, see “The Stern Review of the Economics of Climate Change” by Martin Weitzman):

Region	Labor Force Growth %	TFP Growth %	Steady State Econ Growth %	Std Dev of Econ Growth Rate %	Time Preference %	Risk Aversion Factor	Risk Free Rate Demanded* %
Australia	1.0	1.20	2.2	1.1	2.0	3.0	3.2
Canada	0.8	1.00	1.8	0.9	2.0	3.0	3.8
Eurozone	0.4	1.20	1.6	0.8	2.0	3.0	3.9
Japan	-0.3	1.20	0.9	0.5	2.0	3.0	3.8
United Kingdom	0.5	1.20	1.7	0.9	2.0	3.0	3.8
United States	0.8	1.20	2.0	1.0	2.0	3.0	3.5

- The risk free rate equals time preference plus (risk aversion times growth) less (.5 times risk aversion squared times the standard deviation of growth squared).

The next table compares this long-term equilibrium real risk free rate with the real risk free return that is currently supplied in the market. Negative values indicate that real

return bonds are currently overvalued, as their prices must fall in order for their yields (i.e., the returns they supply) to rise. The valuation is based on a comparison of the present values of ten year zero coupon bonds offering the rate demanded and the rate supplied, as of **31 July 2009**.

Region	Risk Free Rate Demanded	Actual Risk Free Rate Supplied	Difference	Overvaluation (>100) or Undervaluation (<100)
Australia	3.2	3.1	0.0	100
Canada	3.8	1.7	-2.0	122
Eurozone	3.9	1.9	-2.0	122
Japan	3.8	2.4	-1.4	115
United Kingdom	3.8	0.9	-2.9	133
United States	3.5	1.9	-1.6	117

We reiterate that this analysis is based on a medium term view of the logical value of the risk free real return investors should demand. For example, plunging consumer spending around the world implies a lower time preference rate than the 2.0% we have used in our analysis, which would reduce the estimated overvaluation of this asset class.

### Credit Spreads

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 primarily reflects 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 BAA and AAA rated bonds, which tells us more about the level of compensation required by investors for bearing relatively high quality credit risk. Research has also shown that credit spreads on longer maturity intermediate risk bonds has predictive power for future economic

demand growth, with a rise in spreads signaling a future fall in demand (see “Credit Market Shocks and Economic Fluctuations” by Gilchrist, Yankov, and Zakrajsek).

The following table shows the statistics of the distribution of these spreads between January, 1986 and December, 2008 (based on daily Federal Reserve data – 11,642 data points). Particularly in the case of the BAA spread, it is clear we are not dealing with a normal distribution!

	<b>AAA – 10 Year Treasury</b>	<b>BAA-AAA</b>
Average	1.20%	.94%
Standard Deviation	.44%	.34%
Skewness	.92	3.11
Kurtosis	.53	17.80

At **31 July 2009**, the AAA minus 10 year Treasury spread was 1.85%. The AAA minus BAA spread was 1.47%. Since these distributions are not normal (i.e., they do not have a “bell curve” shape), we take a different approach to putting them in perspective. Over the past twenty three years, there have been only 561 days with a higher AAA spread (4.8% of all days) and 182 days with a higher BAA spread (1.6% of all days in our sample). Clearly, and despite all the talk one hears about “green shoots”, current spreads still reflect relatively a high degree of investor uncertainty about future liquidity and credit risk, despite the declines in the BBB – AAA spread from its crisis high. However, given the uncharted economic waters through which we are now passing, and our belief that the conventional wisdom underestimates the amount of trouble on the horizon, we believe that these spread likely reflect the undervaluation of liquidity and credit risk.

### Currencies

Let us now turn to currency valuations. 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, especially over short periods of time (for a logical approach to forecasting equilibrium exchange rates over longer horizons, see “2009 Estimates of Fundamental Equilibrium Exchange Rates” by Cline and Williamson).

In our case, 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 (for an excellent analysis of the sources of carry trade profits – of which 25% may represent a so-called “disaster risk premium”, see “Crash Risk in Currency Markets” by Farhi, Frailberger, Gabaix, Ranciere and Verdelhan). 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 31 July 09*

	To AUD	To CAD	To EUR	To JPY	To GBP	To USD	To CHF	To INR
From								
<b>AUD</b>	0.00%	-2.23%	-2.41%	-4.27%	-1.89%	-2.21%	-3.69%	1.42%
<b>CAD</b>	2.23%	0.00%	-0.18%	-2.04%	0.34%	0.02%	-1.46%	3.65%
<b>EUR</b>	2.41%	0.18%	0.00%	-1.86%	0.52%	0.20%	-1.28%	3.83%
<b>JPY</b>	4.27%	2.04%	1.86%	0.00%	2.38%	2.06%	0.58%	5.69%
<b>GBP</b>	1.89%	-0.34%	-0.52%	-2.38%	0.00%	-0.32%	-1.80%	3.31%
<b>USD</b>	2.21%	-0.02%	-0.20%	-2.06%	0.32%	0.00%	-1.48%	3.63%
<b>CHF</b>	3.69%	1.46%	1.28%	-0.58%	1.80%	1.48%	0.00%	5.11%
<b>INR</b>	-1.42%	-3.65%	-3.83%	-5.69%	-3.31%	-3.63%	-5.11%	0.00%

### Commercial Property

Our approach to valuing commercial property securities as an asset class is also based on the expected supply of and demand for returns, utilizing the same mix of fundamental and investor behavior factors we use in our approach to equity valuation. Similar to equities, the supply of returns equals the current dividend yield on an index covering publicly traded commercial property securities, plus the expected real growth rate of net operating income (NOI). A number of studies have found that real NOI growth has been basically flat over long periods of time (with apartments showing the strongest rates of real growth). This is in line with what economic theory predicts, with increases in real rent lead to an increase in property supply, which eventually causes real rents to fall. However, it is entirely possible – as we have seen in recent months – that rents can fall sharply over the short term during an economic downturn.

Our analysis also assumes that over the long-term, investors require a 3.0% risk premium above the yield on real return bonds as compensation for bearing the risk of securitized commercial property as an asset class (see this month's feature article on commercial property as an asset class). Last but not least, there is significant research evidence that commercial property markets are frequently out of equilibrium, due to slow adjustment processes as well as the interaction between fundamental factors and investors' emotions (see, for example, "Investor Rationality: An Analysis of NCREIF Commercial Property Data" by Hendershott and MacGregor; "Real Estate Market Fundamentals and Asset Pricing" by Sivitanides, Torto, and Wheaton; "Expected Returns and Expected Growth in Rents of Commercial Real Estate" by Plazzi, Torous, and Valkanov; and "Commercial Real Estate Valuation: Fundamentals versus Investor Sentiment" by Clayton, Ling, and Naranjo). Hence, it is extremely hard to forecast how long it will take for any over or undervaluations we identify to be reversed. The following table shows the results of our valuation analysis as of **31 July 2009**: We use the dividend discount model approach to produce our estimate of

whether a property market is over, under, or fairly valued today, assuming a long-term perspective on property market valuation drivers. The specific formula is (Current Dividend Yield x 100) x (1+ Forecast NOI Growth) divided by (Current Yield on Real Return Bonds + Property Risk Premium - Forecast NOI Growth). Our estimates are shown in the following tables, where a value greater than 100% implies overvaluation, and less than 100% implies undervaluation.

Country	Dividend Yield	Plus LT Real Growth Rate	Equals Supply of Returns	Real Bond Yield	Plus LT Comm Prop Risk Premium	Equals Returns Demanded	Over or Undervaluation (100% = Fair Value)
Australia	6.6%	0.2%	6.8%	3.1%	3.0%	6.1%	90%
Canada	7.5%	0.2%	7.7%	1.7%	3.0%	4.7%	60%
Eurozone	8.1%	0.2%	8.3%	1.9%	3.0%	4.9%	58%
Japan	8.3%	0.2%	8.5%	2.4%	3.0%	5.4%	62%
Switzerland	4.7%	0.2%	4.9%	2.0%	3.0%	5.0%	101%
U.K.	4.0%	0.2%	4.2%	0.9%	3.0%	3.9%	93%
United States	6.4%	0.2%	6.6%	1.9%	3.0%	4.9%	74%

*\*Using the current dividend yield, the valuation of the Swiss property market appears to be significantly out of line with the others. Hence, our analysis is based on the estimated income yield on directly owned commercial property in Switzerland instead of the dividend yield on publicly traded property securities.*

### Commodities

Let us now turn to the Dow Jones AIG Commodity Index, our preferred benchmark for this asset class because of the roughly equal weights it gives to energy, metals and agricultural products. One of our core assumptions is that financial markets function as a complex adaptive system which, while attracted to equilibrium (which generates mean reversion) are seldom in it. To put it differently, we believe that investors' expectations for the returns an asset class is expected to supply in the future are rarely equal to the returns a rational long-term investor should logically

---

demand. Hence, rather than being exceptions, over and undervaluations of different degrees are simply a financial fact of life. We express the demand for returns from an asset class as the current yield on real return government bonds (ideally of intermediate duration) plus an appropriate risk premium. While the former can be observed, the latter is usually the subject of disagreement. In determining the risk premium to use, we try to balance a variety of inputs, including historical realized premiums (which may differ considerably from those that were expected, due to unforeseen events), survey data and academic theory (e.g., assets that payoff in inflationary and deflationary states should command a lower risk premium than those whose payoffs are highest in “normal” periods of steady growth and modest changes in the price level). In the case of commodities, Gorton and Rouwenhorst (in their papers “Facts and Fantasies About Commodity Futures” and “A Note on Erb and Harvey”) have shown that (1) commodity index futures provide a good hedge against unexpected inflation; (2) they also tend to hedge business cycle risk, as the peaks and troughs of their returns tend to lag behind those on equities (i.e., equity returns are leading indicators, while commodity returns are coincident indicators of the state of the real business cycle); and (3) the realized premium over real bond yields has historically been on the order of four percent. We are inclined to use a lower ex-ante risk premium in our analysis (though reasonable people can still differ about what it should be), because of the hedging benefits commodities provide relative to equities. This is consistent with the history of equities, where realized ex-post premiums have been shown to be larger than the ex-ante premiums investors should logically have expected.

The general form of the supply of returns an asset class is expected to generate in the future is its current yield (e.g., the dividend yield on equities), plus the rate at which this stream of income is expected to grow in the future. The key challenge with applying this framework to commodities is that the supply of commodity returns doesn't obviously fit into this framework. Broadly speaking, the supply of returns from an investment in commodity index futures comes from four sources. First, since commodity futures contracts can be purchased for less than their face value (though

---

the full value has to be delivered if the contract is held to maturity), a commodity fund manager doesn't have to spend the full \$100 raised from investors to purchase \$100 of futures contracts. The difference is invested – usually in government bonds – to produce a return.

The second source of the return on a long-only commodity index fund is the so-called “roll yield.” Operationally, a commodity index fund buys futures contracts in the most liquid part of the market, which is usually limited to the near term. As these contracts near their expiration date, they are sold and replaced with new futures contracts. For example, a fund might buy contracts maturing in two or three months, and sell them when they approached maturity. The “roll yield” refers to the gains and losses realized by the fund on these sales. If spot prices (i.e., the price to buy the physical commodity today, towards which futures prices will move as they draw closer to expiration) are higher than two or three month futures, the fund will be selling high and buying low, and thus earning a positive roll yield. When a futures market is in this condition, it is said to be in “backwardation.” On the other hand, if the spot price is lower than the two or three month's futures price, the market is said to be in “contango” and the roll yield will be negative (i.e., the fund will sell low and buy high). The interesting issue is what causes a commodity to be either backwardated or contangoed. A number of theories have been offered to explain this phenomenon. The one that seems to have accumulated the most supporting evidence to date is the so-called “Theory of Storage”: begins with the observation that, all else being equal, contango should be the normal state of affairs, since a person buying a commodity at spot today and wishing to lock in a profit by selling a futures contract will have to incur storage and financing costs. In addition to his or her profit margin, storage and financing costs should cause the futures price to be higher than the spot price, and normal roll yields to be negative.

However, in the real world, all things are not equal. For example, some commodities are very difficult or expensive to store; others have very high costs if you run out of them (e.g., because of rapidly rising demand relative to supply, or a potential disruption of supply). For these commodities, there may be a significant option value

to holding the physical product (the Theory of Storage refers to this option value as the “convenience yield”). If this option value is sufficiently high, spot prices may be bid up above futures prices, causing “backwardation” and positive roll-yields for commodity index funds. Hence, a key question is the extent to which different commodities within a given commodity index tend to be in backwardation or contango over time. Historically, most commodities have spent time in both states. However, contango has generally been more common, but not equally so for all commodities. For example, oil has spent relatively more time in backwardation, as have copper, sugar, soybean meal and lean hogs. This highlights a key point about commodity futures index funds – because of the critical impact of the commodities they include, the weights they give them, and their rebalancing and rolling strategies, they are, in effect, uncorrelated alpha strategies. Moreover, because of changing supply and demand conditions in many commodities (e.g., global demand has been growing, while marginal supplies are more expensive to develop and generally have long lead times), it is not clear that historical tendencies toward backwardation or contango are a good guide to future conditions. To the extent that any generalizations can be made, higher real option values, and hence backwardation and positive roll returns are more likely to be found when demand is strong and supplies are tight, and/or when there is a rising probability of a supply disruption in a commodity where storage is difficult. For example, ten commodities make up roughly 75% of the value of the Dow Jones AIG Commodities Index. The current term structures of their futures curves are as follows on **31 July 2009**:

Commodity	2009 DJAIG Weight	Current Status
Crude Oil	13.8%	Contango
Natural Gas	11.9%	Contango
Gold	7.9%	Contango
Soybeans	7.6%	Backwardated
Copper	7.3%	Contango
Aluminum	7.0%	Contango
Corn	5.7%	Contango
Wheat	4.8%	Contango

---



---

Live Cattle	4.3%	Contango
Unleaded Gasoline	3.7%	Backwardated
	74.0%	

Given the continued presence of so many contangoed futures curves, expected near term roll returns on the DJAIG as a whole are still negative, absent major supply side shocks. On a weighted basis, the forward premium (relative to the spot price) has grown from 3.59% to 5.70% over the past month. However, we also note that under these conditions, commodity funds that can take short as well as long positions may still deliver positive returns.

The third source of commodity futures return is unexpected changes in the price of the commodity during the term of the futures contract. It is important to stress that the market's consensus about the expected change in the spot price is already included in the futures price. The source of return we are referring to here is the unexpected portion of the actual change. This return driver probably offers investors the best chance of making profitable forecasts, since most human beings find it extremely difficult to accurately understand situations where cause and effect are significantly separated in time (e.g., failure to recognize how fast rising house prices would – albeit with a time delay – trigger an enormous increase in new supply).

Again, large surprises seem more likely when supply and demand are finely balanced – the same conditions which can also give rise to changes in real option values and positive roll returns. Given our economic outlook, at this point we view negative surprises on the demand side that depress commodity prices as more likely than supply surprises that have the opposite effect.

The fourth source of returns for a diversified commodity index fund is generated by rebalancing a fund's portfolio of futures contracts back to their target commodity weightings as prices change over time. This is analogous to an equity index having a more attractive risk/return profile than many individual stocks. This rebalancing return will be higher to the extent that price volatilities are high, and the correlations of price changes across commodities are low. Historically, this rebalancing return has been estimated to be around 2% per year, for an equally weighted portfolio of different

---

commodities. However, as correlations have risen in recent years, the size of this return driver has probably declined – say to 1% per year.

So, to sum up, the expected supply of returns from a commodity index fund over a given period of time equals (1) the current yield on real return bonds, reduced by the percentage of funds used to purchase the futures contracts; (2) expected roll yields, adjusted for commodities' respective weights in the index; (3) unexpected spot price changes; and (4) the expected rebalancing return. Of these, the yield on real return bonds can be observed, and we can conservatively assume a long-term rebalancing return of, for example, 1.0%. These two sources of return are clearly less than the demand for returns that are equal to the real rate plus a risk premium of, say, 3.0%. The difference must be made up by a combination of roll returns (which, given the current shape of futures curves, are likely to be negative in the near term) and unexpected price changes, due to sudden changes in demand (where downside surprises currently seem more likely than upside surprises) and/or supply (where the best chance of a positive return driver seems to be incomplete investor recognition of slowing oil production from large reservoirs and/or the medium term impact of the current sharp cutback in E&P and refining investments).

Another approach to assessing the valuation of commodities as an asset class is to compare the current value of the DJAIG Index to its long-term average. Between 1991 and 2008, the inflation adjusted (i.e., real) DJAIG had an average value of 91.61, with a standard deviation of 16.0 (skewness of .52, and kurtosis of -.13 – i.e., it was close to normal). The inflation adjusted **31 July 2009** closing value of 80.25 was .71 standard deviations below the long term average. Assuming the value of the index is normally distributed around its historical average (which in this case is approximately correct), a value within one standard deviation of the average should occur about 67% of the time, and a value within two standard deviations 95% of the time. Whether the current level of the inflation adjusted DJAIG signifies that commodities are undervalued depends upon one's outlook for future roll returns and price surprises.

Two factors argue in favor of undervaluation. The first is the large amount of monetary easing underway in the world, which, at some point, will likely lead to higher

---

inflation. The second factor is the equally large amount of fiscal stimulus being applied to the global economy, with its focus on infrastructure projects and clean fuels, both of which should eventually boost demand for commodities (and indirectly boost economic growth in commodity exporting countries like Australia and Canada). Gold prices should also benefit from rising investor uncertainty and/or worries about future inflation, which should generate higher retail flows into the expanding range of gold ETF products that make easier to invest in this commodity.

The argument in favor of a negative view on commodity valuations is (as more fully discussed in our Economic Update) is based on the continued failure to resolve three critical problems that underlie this global recession: excessive consumer debt, insolvent banks, and substantial world current account imbalances. Until these core issues are resolved, the impact of fiscal stimulus on global growth (and hence commodity prices) is likely to be limited, though still positive. After weighing these two views, we conclude that at the end of **July 2009** commodities are likely overvalued, while gold is possibly undervalued, given our view that the majority of market participants have underestimated the chances of a sharp increase in uncertainty over the next 12 months.

### Timber

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). We note that, since PCL and RYN are listed securities, investors should not demand a liquidity premium for holding them, as they would in the case of an investment in a TIMO Limited Partnership (Timber Management Organization). Two of the variables we use in our valuation analysis are readily available: 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.

In broad terms, the rate of dividend growth results from the interaction of physical, and economic processes. In the first part of the physical process, trees grow, adding a certain amount of mass each year. The exact rate depends on the mix of trees (e.g., southern pine grows much faster than northern hardwoods), on silviculture techniques employed (e.g., fertilization, thinning, etc.), and weather and other natural factors (e.g., fires, drought, and beetle invasions). In the second part of the physical process, a certain amount of trees are harvested each year, and sold to provide revenue to the timber REIT. In the economic area, three processes are important. As trees grow, they can be harvested to make increasingly valuable products, starting with pulpwood when they are young, and sawtimber when they reach full maturity. This value increasing process is known as “in-growth.” The speed and extent to which in-growth increased value depends on the type of tree; in general, this process produces greater value growth for hardwoods (whose physical growth is slower) than it does for pines and other fast-growing softwoods. The second economic process (or, more accurately, processes) is the interaction of supply and demand that determines changes in real prices for pulpwood, sawtimber and other forest products. As is true in the case of commodities, there is likely to be an asymmetry at work with respect to the impact of these processes, with prices reacting more quickly to more visible changes in demand, while changes in supply side factors (which only happen with a significant time delay) are more likely to generate surprises. In North America., a good example of this may be the eventual supply side and price impact of the mountain pine beetle epidemic that has been spreading through the northwestern forests of the United States and Canada.

The IMF produces a global timber price index that captures the net impact of demand and supply fluctuations, which is further broken down into hardwood and softwood. The average annual change in real prices (derived by adjusting the IMF

series for changes in U.S. inflation) between 1981 and 2007 are shown in the following table:

	<b>Average</b>	<b>Standard Deviation</b>
Hardwood	0.4%	11.8%
Softwood	1.7%	21.6%
All Timber	0.1%	9.2%

As you can see, over the long term, prices have been quite stable in real terms, though with a high degree of volatility from year to year (and additional volatility across different regional markets). The final economic process that affects the growth rate of dividends is changes in the REIT's cost structure, and non-timber related revenue streams (e.g., from selling timber land for real estate development). With respect to the latter, the potential imposition of carbon taxes or cap and trade systems for carbon emissions could provide a new source of revenue for timber REITs in the future. Last but not least, with rising interest in limiting global CO<sub>2</sub> emissions, timberlands have another potential source of value – their ability to convert CO<sub>2</sub> to oxygen. Accurate estimation of this value is not possible in the absence of an economic system for managing CO<sub>2</sub> emissions, be it a cap-and-trade or tax-based approach (for an early attempt at establishing this value, see “Economic Valuation of Forest Ecosystem Services” by Chiabai, Travisi, Ding, Markandya and Nunes. For a review of similar studies, see “Estimates of Carbon Mitigation Potential from Agricultural and Forestry Activities” by the U.S. Congressional Research Service).

The following table summarizes the assumptions we make about these physical and economic variables in our valuation model:

<b>Growth Driver</b>	<b>Assumption</b>
Biological growth of trees	We assume 6% as the long term average for a diversified timberland portfolio.
Harvesting rate	As a long term average, we assume that 5% of tree volume is harvested each year.
In-growth of trees	We assume this adds 3% per year to the

	value of timber assets, assuming no change in the real price of pulpwood, sawtimber and other final products.
Change in prices of timber products	We assume that over the long term prices will just keep pace with inflation. However, there are indications that climate change is causing increasing tree deaths in some areas, which should lead to future real price increases (see “Western U.S. Forests Suffer Death by Degrees” by E. Pennisi, <i>Science</i> , 23Jan09). Hence our assumption is conservative.
Carbon credits	We assume no additional return from this potential source of value, which also appears to be conservative given forests’ role in CO2 absorption.

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 NCRIF 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 NCRIF index, we have used four percent as the required return premium for investing in liquid timberland assets. Arguably, this may still be too high, as timber is an asset class whose return generating process (being partially biologically driven) has a low correlation with returns on other asset class. Hence, it should provide strong diversification benefits to a portfolio when they are most needed, and investors should therefore require a relatively low risk premium to hold this asset class.

Given these assumptions, our assessment of the valuation of the timber asset class at **31 July 2009** is shown in the following table. We use the dividend discount model approach to produce our estimate of whether timber is over, under, or fairly valued today. The specific formula is  $(\text{Current Dividend Yield} \times 100) \times (1 + \text{Forecast Dividend Growth})$  divided by  $(\text{Current Yield on Real Return Bonds} + \text{Timber Risk Premium} - \text{Forecast Dividend Growth})$ . A value greater than 100% implies overvaluation, and less than 100% implies undervaluation.

Average Dividend Yield	5.20%
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 In-growth	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	<b><u>9.20%</u></b>
Real Bond Yield	1.93%
Plus Risk Premium for Timber	4.00%
Equals Average Annual Real Return Demanded	<b><u>5.93%</u></b>
Ratio of Returns Demanded/Returns Supplied Equals Valuation Ratio (less than 100% implies undervaluation)	<b><u>36%</u></b>

We have also calculated the breakeven rate of annual timber price declines that would cause timber to be fully valued in our model. Today, it is about 3.25%. In light of the sharp falls that have occurred in housing and commercial construction around the world, it is easy to see how these could occur in the short-run, and hence cause investors with short time horizons to see timberland as fully valued today. However, as noted above, over a longer time horizon, the data show that an assumption of no change in real timber prices is the appropriate assumption to use.

### Volatility

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, 2008, the average daily

---

value of the VIX Index was 19.70, with a standard deviation of 7.88 (skewness 2.28, kurtosis 9.71 – i.e., a very “non-normal” distribution). On **31 July 2009**, the VIX closed at 25.92, To put this in perspective, only 751 days, or 15.7% of our sample had higher closing values of the VIX. This high (by historical standards) level of implied volatility may still be too low, if (as described in this month’s economic update) investors’ rapidly rising hopes for a fast return to normalcy eventually meet with disappointment as the conflict scenario and/or a worsening global influenza pandemic develops. As we noted above with respect to commodities, despite the likely impact of fiscal stimulus on aggregate demand, and monetary growth on price levels (i.e., reducing the risk of prolonged deflation), the core issues that lie at the heart of the current recession remain unresolved. Critically, we do not believe that this information and its likely impact on future uncertainty levels has been fully incorporated into S&P 500 option prices, and hence into the VIX. For these reasons, at the end of **July 2009** we estimate that volatility is likely undervalued.

### **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, 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 (for three good papers on rotation strategies, see "Sector Rotation Over Business Cycles" by Stangl, Jacobsen and Visaltanachoti; "Can Exchange Traded Funds Be Used to Exploit Industry Momentum?" by Swinkels and Tjong-A-Tjoe; and "Mutual Fund Industry Selection and Persistence" by Busse and Tong).

That being said, the highest rolling three month returns in the table do provide us with 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 a plurality of investors (as measured by the value of the assets they manage) 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 (although some might argue that the growth of the credit derivatives market has undermined this discipline). 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*

**31 July 09**

<b><i>Economy</i></b>	Bottoming	Strengthening	Peaking	Weakening
<b><i>Interest Rates</i></b>	Falling	Bottom	Rising	Peak
<b><i>Style and Size Rotation</i></b>	Small Growth (DSG) <b>17.50%</b>	Small Value (DSV) <b>16.03%</b>	Large Value (ELV) <b>13.92%</b>	Large Growth (ELG) <b>12.76%</b>
<b><i>Sector Rotation</i></b>	Cyclicals (RXI) <b>13.30%</b>	Industrials (EXI) <b>15.68%</b>	Staples (KXI) <b>18.66%</b>	Utilities (JXI) <b>14.14%</b>

<b><i>Bond Market Rotation</i></b>	Higher Risk (HYG) <b>13.39%</b>	Short Maturity (SHY) <b>0.07%</b>	Low Risk (TIP) <b>2.27%</b>	Long Maturity (TLT) <b>-2.41%</b>
------------------------------------	---------------------------------------	--	-----------------------------------	--

## Feature Article: A Letter to the New Graduate

Many of you are probably planning to take some vacation time this month, possibly to attend reunions where you will catch up with your family's newest graduates. With that in mind, I thought you might find interesting a letter I recently wrote to one, that also holds some important reminders for those of us who are faced with the challenge of making good asset allocations decisions:

*Dear Graduate,*

While you have no doubt received an excellent education, it has been my experience that formal schooling too often fails to spend enough time on four points that you will find critically important over the next thirty years. With that in mind, I've written this letter to cover them for you.

### Point 1: Thinking Clearly in an Age of Information Overload

Like me, most of your teachers grew up in the age of information scarcity. When we had a paper to write, we trundled off to the library, where we used ancient technologies like the Dewey Decimal System, Card Catalogues, and Encyclopedias to search for whatever information we could find about a subject. Finding this information, and then organizing it (which most of did by taking laborious notes on what we read) usually ate up more than half the time we spent on a project. In many cases, the hypotheses we developed depended on the data we could find. On the other hand, when it came to supporting or refuting these hypotheses, we became quite

good at combining limited data with assumptions and logic to build well constructed arguments.

Today, we live in a different world, where a few mouse clicks bring thousands of pieces of data about a subject to your desktop, where it can be cut and pasted into information organizers. In this environment, the old approach of trying to extract meaning from relatively limited data will quickly be swamped by information overload. Clearly we need a new approach that is based on the assumption of information abundance, rather than information scarcity. In broad terms, there are two paths you can take. The first is essentially a computer assisted version of the old fashioned approach. It goes by many names, including “data mining”, “knowledge discovery”, “exploratory search systems” and “machine learning”, and is based on software programs that can analyze terabytes of data and extract novel insights from them, including hidden relationships and improved predictions. However, while this approach is undoubtedly powerful, its practical application is usually limited by time, cost and limited data availability. This brings me to the second approach: thinking like Karl Popper and Thomas Bayes. Let me explain. Say there are two hypotheses: A and B, and I asked you which was more likely. How would you develop your answer? Karl Popper is famous for his doctrine of falsification – that the essence of the scientific method lies not in proving hypotheses, but in disproving them (there’s even free software available that helps you with this process – see <http://www2.parc.com/istl/projects/ach/ach.html>). Hence one way to approach this issue would be to seek information that would disprove each of the two hypotheses. Bayes would say you need to go further than this, and assess the potential diagnostic value of the information you seek. For example, a piece of evidence that you would see 60% of the time if A were not true, and 50% of the time if B were not true is much less valuable than a piece of evidence that you would expect to see 95% of the time if A were not true, but only 5% of the time if B were not true. More formally, Bayes teaches us to seek evidence with a high “likelihood ratio” – that is, evidence that is much more likely in the case of one hypothesis (e.g., A is not true) than the others being evaluated.

Thinking clearly in the face of information overload also requires us to develop insightful initial hypotheses to guide our search for information. While these will often be refined in an iterative manner as the information search proceeds (for more on this, see “Information Foraging” and “The Sensemaking Process and Leverage Points for Analyst Technology” by Pirolli and Card), starting out with good hypotheses often saves a substantial amount of time, and leads to a better analytical result. So how do you develop good initial hypotheses? In many cases, we have existing mental models that enable us to quickly generate them. These mental models are usually based on a combination of theories and practical experience, and encode our memories of the most important cause and effect relationships, information cues, and potential outcomes of different courses of action. However, most people’s mental models suffer from some well-known shortcomings: as humans, we struggle to understand situations in which (a) cause and effect are widely separated in time; (b) cause and effect have a non-linear relationship, and/or (c) in which effects have multiple causes that are themselves related to each other. Given this, while an existing mental model will usually provide us with at least one initial hypothesis about a situation, it often helps to develop a second hypothesis by identifying (and changing) one or more assumptions that underlie the first one. In my experience, the right ones to focus on are the linchpins – assumptions that are both critical to the first hypothesis, and highly uncertain. Alternatively, in a competitive situation, where the first hypothesis is an opponent’s most likely course of action, a good alternative hypothesis is the opponent’s most dangerous (to your goals) course of action. Finally, if you are truly confronted with a unique situation where existing mental models don’t apply, three approaches can guide your hypothesis development: analogies, deductions from theories that may apply, and/or reasoning about the players involved (e.g., their goals, constraints, perceptions, and possible courses of action).

## Point 2: Accepting the Non-Trivial Impact of Luck in Life

As human beings, we have a fundamental need to maintain some sense of control over our lives (as uncertainty triggers a primal fear), as well as a positive self-image. Unfortunately, these very human traits result in a distorted understanding of the role of luck (or randomness, if you prefer that term) in our lives. To put it succinctly, when we win, we attribute too much of our success to our own skill, and not enough to good luck. And when we lose, we assign too much of the blame to bad luck, and not enough to our own performance. In both cases, our misperception of the role of luck causes us to spend too little time examining how we need to adapt our thinking and/or behavior. Unfortunately, failure to adapt usually catches up with us, in unpleasant ways. A related problem is our tendency to misperceive random sequences. As Rabin and Vayanos note (in “The Gambler’s and Hot-Hand Fallacies”), the gambler’s fallacy derives from a fallacious belief in the “law of small numbers”: people believe that a small sample should resemble closely the underlying population, and hence believe that heads and tails should balance even in small samples.” An example of this is underreaction to short-term streaks, in the belief that they will soon reverse, failing to recognize that a random process (e.g., coin flipping) will naturally generate such short term streaks, and that the expected statistical outcome (50% heads, 50% tails) will only be apparent after a large number of trials. “On the other hand, people also sometimes predict that random sequences will exhibit persistence rather than reversals – e.g., the belief that a basketball player [or an active investment manager] has a ‘hot hand.’” In this case, people over-react to long-term streaks, taking them as evidence that the underlying process is not random, even when it is -- i.e., that the observed results reflect skill and not just luck. To summarize: our difficulty with accurately perceiving randomness leads us to overestimate the probability a short-streak will reverse, and over-estimate the probability that a long streak will continue (for more on the role of luck, read these two good books: [Fooled By Randomness](#) by Nassim Nicholas Taleb, and [The Drunkard’s Walk](#), by Leonard Mlodinow).

### Point 3: Making Good Decisions in the Face of Uncertainty

We'll assume a simple example. You face a situation in which you could follow course of action (or make choice) "A", "B", or "C". The result of each choice (e.g., whether you avoid a crisis, or how much money you make) depends on the conditions that prevail in the future. Let's call these scenarios 1, 2, and 3. You can organize this using a simple table. In the following example, I've assumed a money payoff as the result under each scenario.

	<b>Scenario 1</b>	<b>Scenario 2</b>	<b>Scenario 3</b>
<b>Choice A</b>	\$100	\$(50)	\$50
<b>Choice B</b>	\$50	\$200	\$10
<b>Choice C</b>	\$(60) – you lose \$60	\$130	\$300

The classical theory of decision making in the face of risk shows you how to identify the best choice in this situation. It works like this: (a) Assign a probability to each scenario, so that the probabilities total to 100%. (b) Multiply each result by the probability of the scenario. (c) Add up the resulting numbers for each choice to obtain its expected value (that is, its expected result). (d) Select the choice with the highest expected value. The following table shows an example of this:

	<b>Scenario 1 (25%)</b>	<b>Scenario 2 (50%)</b>	<b>Scenario 3 (25%)</b>	<b>Expected Value</b>
<b>Choice A</b>	\$100 x 25% = \$25.00	\$(50) x 50% = \$(25.00)	\$50 x 25% = \$12.50	\$25.00 - \$25.00 + 12.50 = <b>\$12.50</b>
<b>Choice B</b>	\$50 x 25% = \$12.50	\$100 x 50% = \$50	\$10 x 25% = \$2.50	\$12.50 + \$50 + \$2.50 = <b>\$65.00</b>
<b>Choice C</b>	\$(60) x 25% = (\$15.00)	\$130 x 50% = \$65.00	\$300 x 25% = \$75.00	= \$15.00 + 35.00 + 75.00 = <b>\$125.00</b>

As you can see, classical decision theory in the face of risk tells you that "C" is the best choice, followed by "B", and then by "A" in last place. However, classical decision theory has some limitations. The first is that the scenario probabilities are usually subjective. That means that two people who agree on the three choices could still disagree over which one is best simply because they believe the Scenarios have different probabilities.

But an even bigger problem is the way different people interpret the concept of “risk.” For example, rather than using the probabilities of the different scenarios as the measure of risk, another person might think of risk as the size of the range of possible outcomes -- \$150 for Choice A, \$190 for Choice B, and \$360 for Choice C. He or she might then want to choose on the basis of the ratio of the expected value of the choice to the range of possible outcomes (in which case, Choice B and Choice C look about equivalent). Alternatively, suppose two people, say, John and Jane, differ in their willingness to lose money. John chooses “C” because he is willing to risk a loss of \$60 to achieve the maximum expected gain of \$125. However, Jane isn’t willing lose any money, and so chooses “B”, which has a lower expected value of \$65. Classical decision theory might say that Jane made an irrational decision. However, it makes perfectly good sense in light of research that shows how losses typically have twice the emotional impact as gains.

But there is an even bigger problem with classical decision theory, that goes beyond different definitions of “risk”. The problem is this: when we have to make decisions in the real world, more often than not we don’t know all the possible future scenarios, much less their probabilities. In this situation, we have to make decisions in the face of “uncertainty” not “risk.” So how do you approach this? The first question to ask is “do I have to make this decision now?” In the face of uncertainty, if you can wait to make a decision, it is usually to your advantage, as you will have more time for “sensemaking” – developing a better understanding of the scenario that is developing. Unfortunately, in many cases, you can’t wait, and have to choose. In these situations, and particularly when you don’t have much time to make a decision, the first question you should ask is “do I recognize this situation?” If you do, then that recognition should trigger the memory of what you did when you encountered it before, and how that course of action turned out. If it turned out well, you will probably decide to do the same thing again. If it didn’t turn out well, you’ll probably want to make some changes. This process results in your initial plan.

If you don’t recognize the situation, you have to quickly gain a rough understanding of it. To do this, ask yourself three questions: (a) what are the most

important elements (people, conditions, objects, etc.) in the situation I'm facing? (e.g., we're having a picnic by the lake; there is a boat on the shore; the car is a half-hour hike away; I see fire on a ridgeline about a mile away; and the wind is blowing towards me); (b) What are the most important relationships between these elements? (e.g.: What is the probability the fire will reach us before we can get back to the car? Will the road be crowded with other cars and slow us down? Is the lake big enough that we could get in the boat, go out into the middle of the lake, and escape the fire?); and (c) How the situation is likely to evolve in the near future? (e.g.: do I see or hear any fire engines? Are other people starting to leave? Did some other group already take the boat?). This three step process develops what is called "situation awareness." Good situation awareness enables you to identify good choices or options, and to choose the one that, in your view, appears to have the highest probability of achieving your goal (in this case, escaping the fire).

The next step is to quickly test your plan before you put it into action. The best way to do this is called a "pre-mortem", which is like making up a little story about your course of action. Assume you are in the future, and your plan has failed. Tell a story (in your mind if you are alone, or have your team do this if you are leading a group) about what went wrong. Usually, the key to this story will be an important assumption in your original plan that turns out to be wrong. Then ask yourself what you could have done differently to enable your plan to succeed. Here's a quick example. "My plan to have a picnic by the lake failed because of a surprise rainstorm. My plan to have a nice day out with my family could have succeeded if I had also made reservations at that nice restaurant by the lake, just in case it rained." Making this reservation is called "hedging" – incorporating alternatives in your plan that you can follow if the original plan goes wrong. Usually, a pre-mortem will cause you to consider more hedges. Sometimes it will cause you to discard your original plan and make a new one. That's what makes it such a powerful technique to use when you are faced with having to make a decision in the face of uncertainty. Once you have done this, mentally think about how your plan, complete with its hedges, will play out. This is called "mental simulation" and sometimes it too can highlight problem areas

where you need to think about hedges, or to make other changes in the plan. Once you have finished this step, you've made your decision in the face of uncertainty, and you're ready to implement it – while constantly checking to see if any of your key assumptions aren't matching up with unfolding reality (which, beyond a certain point, should trigger an adaptation to your plan).

One last, but important point: decision making tires you out, and can trigger some unpleasant consequences, including reduced physical stamina, task persistence, cognitive performance, and self control (see “Decision Fatigue Exhausts Self-Regulatory Resources” by Vohs et al). Keep this in mind when you are faced with a sequence of decisions.

#### Point 4: Using Options to Achieve Your Long-Term Goals in an Era of Rapid Change

I realize that for at least the past decade, you have been constantly told that you live in a period of unprecedented change. However, when I look back at my father's life – which began in 1918 and ended in 2008 – I'm not sure this is the case. Every generation probably thinks that it is facing a faster pace of change than anything that has come before. But what is constant over time is that some people seem to cope with this change better than others. What accounts for this? At one level, it may be biological, in that some people have less intense fear reactions to the loss and uncertainty that are an inescapable part of living through a period of rapid change. At a more conscious level, the ability to cope with change involves emotional maturity and stability (i.e., “grace under pressure”), the social ability to build a web of supportive interpersonal relationships, and the cognitive flexibility to question your assumptions, make sense of changing circumstances, and constantly adapt your mental models. Finally, at the strategic level, many of the people who achieve their long-term goals in spite of rapid and unpredictable change have consciously focused on creating and nurturing a portfolio of options.

A friend of mine once observed that many decisions in life – and particularly career decisions -- have an option element to them. Some decisions create more

possibilities than they close off (i.e., they have the profile of buying a financial call option), while others close off more possibilities than they create (i.e., they have the profile of selling a financial put option). In the face of rapid change, seek out the former type, and try to avoid the latter. Diversification is just as important in a career and other aspects of life as it is in an investment portfolio. Of course, the other side of this issue is that you need to retain the flexibility – cognitive, emotional, social and financial – to exercise an attractive option when it is “in the money.” There are lots of different aspects to this, including clarity about your long-term goals, sharing them with the most important people in your life, and resisting the temptation to forego long-term financial flexibility for higher short-term consumption (as my father used to say, “the real secret of feeling rich isn’t having more, it’s wanting less” – but that’s a subject for another letter).

In sum, I have no doubt that over the years of your schooling you have heard many references to “effectiveness” and “efficiency.” Indeed, these are two of the three standards against which the performance of all organisms and organizations can be measured. Unfortunately, the third standard – adaptability – is probably the most important in a period of rapid change, where accurate foresight is next to impossible, particularly as the time horizon lengthens. Yet I’d bet that it is the one you’ve learned the least about. Hopefully, this letter will make up for that, and help you achieve your goals over the next forty years. Good luck (it helps).

*(for reprints, please contact [smiller@indexinvestor.com](mailto:smiller@indexinvestor.com))*

## **Product and Strategy Notes**

### A Closer Look at Asset Class Risk/Return Regimes in Canadian Dollars

This month we continue the analysis of asset class risk/return regimes that we began in our April 2009 issue with an overview of U.S. dollar denominated returns. This article covers risk/return regimes in Canadian Dollars (CAD). Analysis of risk/return regimes in Australian Dollars, Canadian Dollars, and Swiss Francs may be found in

the corresponding editions of this month's issue. Our starting point is the following table, which shows the correlation of real monthly CAD returns between a number of asset classes between January 2006 and December 2008.

	Domestic Property	Foreign Property	Domestic Equity	Foreign Equity	Emerging Equity	Volatility (VIX)
Dom Prop	1.0					
For Prop	.81	1.0				
Dom Eq	.67	.43	1.0			
For Eq	.76	.73	.62	1.0		
Emg Eq	.53	.59	.77	.86	1.0	
Volatility	(.60)	(.49)	(.69)	(.64)	(.64)	1.0

As you can see, the positive correlations between these asset classes were generally quite strong, as was their average negative correlation with volatility, as measured by the VIX index. This is what people mean when they say that “correlations went to one during the crisis”, and in so doing reduced the expected downside risk protection from holding a diversified portfolio. That said, the CAD correlations were lower than their USD equivalents, particularly for domestic and foreign property versus all equity asset classes. In other words, over the past two years an allocation to commercial property securities provided CAD based investors with better diversification benefits that was the case for USD based investors.

On the other hand, some asset classes delivered positive returns even as volatility rose, including 1- 3 year U.S. Treasury securities (positive .44 correlation with changes in the VIX), world bonds (positive .29), and gold (slightly positive at .09). In addition, the returns on 10 year Canadian Government Bonds the DJUBS Commodity Index had only slight negative correlations with the VIX, at (.06) and (.10) respectively. Finally, returns on timber had a strong .40 positive correlation with the VIX. Note, however, that in this analysis we use the NCREIF Timber Index, instead of a mix of Plum Creek Timber and Rayonier – the two timber REITs we use in our model portfolios -- because the data history for PCL and RYN in their timber REIT form does not go back to 1990. However, the NCREIF series is appraisal based, and we have

---

interpolated its values from quarterly to monthly, both of which distort its comparative meaning – e.g., by artificially reducing its standard deviation and correlation.

We next performed a principal components analysis (PCA) on the 2006 to 2008 real returns data. PCA is a statistical technique that reduces the variation in a given set of variables to variation in a smaller number of independent underlying factors. For example, assume you have four variables in a data set. Variables one and two may have a very strong positive correlation with factor A (technically, principal component A), while variables three and four have a strong negative correlation with factor B. The art in this type of analysis lies in making inferences about just what those statistical factors represent in the real world. The first factor we extracted from the CAD data explained 34% the variation in asset class returns over the 2006 – 2008 period. In contrast, in our analysis of U.S. Dollar returns over the same period, the first factor explained 49% of the variation. However, in both cases, it described the impact of the volatility/liquidity/solvency shock that hit the world financial system in 2007-2008. Asset classes with strong return correlations with this factor include volatility, short term U.S. Treasuries, world bonds and timber (and to a lesser extent Canadian 10 year government bonds and gold), and, with opposite signs, domestic and foreign property and all three equity asset classes.

The second principle component accounted for 23% of the variation in returns. With strong positive correlations with Canadian real return and nominal return 10 year government bonds, as well as foreign bonds, property and equity, but weak loadings on Canadian property and equity, this seems related to the interaction of falling Canadian interest rates and some weakening in the CAD exchange rate. The next two PCs are quite similar to each other, and account for a further 21% in the variation in asset class returns. This factor describes the strong commodity cycle experienced between 2006 and 2008, with strong positive correlations with returns on commodities and gold, positive correlations with Canadian real return bonds and equities, and negative correlations with domestic and foreign nominal bonds, commercial property securities, and foreign developed market equity. Again, we believe this factor includes the impact of rising commodity prices on both expected inflation and interest rates,

---

Canadian equities (which include a large number of resource producing firms), and exchange rate appreciation.

Our next step was to perform the same analysis on rolling 12 months returns data from 1991 to 2005 to see if these same factors were present. We used rolling returns to reduce the potential impact of any autocorrelation (i.e., lack of independence) between monthly real returns. As we noted in April, when doing this analysis, we admit to feeling somewhat akin to the 9-11 Commissions, going back to see what dots were present in the past that we had failed to properly connect. The first principal component accounted for 26% of the variation in returns, and had strong positive correlations with real return bonds, domestic property and equity, commodity prices and emerging market equities. We interpret this is the impact of the “great moderation” – the period of strong real growth, low inflation and generally falling real bond yields around the world, and, in this case, a gradual strengthening of the Canadian dollar. The second principal component accounted for 19% of return variation, and seemed to reflect the impact of falling global real interest rates, with strong positive correlations with returns on Canadian real return and nominal return government bonds, and with foreign bonds, property and equity.

The third PC accounted for 14% of the variation in returns, and seemed to capture the interaction between interest rate and property cycles, with negative correlations between the PC and returns on all bonds and property asset classes. We suspect that this PC captures variation in inflation expectations. As you can see, the first three principal components capture a lower percentage of the variation in asset class returns between 1991 and 2005 than they do the first three principal components during the 2006 – 2008 period. This means that returns over the latter period were driven by fewer, stronger factors than they were between 1991 and 2005.

Our next step was to test for the presence of three different regimes, which we have defined as high inflation, high uncertainty/volatility, and normal times, when markets are closer to equilibrium than in the first two regimes. To test these ideas, we divided monthly real returns from 1990 to 2008 into three groups. About fifty high volatility months had changes (either positive or negative) in volatility of 20% or more.

About an equal number of high inflation months had a change in the consumer price inflation of .40% or more. The remaining months were deemed to be in the normal regime. The following table shows the average monthly real return and standard deviation for each asset class under each regime, as well as within regime rankings of relative returns and risks.

	High Vol				High Infl				Normal			
	AVG	Rank	STD	Rank	AVG	Rank	STD	Rank	AVG	Rank	STD	Rank
1 - 3 Yr.U.S. Treasury	0.50%	5	3.02%	3	-0.83%	13	1.94%	2	0.01%	11	1.75%	2
Real Return Bonds	-0.28%	7	1.75%	1	0.11%	4	1.07%	1	0.25%	9	1.21%	1
10 Year Govt Bonds	-0.46%	8	2.59%	2	-0.58%	10	2.48%	3	0.53%	6	2.59%	5
World 1+ Bond	0.78%	4	3.15%	5	-0.73%	12	2.53%	4	0.37%	8	2.47%	4
Domestic Property	-1.93%	12	5.90%	10	-0.39%	8	4.60%	10	-0.05%	12	6.26%	12
Foreign Property	-0.52%	9	4.49%	7	-0.45%	9	3.44%	6	0.99%	4	3.73%	9
Commodities (DJUBS)	0.02%	6	5.13%	9	0.52%	3	4.01%	8	0.46%	7	4.11%	10
Timber	1.26%	2	3.11%	4	0.05%	5	2.54%	5	1.03%	3	2.11%	3
Gold	0.79%	3	3.21%	6	-0.35%	7	3.48%	7	0.20%	10	3.56%	7
Domestic Equity	-2.07%	13	6.00%	11	0.89%	1	4.69%	11	1.12%	2	3.56%	8
Foreign Equity	-1.30%	10	4.80%	8	-0.21%	6	4.26%	9	0.81%	5	3.39%	6
Emerging Equity	-1.50%	11	7.92%	12	0.82%	2	6.13%	12	1.46%	1	5.83%	11
Volatility (VIX)	13.45%	1	33.33%	13	-0.63%	11	18.69%	13	-0.95%	13	9.96%	13
<b>Equal Wtd with VIX</b>	<b>0.67%</b>		<b>6.49%</b>		<b>-0.14%</b>		<b>4.60%</b>		<b>0.48%</b>		<b>3.89%</b>	
<b>Equal Wtd ex VIX</b>	<b>-0.39%</b>		<b>4.25%</b>		<b>-0.10%</b>		<b>3.43%</b>		<b>0.60%</b>		<b>3.38%</b>	

This table illustrates a number of interesting points. First, the difference between the regimes is clear. Second, there are obvious benefits to hedging against the downside risks represented by the high uncertainty and high inflation regimes. Third, an allocation to volatility represents a potentially powerful way to limit tail risks, though at the cost of lower returns during the normal regime. In the past, we have noted that investable volatility products are based not on the VIX index, but rather on futures contracts on the VIX, which usually have much lower price fluctuations that reduce their potential value as a hedging investment. However, this analysis has refined our views on these products. Even if you assume that the returns on VIX futures (which are now available to retail investors via Barclays VXX exchange traded note) equal only 33% of the returns on the underlying index, the above table suggests they may still be a good hedging investment in some portfolios (in addition, the use of leverage

---

could boost these returns to a level closer to the VIX). While further analysis will be needed to determine the right allocation to volatility (which will undoubtedly depend on an investor's target real return objective), we are encouraged by what appears to be a real opportunity for improved asset allocation techniques in combination with new hedging instruments to reduce investors' potential exposure to tail risk.

Fourth, and consistent with many other studies, the table also shows that relative risk rankings are much more consistent across regimes than relative return rankings. Finally, while we have not shown them, our analysis of the correlations between asset class returns under the three regimes found that the average correlation was surprisingly highest under the normal regime, and lowest under the high volatility regime. The reason for this is the emergence under the latter of far more negative correlations between asset classes, which depresses the overall average.

As we noted at the outset, because adaptive markets are constantly evolving, the ability to explain what happened in the past does not guarantee the same ability to accurately forecast the future. Yet an understanding of the past can surely help us to better prepare for the future, even if we do not know the exact form it will take. In our case, we have for sometime been working on a new portfolio construction methodology that will be based, in part, on an expanded regime switching methodology that incorporates the lessons we have just reviewed. Where we used good and bad regimes in the past, we will be moving to a three regime model, with more significant differences in the risk, return and correlation assumptions under each regime. In addition, because estimation errors are inescapable in any asset allocation analysis, we will also continue to employ shrinkage methodologies to limit their potential impact. We believe that these changes will further improve a portfolio construction methodology that has already proved its mettle under some very challenging circumstances. That said, we also reiterate two key points: all asset allocation methodologies contain inescapable shortcomings. For that reason, they must always be complemented with ongoing asset class valuation analyses (based on a mix of approaches, like our fundamental and scenario based methodologies), as well as a willingness to occasionally move beyond relatively passive risk management

techniques like diversification and automatic rebalancing, and employ more active hedging measures like moving to cash or buying options.

### Sentiment, Trend Following, Momentum, and the Inefficient Market Argument for Index Investing

John Kay had an outstanding column in the June 9, 2009 *Financial Times* that serves as an excellent starting point for a discussion of a number of other recent developments. As we have also written many times, Kay began by noting that “John Maynard Keynes famously likened the processes of stock exchanges to a newspaper beauty contest, in which the objective was not to choose the most beautiful face, but to choose the one you thought others would find most beautiful.” Kay went on to describe how Keynes believed that “two approaches to investment followed from this metaphor. One – speculation – required careful study of the fads and fancies of the other contestants. The alternative – enterprise – believed that real beauty would always shine through. Speculation involved forecasting the psychology of the market, enterprise the prospective yield [return] of assets over their whole life.” Kay then stressed one of Keynes’ key conclusions: “Perceptively, Keynes anticipated the development of a paradox. Professionalization of markets would drive out analysts who focused on fundamental value...since it was better [for a professional investment manager’s career] to be conventionally wrong than unconventionally right.” Finally, Kay noted how the dominance of a market by speculators has spread beyond equities: “In the past two decades, securitization and other financial innovations [e.g., credit default swaps] brought the same phenomenon to credit markets. When loans remained on the balance sheet to maturity, there was no alternative to an assessment of their fundamental value. Once loans could be bought and sold, what mattered was not their soundness but their price – with the predictable consequences of instability and price fluctuations far in excess of any reasonable assessment of any underlying change in fundamental value.”

Other writers have used different words to describe this change in the nature of financial markets, noting that they are now seem more heavily dominated by short-term traders rather than long-term investors, or by trend-followers (whether human or algorithmically based) rather than investors who analyze fundamental security, sector, and asset class valuations. Of course, as Keynes noted, this change began long ago. It was also highlighted in the works of Benjamin Graham, who famously said that "In the short run, the market is a voting machine but in the long run it is a weighing machine" (which is close to our core assumption that, while markets are attracted to equilibrium and prices close to fundamental values, practice they rarely achieve it, and are usually in a state of disequilibrium). However, we also believe that, due to improved communications technology that facilitates greater interconnection between investors, faster spread of information, and easier development of price trends (i.e., herding), the market impact of speculation has undoubtedly become stronger in recent years.

This raises an interesting question – has the growing power of speculative forces paradoxically increased the probability that active investment management strategies will meet with success? There is a growing body of evidence that a range of emotional and social forces give rise to coordinated human behavior across a wide range of contexts. In previous issues, we have described how neurobiology causes humans' fear of social isolation to rise in the face of increased uncertainty. Other research has found that human beings differ in the intensity of these responses, and that variations in cognitive ability affect humans tendency towards overconfidence, impatience, and errors of judgment (see, for example, "Cognitive Abilities and Behavioral Biases" by Oechssler, Roider, and Schmitz). Other researchers have noted that "when agents are sensitive to the wealth of others, they tend to herd on the same information, trying to mimic each others' trading strategies" (see "Relative Wealth Concerns and Complementarities in Information Acquisition" by Garcia and Strobl). These tendencies are reinforced by technological changes, including faster access to information and the increasing use of "most popular stories this week" aggregators by

---

a wide range of media that further focus people's limited attention on a few key themes (or memes).

There is more controversy about the investment implications of these findings. On the one hand, there is evidence that a focus on investor sentiment leads to pricing errors and lower investment returns. For example, a recent paper found that "analysts whose stock recommendations are positively correlated with recent or future investor sentiment tend to issue relatively less profitable recommendations" (see "The Profitability of Analysts' Stock Recommendations: What Role Does Investor Sentiment Play?" by Bagnoli, Clement, Crawley and Watts). Another recent paper finds that following these sentiment based recommendations causes short sellers to lose money, while use of fundamental valuation indicators leads to higher returns ("False Prophets: How Analysts Lead Short Sellers Astray During Periods of High Investor Sentiment" by Seybert and Wang). Finally, in another paper, Baker, Wurgler and Yuan conclude that "both global and local sentiment are contrarian predictors of major markets' returns" and that "sentiment appears to be contagious across markets" ("Global, Local and Contagious Investor Sentiment").

Let's examine this issue in more detail. Before proceeding, we note that what follows reflects an argument first put forward by Steve Thorley in his outstanding (and underappreciated) 1999 paper, "The Inefficient Market Argument for Passive Investing." We will start with the following assumptions:

- The true value of an asset can be described in terms of the discounted cash flow equation (in this case, the Gordon Growth Formula): Value equals dividends divided by (cost of equity capital less expected dividend growth rate).
- The underlying processes that generate the inputs to this equation are stable over time (statistically, they are "stationary").
- Initially, the market contains only active investors who attempt to earn above average returns by forecasting the future values in the DCF equation.
- These investors differ in their forecasting ability. Let's say 75% of them (measured by the percentage of investable capital they control) cannot

---

make accurate forecasts, due to some combination of poor information, inaccurate models, or the influence of emotional factors.

- At the end of the year, all market values adjust to their true fundamental values, so that actual returns are ultimately determined by the underlying economic processes driving changes in the inputs to the DCF model (unrealistic, but useful in making the points that follow).

What outcomes do we expect this market to produce? First, because the majority of investors lack accurate forecasting skills, during the year, market prices for securities should diverge from their true values – perhaps by a large amount. Second, at the end of the year, the returns of the skilled and unskilled investors net out to the returns generated by changes in true fundamental values. Third, because unskilled investors are in the majority, the median investor should earn a negative return for the year.

Now let's introduce an index fund. Assume 50% of the unskilled investors become index investors, leaving 25% skilled and 25% unskilled. What changes would we expect to see versus the previous scenario? First, asset prices should stay closer to their fundamental values, since there are fewer unskilled active investors making valuation mistakes. Second, the median active investor's return should be higher (since skilled and unskilled are now balanced), even though all active returns will still net out to the overall market return. Third, those unskilled investors who became index investors will also enjoy higher returns, since the index fund's return tracks the overall market return, and they are no longer systematically losing money to the skilled investors. Finally, life for the skilled investors will become more difficult – and their excess return above the overall market return should decline – because there are fewer unskilled investors for them to exploit.

In our third scenario, let us assume that 25% of the investors who were in the index fund decide that trend following is the best way to earn high returns. And let us assume that 5% discover they are actually skilled at forecasting the future behavior of other investors. We now have a more complicated market, composed of 25% skilled active fundamental investors, 25% unskilled active fundamental investors; 5% skilled active trend following investors, 20% unskilled trend following active investors, and

---

25% passive index investors. What results is this new mix likely to produce? Once again, all the active returns will net out to the market return, which is what the index investors will earn. However, rather than the previous mix of 25% skilled and 25% unskilled active investors, we now have 30% skilled and 45% unskilled active investors. So the median active investor's return should be lower than it was in the previous scenario. Moreover, since trend followers are not concerned with fundamental values, the gap between the average returns of skilled versus unskilled active investors may be much wider than it was even when 75% of investors were unskilled but focused on fundamental valuation, for the simple reason that trend followers can accentuate the price impact of security valuation mistakes. On the other hand, skilled active investors should earn higher returns in this scenario than in the previous one.

Hopefully, this short example clarifies a number of critical points: (1) even in a market where security prices can substantially deviate from their true values, indexing makes sense for investors who lack active management skills. (2) Skilled active investors have a very strong interest in convincing unskilled investors that they are, in fact, skilled. (3) Skilled investors have perhaps an even stronger vested interest in convincing unskilled investors to pursue a trend following strategy (as operators of boiler room "pump and dump" schemes have known for years). Keep that in mind the next time someone tells you to buy a hot stock because it is "breaking out" and "really starting to move" – or when someone tries to argue against adding more index funds to your 401(k), superannuation, or other defined contribution pension plan.

Careful readers will note that there are four factors missing from this example that make the challenge faced by active investors much more difficult. First, true prices are not revealed at the end of each year; a more accurate description of markets is that while over time prices are attracted to true values, they usually deviate from them, sometimes by large amounts. This makes it much more difficult to separate skilled from unskilled investors – even in their own minds. Second, the underlying processes driving true valuation actually evolve over time, and are not stationary. The same is true for the underlying processes governing trend following behavior are also not

---

stationary (e.g., rates of information dissemination and its perceived importance, the degree of uncertainty about overall economic conditions, and the current state of investors' individual emotions and social network connections). Finally, in real markets luck, or randomness, plays an important (if usually underappreciated) role. For example, an unskilled fundamental active investor whose forecast is correct three times in a row can become a market guru, and the focal point for the actions of trend following investors. The extraordinary difficulty involved in being a skilled investor – whether based on accurate forecasts of future fundamental value or investor behavior – may also help to explain the sharp increase in the volume of so-called “high frequency” trading in recent years. Essentially, high frequency trading is based on computer executed trading algorithms (i.e., customized software programs) that attempt to exploit – over extremely short term intervals – price discrepancies caused by market microstructure factors (e.g., the timing and pricing of submissions to an electronic limit order book) and/or very short-term trends and/or cross market (e.g., futures vs. stocks) valuation inconsistencies. Thanks to the advent of huge databases with tick-by-tick trading records, as well as cheaper and more powerful computing power, these short-term price discrepancies are now much easier to identify and exploit. Moreover, since at least some of them seem to be a function of the structure of the markets themselves, they may be less likely to be arbitrated away. Hence, it should come as no surprise that many active investment managers looking for an edge to justify their high fees have turned to high frequency trading.

Let us now move on to a closer examination of the issue of momentum. Momentum is not the same as trend following. While the latter is generally assumed to be investing in a previous period's winners, momentum technically refers to a market neutral investment position that goes long stocks with the highest recent increase in earnings or prices (say the top 10% or 20%) while selling short an equivalent amount of stocks at the other end of the spectrum. Multiple studies have shown that, at least in theory, momentum can be a profitable strategy (see, for example, “The Global Investment Returns Yearbook, 2008” by Dimson, Marsh and Staunton; “The Case for Momentum Investing” by Berger, Israel, and Moskowitz; and

---

“Global Momentum Strategies: A Portfolio Perspective” by Griffing, Ji, and Martin). More recently, researchers have introduced new indices intended to make it easier for investors to either implement either a trend following or a momentum strategy in their equity allocations (see “Momentum and Contrarian Stock Market Indices” by Eggins and Hill, “The Efficient Replication of Factor Returns” by Melas, Suryanarayanan and Cavaglia of MSCI Barra, and AQR Capital’s new momentum indexes).

However, other writers have cautioned that in practice, true momentum strategies may be only marginally profitable (or actually unprofitable), because they often involve high transaction costs (due to monthly rebalancing, expensive short sales, and often times the presence of small, hard to trade stocks among both the momentum winners and losers). Others have argued that momentum is suffering the same declining returns as other strategies that received large cash inflows after they were popularized (see, for example, “The Fading Abnormal Returns of Momentum Strategies” by Henker, Matens and Huynh).

These are all points to keep in mind when evaluating the new “momentum” funds that have recently been introduced in the United States by AQR Capital. These include strategies focused on the Russell 1000 (AMOMX, no load, .49% expense ratio), small cap (ASMOX, no load, .65% expense ratio), and international equities (AIMOX, no load, .65% expense ratio). In light of our discussion, we would say these funds are mislabeled, since AQR defines its “momentum” strategy as investing in shares with the top 33% performance over the previous twelve months, rebalanced no more than quarterly. As they take no offsetting short positions, we think these are better described as “trend following” funds. Thus, rather than being an interesting new uncorrelated alpha strategy, we regard the new AQR momentum funds as tilts within an overall equity allocation. As with all other tilts, achieving superior risk adjusted returns from this one necessarily depends on making a superior forecast of future equity market conditions.

More broadly, however, it will be interesting to see where this increasing emphasis on momentum and trend following investing leads. One likely consequence is that the appearance of low cost trend following index funds will make it even harder

---

for many active managers to justify their fees (or at the very least it will force a clearer distinction between trend following and momentum). In the mutual fund world, papers co-authored by Russ Wermers have shown how momentum has a very strong impact on the returns of successful active funds (“Is Money Really “Smart”? New Evidence on the Relation Between Mutual Fund Flows, Manager Behavior, and Performance Persistence”), and that momentum oriented strategies have become more predominant in recent years (“Analyst Recommendations, Mutual Fund Herding, and Overreaction in Stock Prices”). A more recent paper reviews the performance of 1,448 institutional domestic equity investment management firms between 1991 and 2008 (“Performance and Persistence in Institutional Investment Management” by Busse, Goyal and Wahal). They find that after taking momentum into account, remaining alpha’s are not statistically different from zero, net of fees. Moreover, momentum accounts for virtually all the persistence in top performers’ returns over a one year time horizon.

In sum, we remain intrigued by the prospect of someone introducing a true quantitatively based long/short momentum product, which would be similar to other uncorrelated alpha strategies. We suspect, however, that if this could have been done profitably, AQR would have taken this approach, as they are known to be a very smart team of quants.

### Private Equity, Again

We just read another interesting new paper on one of our favorite subjects – whether (and if so, how) private equity funds really create value for investors in their limited partnerships. In “Managerial Incentives and Value Creation: Evidence from Private Equity”, Leslie and Oyer compare companies owned by private equity funds with similar public companies. They find that the PE owned funds have much stronger incentives for their top executives and use higher levels of debt. “The highest-paid executive at a PE-owned firm owns approximately twice as large a share of the firm, earns about 12% less in base pay, and receives a substantially larger share of his

cash compensation through variable pay” relative to his counterpart at a publicly owned company. However, the authors “find little evidence that the PE-owned firms outperform public firms in profitability or operational efficiency.” This will undoubtedly come as no surprise to anyone who has been a manager in one of those public firms, and struggled to successfully compete in the face of rapidly evolving customer needs, competitor offerings, technological possibilities, and economic conditions. Rarely have I encountered anyone in this role who believed that stronger incentives would instantly endow them with greater ability to pierce the uncertainty they confront, or magically eliminate the implementation challenges posed by human nature (in fact, widening the compensation gap between senior managers and everyone else often has the opposite effect). Nor have I ever encountered an experienced operating manager who believed that former investment bankers now running private equity firms had any unique wisdom to add when it came to improving profitability and operational efficiency.

Leslie and Oyer also “find that the compensation and debt differences between PE-owned companies and public companies disappear over a very short period (one to two years) after the PE-owned firm goes public.” No surprise there either – returning to a more conservative capital structure makes sense, since it increases financial flexibility, and therefore the company’s ability to adapt to unexpected change (which is critical to survival in a highly competitive and uncertain environment). Similarly, reducing compensation disparities also removes barriers to both the free flow of ideas and the rapid implementation of change – factors that are also critical to a company’s ability to adapt.

Unfortunately, these fundamental truths seem to have escaped the notice of the many bankers who loaned enormous sums to PE firms to back their highly priced, highly leveraged bids, as well as the equity investors who bought the PE firms’ shares when the highly leveraged portfolio companies were taken public again. In sum, as more research is produced into the dynamics of private equity over the past decade, evidence accumulates that a very substantial portion of recent PE fund returns was derived from a combination of skill in exploiting lenders’ ignorance and timing equity

---

investors' tendency to overestimate future growth rates in different sectors of the economy. Of course, that may also be why LP units in many PE funds are trading in gray and secondary markets at 50% or less of their stated values, and so many former investment bankers have struggled to raise their second PE funds.

#### Four Interesting Research Papers

In "Carry Trades and Global Foreign Exchange Volatility", Menkhoff, Sarno, Schmeling, and Schrimpf provide new insights into the uncorrelated alpha foreign exchange strategy known as the "carry trade", where an investor borrows in a low interest rate currency, and invests in a high interest rate currency. According to the theory of uncovered interest rate parity, changes in the exchange rate should offset the interest rate difference, leaving zero profit. However, as the very substantial amount of money invested in this strategy has shown, this has often proven not to be the case. However, the authors show why the carry trade is not the free lunch it first appears (as investors who were long Icelandic Krona can attest). "We find a significant negative return comovement of high interest rate currencies with global volatility, whereas low interest rate currencies provide a hedge against volatility shocks." Bottom line: the carry trade worked well as long as world financial markets were relatively stable. However, a substantial portion of the return earned on the carry trade represented compensation for bearing the risk of very negative outcomes if volatility and illiquidity sharply increased.

In "Performance Maximization of Actively Managed Funds", Guasoni, Huberman, and Wang show a new way that active managers can game performance measurement systems in order to show higher levels of alpha – in this case, by taking a long position in the benchmark against which the fund's performance is measured, and then writing call options on them. Provided the implied volatility of the call options (or similar derivative) is higher than the realized volatility of the benchmark (which is usually the case), the manager will appear to have generated significant alpha, even in the absence of superior information or skill.

Along somewhat similar lines (gaming the system), Richard Evans has written an interesting paper on the practice of “Mutual Fund Incubation”, “which is a strategy for initiating new funds, where multiple funds are started privately, and, at the end of an evaluation period, some are opened to the public.” He finds that “funds incubation outperform non-incubated funds by 3.5% risk adjusted, and when they are opened to the public they attract higher net dollar inflows. Post-incubation, however, this outperformance disappears. This performance reversal imparts an upward bias to equal weighted, but not value weighted, return indexes.” Interestingly, he finds a higher probability of incubation at fund families whose products are primarily sold through brokers, since fund flows through this channel have been shown to be more sensitive to past returns. Evans concludes that “overall, the evidence suggests that incubation is used by fund families to speciously enhance performance and thereby increase inflows, and it is an effective tool in this regard.”

Last but not least, we call your attention to a new piece of research from Morgan Stanley on “The Renaissance of Global Macro Investing.” The author, Henry McVey, concludes that the “Great Recession” will lead to a renewed emphasis on a “top-down, global macro investing approach”, and that “investors within the asset allocation community will be required to enhance their analytical tools in an effort to find out which investment will actually serve as diversification instruments for large portfolios, especially during periods of market stress.” This is not too different from something Jack Bogle said in his recent *Financial Analysts Journal* interview: “We should build a model based on a winning strategy whereby incentives are not based on trading volume, but on personal financial service, asset allocation, broad diversification and control of the risks and the costs.” We couldn’t agree more that this is the way the financial advisory and planning industry must move if higher levels of consumer savings are to result in adequate levels of post-retirement income.

## 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 uncorrelated alpha strategy 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 2009, our CAD cash benchmark is 2.00% (in nominal terms). The second benchmark we use is a portfolio equally allocated between the ten asset classes we use (it does not include uncorrelated alpha). 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 at: <http://www.indexinvestor.com/Members/YTDReturns/Canada.php>

## Appendix: Economic Scenarios and Accumulated Evidence

The following table summarizes the accumulated evidence over the past three months (on a rolling basis) against both of our scenarios in the following table. More specifically, we report evidence that seems significantly more likely to be observed if a scenario is false than if it is true. This is in the spirit of the scientific method, where one tries not to *prove* hypotheses, but to *disprove* them. This approach also helps to minimize the risk that our conclusions will be skewed by the confirmation bias, of the tendency to only look for, and give relatively heavier weight to evidence which confirms one's existing views. We do not claim that this approach is foolproof, nor that it guarantees perfect objectivity and foresight. However, evidence from the use of this approach in the intelligence community suggests that it does help to improve forecast accuracy.

	<b>Cooperative Scenario</b>	<b>Conflict Scenario</b>
<b><i>Brief Scenario Description:</i></b>	More rapid domestic consumption growth in China and cleantech investment demand in North America return the world to a health rate of growth, and enable preservation of the world trading system, a reduction in global imbalances, and monetary actions to head off an extended period of high inflation.	Domestic politics prevents an increase in cleantech investment in the United States, while China continues to pursue export led growth while encouraging rising nationalism to limit domestic unrest and the political threat to the current Chinese leadership. This only reinforces growing demands for protection in Europe and the United States. Weak global demand is maintained by rising fiscal deficits, which are increasingly monetized, leading to much higher inflation.
<b><i>Key Agent Level Scenario Assumptions</i></b>		

	<b>Cooperative Scenario</b>	<b>Conflict Scenario</b>
<b>U.S. Middle Class</b>	Resolution of banking crisis, passage of health care reforms, mortgage relief, and a sharp increase in cleantech driven investment spending lead to reduced uncertainty and a shift towards higher savings and lower consumption, without triggering populist demands for protectionism.	Continued economic stagnation, uncertainty, and insecurity lead to more extreme partisanship and the development of strong populist calls for protectionism and income redistribution.
<b>Chinese Peasants</b>	Land reform and economic growth (which provides jobs) boost incomes while a sharp increase in government spending on health care and education limits resentment of Communist Party corruption and economic inequality compared to coastal elites. This minimizes social unrest and threats to continued legitimacy of the Party's governance of China.	Growing unemployment and a sense that government stimulus is disproportionately benefiting coastal and party elites triggers widespread unrest and peasant alignment with disaffected students, urban unemployed, and members of the military. The Chinese government becomes aggressively nationalist in an attempt to channel this anger outward. At best, this triggers a global retreat into trading blocs; at worst, this strategy fails and China descends into fragmented authoritarian regions with minimal central control.
<b>Iranian Youth</b>	Prolonged economic stagnation and rising inflation lead to the defeat of President Ahmadinejad in June 2009 elections, and widespread pressure for better relations with the West. Economic self-interest trumps the Revolutionary Guards'	Supreme Leader Khamenei ensures that Ahmadinejad is re-elected. Repression and emigration are used to limit resistance by younger Iranians to these policies. The country attempts to improve economic conditions via closer ties with China, while

	<b>Cooperative Scenario</b>	<b>Conflict Scenario</b>
	ideological opposition to this opening. Moderation of Iran's conflicts with the west and a renewal of inward investment flows lead to increased hydrocarbon production, limiting upward pressure on global energy prices.	maintaining its nuclear program (which could trigger an attack by Israel) and a conflict-oriented policy versus the US that continues to put upward pressure on energy prices.
<b>Key Issue Level Scenario Assumptions:</b>		
<b>Overleveraged Consumers</b>	Effective mortgage relief plans implemented in most affected countries, while stronger economic growth maintains income needed for debt repayment.	No effective mortgage relief legislation passed. Instead, rise in bankruptcies and mortgage foreclosures puts continuing downward pressure on housing prices.
<b>Financial System Weakness</b>	Combination of stronger investment and export led economic growth and effective bank rescue plans reduces uncertainty about health of system, and enables sufficient flow of credit to support renewed economic growth.	Worsening economic conditions and failure of bank rescue plans (due to design or political resistance) cause uncertainty to remain high, credit flows to be constrained, and defaults to increase, which all contribute to a worsening process of debt deflation.
<b>International Imbalances</b>	Rising domestic consumption spending in China enables a reduction in export dependence, while U.S. imports are reduced by a shift from private consumption to private saving and higher investment spending and greater exports. This reduces global current account imbalances to a manageable level.	China's continued emphasis on export led growth, at a time when the US is incurring high fiscal deficits (and eventually higher taxes) to maintain global demand, triggers demands for greater protection, which in turn precipitate a dollar exchange rate crisis as other countries move to limit the losses on their foreign exchange reserves. Result is a fragmentation of

	<b>Cooperative Scenario</b>	<b>Conflict Scenario</b>
		the global trade and financial system into much less integrated blocs.
<b><i>Evidence Over the Previous Three Months Against Each Scenario (most recent month first)</i></b>	<b><i>Evidence Against the Cooperative Scenario</i></b>	<b><i>Evidence Against the Conflict Scenario</i></b>
<b>July 2009 (this month's issue)</b>	<ul style="list-style-type: none"> <li>• Apparent failure of U.S. Treasury meeting with mortgage servicers to make any progress toward reducing mortgage burdens and stem foreclosures. With unemployment benefits running out for a growing number of households, this will put further downward pressure on consumer confidence, and raise the level of middle class frustration</li> <li>• Widespread reports of faster deterioration in the quality of commercial real estate loan portfolios and associated asset backed securities</li> <li>• Sharp falls in economic output in Japan, Eurozone and UK</li> <li>• Rising concern with high levels of loan growth in China, to either finance new investment in industries that already have excess capacity, or speculation in commodities, equity and property markets</li> </ul>	<ul style="list-style-type: none"> <li>• Obama announces support for bipartisan commission to consider ways to solve the growing federal fiscal crisis</li> <li>• Cooling of previously aggressive rhetoric between Chinese and U.S. leadership; successful Strategic and Economic Dialogue Conference</li> <li>• Continued uncertainty in Iran (if opposition succeed in replacing Ahmadinejad, it is evidence against Conflict Scenario; if Ahmadinejad consolidates his position, it is evidence against the Cooperative Scenario)</li> <li>• 75% of US stimulus money remains unspent, which should help economy in 2010</li> </ul>

	<b>Cooperative Scenario</b>	<b>Conflict Scenario</b>
	<ul style="list-style-type: none"> <li>• Evidence of workers' willingness to use violence to resist restructuring of inefficient industries in China</li> <li>• China launches WTO complaint against foreign nations allegedly blocking access of Chinese exports to their markets</li> </ul>	
<b>June 2009</b>	<ul style="list-style-type: none"> <li>• Continued evidence of worsening quality of a wide range of loans and securities, including credit cards, residential and commercial mortgages, construction and development, and LBOs.</li> <li>• Rising FDIC seizures of banks that are not "too big to fail"</li> <li>• Apparent failure of PPIP program to gain traction, as some banks raised new equity and repay TARP funds</li> <li>• Banks have successfully fought off tougher regulation, have raised rates on credit cards, and have let slip that profits and bonus accruals are at record levels</li> <li>• California budget deadlock and issuance of IOUs could heighten foreign creditor fears</li> </ul>	<ul style="list-style-type: none"> <li>• Rapidly developing events in Iran may lead to more moderate regime. However, this remains highly uncertain at this point.</li> </ul>

	<b>Cooperative Scenario</b>	<b>Conflict Scenario</b>
	<p>about creditworthiness of U.S. Government. CBO report highlights need to contain health care costs in order to maintain public sector’s fiscal health.</p> <ul style="list-style-type: none"> <li>• Evidence that Chinese growth may be weaker than previously thought, and that commodity price increase has been driven by speculative buying rather than industrial demand</li> <li>• Both UK and Japanese economy show sharpest drops in 50 years</li> <li>• China imposes a “buy China” policy on use of its stimulus funds; WTO warns of rising protectionism as unemployment mounts in countries around the world</li> <li>• Record support by European Central Bank to regional banks – surpassing amount of support provided by U.S. Federal Reserve</li> <li>• Germany introduces national balanced budget amendment, which if enacted will prevent countercyclical fiscal action by Eurozone’s largest economy</li> <li>• World Bank warns of declining flow of capital</li> </ul>	

	<b>Cooperative Scenario</b>	<b>Conflict Scenario</b>
	<p>to emerging markets, which will constrain their growth, and possibly trigger more crises</p> <ul style="list-style-type: none"> <li>• Rising opposition in US Congress to both energy bill (Senate passage remains uncertain) and health care reform</li> <li>• Chinese central bank survey indicates rise in dissatisfaction with household income; government increases crackdown on public corruption (hoping to distract rising social unrest?)</li> <li>• Rising number of indications that Swine H1N1 influenza is evolving in a potentially dangerous direction</li> </ul>	
<b>May 2009</b>	<ul style="list-style-type: none"> <li>• US Congress has sharply reduced renewable energy requirements proposed by Obama administration, and chose to auction only 15% of CO2 emissions permits, rather than 100%. This has opened an even wider gap in the Obama budget deficit forecast, and raised worries about significant increases in inflation. This has led to an increase in long term interest rates and commodity prices. All of</li> </ul>	<ul style="list-style-type: none"> <li>• Signs that credit market conditions are returning towards, if not to, normal.</li> <li>• Low enthusiasm for PPIP, and stated desire on the part of some banks to repay TARP funds, implies they believe they can “earn their way out of the crisis” via the large gap between the yields on the Treasuries they hold and their low government guaranteed funding costs.</li> </ul>

	<b>Cooperative Scenario</b>	<b>Conflict Scenario</b>
	<p>these factors create headwinds for the conversion of the enormous government fiscal and monetary stimulus into a sustained recovery.</p> <ul style="list-style-type: none"> <li>• Continued worsening of unemployment and problems in the mortgage, housing and household credit markets, with problems moving into ever higher levels of the middle class. This is not only creating more headwinds for economic recovery, but also strengthening an explosive populist anger whose eventual impact is unclear, but unlikely to be positive.</li> <li>• It appears that interest groups are gaining ground in their plans to block or weaken significant parts of the Obama economic program</li> <li>• Introduction of protectionist legislation in US Congress aimed at China</li> <li>• Weakening of Chinese export demand in April; surprise announcement that 25% of stimulus program will be directed to Sichuan suggest domestic conditions may be worsening in China</li> </ul>	<ul style="list-style-type: none"> <li>• During his trip to China, Secretary Geithner and his Chinese hosts have made conciliatory statements to each other, backing away from some of the more inflammatory rhetoric seen in the past few months.</li> <li>• Strong win by Congress Party in Indian elections should lead to faster reform and GDP growth</li> </ul>

---

---

	<b>Cooperative Scenario</b>	<b>Conflict Scenario</b>
	<ul style="list-style-type: none"><li>• Worsening growth in Japan and Europe raises the risk of political unrest and a new banking crisis</li><li>• In Iran, Khamenei seems to have switched support to Ahmadinejad in the 12 June presidential election</li></ul>	