Retired Investor

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September: Key Points

Our asset class valuation analysis finds few asset classes that are likely or probably underpriced today. In addition, our system risk indicators are all at elevated levels, suggesting that conditions exist for sharp changes in financial asset prices.

Our economic situation update examines the four factors that comprise the Gordian Knot facing the world's policymakers: still very substantial levels of leverage, weak and unbalanced global aggregate demand, a unique mix of deflationary and inflationary pressures, and a growing crisis of political legitimacy. We conclude that the balance of evidence weighs against the hypothesis that a "rosy scenario" is materializing, in which a way will be found to muddle through the Eurozone's worsening sovereign debt and banking system solvency crisis, and strong growth in developing countries (and in particular a speedy shift away from export growth and towards higher domestic consumption spending in China) will maintain sufficient aggregate demand in the developed economies. In turn, this means that renewed crisis and downturn is the most likely scenario. When this materializes, the critical uncertainty we face is its impact on the growing political legitimacy crisis. We believe that the downturn can create the political space to enable policymakers to take strong actions that could reverse the decline in a relatively short period. However, a darker resolution of the political legitimacy crisis holds the potential for very unpredictable and dangerous outcomes. We conclude with the implications of our outlook for future asset class returns.

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Global Asset Class Returns

YTD31Aug11	In USD	In AUD	In CAD	In EUR	In JPY	In GBP	In CHF	In INR
Asset Held								
USD Bonds	6.94%	2.46%	5.32%	-0.38%	0.88%	2.94%	-8.63%	9.84%
USD Prop.	5.69%	1.21%	4.07%	-1.63%	-0.37%	1.69%	-9.89%	8.59%
USD Equity	-2.44%	-6.92%	-4.06%	-9.76%	-8.50%	-6.44%	-18.02%	0.46%
AUD Bonds	15.53%	11.05%	13.91%	8.21%	9.47%	11.53%	-0.05%	18.42%
AUD Prop.	3.40%	-1.08%	1.78%	-3.92%	-2.66%	-0.60%	-12.18%	6.30%
AUD Equity	-2.41%	-6.89%	-4.03%	-9.73%	-8.47%	-6.41%	-17.99%	0.49%
CAD Bonds	9.51%	5.04%	7.89%	2.19%	3.46%	5.52%	-6.06%	12.41%
CAD Prop.	15.31%	10.83%	13.69%	7.99%	9.25%	11.31%	-0.27%	18.20%
CAD Equity	-1.89%	-6.37%	-3.51%	-9.21%	-7.95%	-5.89%	-17.47%	1.01%
CHF Bonds	18.78%	14.30%	17.16%	11.46%	12.72%	14.78%	3.20%	21.67%
CHF Prop.	26.08%	21.60%	24.46%	18.76%	20.02%	22.08%	10.50%	28.98%
CHF Equity	0.49%	-3.99%	-1.13%	-6.83%	-5.57%	-3.51%	-15.09%	3.38%
INR Bonds	-7.34%	-11.81%	-8.96%	-14.66%	-13.39%	-11.33%	-22.91%	-4.44%
INR Equity	-21.58%	-26.06%	-23.20%	-28.90%	-27.64%	-25.58%	-37.16%	-18.69%
EUR Bonds	14.48%	10.01%	12.86%	7.16%	8.43%	10.49%	-1.09%	17.38%
EUR Prop.	4.83%	0.35%	3.21%	-2.49%	-1.23%	0.83%	-10.75%	7.72%
EUR Equity	-8.20%	-12.68%	-9.82%	-15.52%	-14.26%	-12.20%	-23.78%	-5.30%
JPY Bonds	6.95%	2.47%	5.33%	-0.37%	0.89%	2.95%	-8.62%	9.85%
JPY Prop.	-4.66%	-9.13%	-6.28%	-11.98%	-10.71%	-8.65%	-20.23%	-1.76%
JPY Equity	-8.91%	-13.39%	-10.53%	-16.23%	-14.97%	-12.91%	-24.49%	-6.01%
GBP Bonds	10.73%	6.25%	9.11%	3.41%	4.67%	6.73%	-4.85%	13.63%
GBP Prop.	4.24%	-0.24%	2.62%	-3.08%	-1.82%	0.24%	-11.34%	7.13%
GBP Equity	-3.70%	-8.18%	-5.32%	-11.02%	-9.76%	-7.70%	-19.27%	-0.80%
1-3 Yr USGvt	1.40%	-3.07%	-0.22%	-5.92%	-4.65%	-2.59%	-14.17%	4.30%
World Bonds	6.12%	1.65%	4.51%	-1.19%	0.07%	2.13%	-9.45%	9.02%
World Prop.	1.75%	-2.73%	0.13%	-5.57%	-4.31%	-2.25%	-13.83%	4.64%
World Equity	-4.75%	-9.23%	-6.37%	-12.07%	-10.81%	-8.75%	-20.33%	-1.85%
Commod Long Futures	0.71%	-3.77%	-0.91%	-6.61%	-5.35%	-3.29%	-14.86%	3.61%
Commod L/Shrt	-5.98%	-10.46%	-7.60%	-13.30%	-12.04%	-9.98%	-21.56%	-3.08%
Gold	28.11%	23.64%	26.49%	20.79%	22.06%	24.12%	12.54%	31.01%
Timber	9.88%	5.40%	8.26%	2.56%	3.82%	5.88%	-5.70%	12.78%
Uncorrel Alpha	0.88%	-3.60%	-0.74%	-6.44%	-5.18%	-3.12%	-14.70%	3.78%
Volatility VIX	78.14%	73.66%	76.52%	70.82%	72.08%	74.14%	62.56%	81.04%
Currency								
AUD	4.48%	0.00%	2.86%	-2.84%	-1.58%	0.48%	-11.10%	7.38%

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YTD31Aug11	In USD	In AUD	In CAD	In EUR	In JPY	In GBP	In CHF	In INR
CAD	1.62%	-2.86%	0.00%	-5.70%	-4.44%	-2.38%	-13.96%	4.52%
EUR	7.32%	2.84%	5.70%	0.00%	1.26%	3.32%	-8.26%	10.22%
JPY	6.06%	1.58%	4.44%	-1.26%	0.00%	2.06%	-9.52%	8.96%
GBP	4.00%	-0.48%	2.38%	-3.32%	-2.06%	0.00%	-11.58%	6.90%
USD	0.00%	-4.48%	-1.62%	-7.32%	-6.06%	-4.00%	-15.58%	2.90%
CHF	15.58%	11.10%	13.96%	8.26%	9.52%	11.58%	0.00%	18.47%
INR	-2.90%	-7.38%	-4.52%	-10.22%	-8.96%	-6.90%	-18.47%	0.00%

Uncorrelated Alpha Strategies Detail

As we have repeatedly noted over the years, actively managed strategies whose objective is to produce returns with low or no correlation with the returns on major asset classes (so-called "uncorrelated alpha strategies") have an undeniable mathematical benefit for a portfolio. Moreover, the potential size of this benefit increases with the portfolio's long-term real rate of return target. On the other hand, we have also repeatedly noted that, for a wide range of reasons, active management is an extremely difficult game to play consistently well, and that this challenge only increases with time. Hence, in our model portfolios, we have tried to strike an appropriate balance between these two perspectives. We start by limiting allocations to uncorrelated alpha to no more than ten percent of a portfolio. We then equally divide this allocation between four different strategies. Within each strategy, we track the performance of two liquid, retail funds which can be used to implement it, and which have far lower costs than the 2% of assets under management and 20% of profits typically charged by hedge fund managers using the same strategy (for more on the advantages of such funds, see "How Do Hedge Fund Clones Manage the Real World?" by Wallerstein, Tuchshmid, and Zaker). The following table shows the year to date performance of these funds (which are listed by ticker symbol):

YTD 31Aug11	In USD	In AUD	In CAD	In EUR	In JPY	In GBP	In CHF	In INR
Eq Mkt Neutral								
HSKAX	-0.20%	-4.68%	-1.82%	-7.52%	-6.26%	-4.20%	-15.78%	2.70%
OGNAX	1.98%	-2.49%	0.36%	-5.34%	-4.08%	-2.01%	-13.59%	4.88%
Arbitrage								
ARBFX	3.17%	-1.30%	1.55%	-4.15%	-2.88%	-0.82%	-12.40%	6.07%

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YTD 31Aug11	In USD	In AUD	In CAD	In EUR	In JPY	In GBP	In CHF	In INR
ADANX	0.54%	-3.94%	-1.08%	-6.78%	-5.52%	-3.46%	-15.04%	3.44%
Currency								
DBV	2.23%	-2.25%	0.61%	-5.09%	-3.83%	-1.77%	-13.34%	5.13%
ICI	-3.53%	-8.01%	-5.15%	-10.85%	-9.59%	-7.53%	-19.11%	-0.64%
Equity L/S								
HSGFX	2.69%	-1.79%	1.07%	-4.63%	-3.37%	-1.31%	-12.89%	5.58%
PTFAX	-1.44%	-5.91%	-3.05%	-8.75%	-7.49%	-5.43%	-17.01%	1.46%
GTAA								
MDLOX	0.08%	-4.40%	-1.54%	-7.24%	-5.98%	-3.92%	-15.50%	2.97%
PASAX	3.27%	-1.21%	1.65%	-4.05%	-2.79%	-0.73%	-12.31%	6.16%

Overview of Our Valuation Methodology

This short introduction is intended to provide an overview of our valuation methodology, and to put the analyses that follow into a larger, integrated context. Our core assumption is that forecasting asset prices is extremely challenging, because unlike physical systems, the behavior of political economies and financial markets isn't governed by constant natural laws. Instead, they are complex adaptive systems, in which positive feedback loops and non-linear effects are common, due to the interaction of competing investment strategies (e.g., value, momentum, arbitrage and passive approaches), and investor decisions that are made on the basis of incomplete information, by individuals with limited cognitive capacities, who are often pressed for time, affected by emotions, and subject to the influence of other people. We further believe that these interactions give rise to three different regimes in financial markets that are characterized by very different asset class return, risk, and correlation parameters. We term these three regimes "High Uncertainty", "High Inflation" and "Normal Times."

We emphasize that while forecasting the future behavior of a complex adaptive system (with a degree of accuracy beyond simple luck) is extremely challenging, it is not impossible. There are two reasons for this. First, complex adaptive systems are constantly evolving, and pass through phases when their behavior makes forecasting more and less challenging. In the investment context, we believe the best example of this is extreme overvaluations, which throughout history have confirmed that what

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can't continue doesn't continue. Second, it is also the case that, across a range of contexts, researchers have found that a small percentage of people and teams are able to develop superior mental models that provide them with a superior, if "coarse-grained" understanding of the dynamics of complex adaptive systems. More important there is also significant evidence that superior mental models translate into substantial performance advantages (see, for example, "Mental Models, Decision Rules, Strategy and Performance Heterogeneity" by Gary and Wood, "Team Mental Models and Team Performance" by Lim and Klein, and "Good Sensemaking is More Important than Information" by Eva Jensen).

We believe that investors are best served when their primary performance benchmark is the long-term real return their portfolio must earn in order to achieve their long term financial goals. We believe the best way to implement this approach is via a portfolio of broadly defined, low cost, low turnover, asset class index products that provide exposure to a diversified mix of underlying return generating processes. In this context, conservatively managing risk in order to avoid large losses is mathematically more important than taking aggressive risk position to reach for additional returns via actively managed strategies. This is not to say that in some cases investors would benefit from those additional active returns. Such cases typically involve aggressive goals, low starting capital, low savings, and/or a short time horizon. In these situations, it is mathematically clear that an allocation to certain actively managed investment strategies can benefit a portfolio, provided the results of those strategies have a low or no correlation with returns on the investor's existing allocations to broad asset class index products. The use of these "uncorrelated alpha" products has a further benefit, in that they avoid the situation (common in traditional actively managed funds) where an investor pays much higher fees to an active manager for performance that is, in fact, a mix of the index fund's results (often referred to as "beta") and the manager's skill (often referred to as "alpha").

We also believe that, in addition to careful asset allocation, a disciplined portfolio risk management process is critical to an investor achieving his or her long-term goals. In our view, there are four main elements to this process. The first is a

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systematic approach to rebalancing a portfolio back to its target weights, either on the basis of time (e.g., yearly) or when one or more asset classes is over or under its target weight by a certain "trigger" amount. The second risk management discipline is the monitoring of asset class prices, in relation to estimates of both fundamental valuation and short-term investor behavior, matched with a willingness to reduce exposure (e.g., by hedging with options or moving into cash or undervalued asset classes) when overpricing becomes substantial and dangerous to the achievement of long-term goals. We stress that the objective of this process is not market timing in pursuit of higher returns; rather, we view this risk discipline as the willingness to depart from one's normal, long-term (i.e., "policy") asset allocation and rebalancing strategy under exceptional circumstances when crash risk is very high. Of course, this begs the question of when and how should one reinvest in an asset class after a bubble has inevitably burst. Again, we believe that fundamental valuation analysis should be an investor's guide to this third risk management discipline. From a long-term investment perspective, the best time to get back in is when an asset class is undervalued, even though this may be the most psychologically difficult time to do so. As a compromise approach, many investors choose to reinvest over time (i.e., "dollar cost average") to limit potential regret.

We also recognize that the valuation analyses which form the basis for these risk management decisions all contain an irreducible element of uncertainty. Hence, we believe that investors' fourth risk management discipline should be to combine our forecasts with those made by other analysts who use different methodologies. Research has demonstrated that forecast combination, using either simple averaging or more complex methods, improves forecast accuracy.

In each month's issue of our journals, we provide investors with updated valuation estimates for a wide range of asset classes. The basic assumptions that underlie our valuation methodology are as follows: (1) In the medium term, asset prices are attracted to their fundamental values. (2) However, fundamental valuation can only be estimated with a degree of uncertainty. (3) In the short term, asset prices are most strongly influenced by what Keynes called the market's "animal spirits", which

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we interpret as collective investor behavior resulting from the complex interplay between underlying political and economic trends and events, information flows, individual mental models, emotions, and social network interactions. (4) Valuation methodologies are most useful to investors when they are applied on a consistent basis over time.

The analyses we provide each month can be grouped into three major categories. First, we compare prevailing asset class prices to our estimate of fundamental values. Second, we present a number of analyses that are intended to warn of the development of conditions that raise the probability of sudden and substantial short-term changes in collective investor behavior. These include (a) Trends in rolling three month asset class returns that assess the probability of a High Uncertainty or High Inflation regime developing (which are dangerous since both of these are extreme disequilibrium conditions); (b) Trends in sector returns within asset classes that indicate the next turning points in the normal business cycle; (c) An assessment of the direction and intensity of recent price momentum (with accelerating positive momentum in the face of fundamental overvaluation the most dangerous condition); and (d) A measure of the estimated strength of investor networks and herding risk. Finally, we summarize our views with an estimate of the percent of time that markets will spend in each regime over the next three years, and the resulting expected real returns on different asset classes over this time horizon.

Table: Market Implied Regime Expectations and Three Year Return Forecast

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 table shows rolling three month returns for different asset classes. The asset classes we list under each regime should deliver relatively high returns when that regime develops. We assume that both the cross-sectional and time series comparisons we present provide insight into the market's conventional wisdom – at a specific point in time -- about the regime that is most likely to develop within the next

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twelve months. To obtain the cross-sectional perspective, we horizontally compare the row labeled "This Month's Average" for the three regimes. In our interpretation, the regime with the highest rolling three month average is the one which (on the specified date) the market's conventional wisdom sees as the most likely to develop.

For the time series perspective, we vertically compare this month's average rolling three-month return for each of the three regimes to the respective rolling three month averages three months ago. We believe this time series perspective provides insight into how fast and in what direction the conventional wisdom has been changing over time.

Rolling Three Month Returns in USD		**31Aug2011**
High Uncertainty	***High Inflation***	***Normal Growth***
Short Maturity US Govt Bonds (SHY) **0.63%**	US Real Return Bonds (TIP) **5.27%**	US Equity (VTI) **-9.85%**
1 - 3 Year International Treasury Bonds (ISHG) **1.39%**	Long Commodities (DJP) **-1.71%**	EAFE Equity (EFA) **-11.84%**
Equity Volatility (VIX) **104.66%**	Global Commercial Property (RWO) **-7.68%**	Emerging Equity (EEM) **-10.96%**
Gold (GLD) **18.77%**	Long Maturity Nominal Treasury Bonds (TLT)* **11.73%**	High Yield Bonds (HYG) **-2.89%**
Average	***Average (with TLT short)***	***Average***
31.36%	***-3.96%***	***-8.88%***
Three Months Ago:	***Three Months Ago:***	***Three Months Ago:***
-0.88%	***0.75%***	***2.70%***

* Falling returns on TLT indicate rising inflation expectations

At the request of many readers, we now publish forecasts for real returns on different asset classes in USD. They can be compared to asset class return forecasts regularly produced by GMO, to which many of our readers also subscribe. Given our

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belief that foresight accuracy is improved by combining the outputs from different forecasting methodologies, we have taken a different approach from GMO. As we understand it (and their methodology is available on their site), they start with their estimate of current over or undervaluation, and assume that these will return to equilibrium over a seven-year business cycle. They believe that the use of this time horizon will cause a number of ups and downs caused by cyclical and investor behavior factors to average out. It has always struck us as a very logical approach, though one that (like ours) is based on unavoidably imperfect assumptions. The forecasting approach we have taken is grounded in our research in to the performance of different asset classes in three regimes, which we have termed high uncertainty, high inflation and normal times. In the latter regime, asset class returns are strongly attracted to their equilibrium levels – i.e., to the situation in which the returns supplied and the returns demanded are close to balance.

Our approach to estimating returns under this regime is to appropriate risk premiums for different asset classes to our estimate of the equilibrium yield on risk return bonds when the system is operating under normal conditions. In contrast, the high uncertainty and high inflation regimes are very much disequilibrium conditions in which investor behavior determines the returns that are actually supplied. Under these regimes, our approach to return forecasting starts with our estimate of what the real rate of return would be (lower than normal under high uncertainty because of a lower time discount rate, and lower still under high inflation because of much stronger investor demand for inflation hedging assets like real return bonds). We then add an estimate of the realized return spread over the real bond yield for each asset class in the high uncertainty and high inflation regimes. To determine these premia, we began with the results from our historical regime analysis, and subjectively adjusted the results to make them more consistent with each other while generally preserving the rank ordering of asset class returns from our historical regime analysis.

The final step in our methodology is to subjectively estimate the percentage of time that the financial system will spend in each of the three different regimes over the next 36 months. These estimated probabilities may or may not change each month, in

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line with our assessment of evolving political and economic conditions. We are the first to admit that ours is, at best, a noisy estimate of the returns investors are likely to receive on different asset classes over our target time horizon. We have no doubt that GMO would say the same about the results produced by their methodology. Indeed, it is either naive or misleading to say anything else, given that one is attempting to forecast results produced by a constantly evolving complex adaptive system. On the other hand, we also believe that our readers appreciate our willingness to put a clear, quantitative stake in the ground, so to speak. As always, we stress that research has shown that foresight accuracy can be improved by combining (i.e., using simple averaging) forecasts produced using different methodologies. With that admonition, our results are as follows:

Regime	**Normal Regime**	**High Uncertainty Regime**	**High Inflation Regime**	***Forecast Annual USD Real Return Over Next Three Years (weighted real return plus premium)***
Assumed Regime Probability Over Next 36 Months	*20%*	*50%*	*30%*	
Real Return Bond Yield	*3.5*	*2.5*	*1.5*	*2.4*
Asset Class Premia Over Real Rate (pct)				
Domestic Bonds	1.0	1.0	-3.0	*2.2*
Foreign Bonds	0.5	2.0	0.5	*3.7*
Domestic Property	3.0	-10.0	1.0	*(1.7)*
Foreign Property	3.0	-10.0	-1.5	*(2.5)*
Commodities	2.0	-6.0	3.0	*0.7*
Timber	2.0	-8.0	1.0	*(0.9)*
Domestic Equity	3.5	-12.0	-5.0	*(4.4)*
Foreign Equity	3.5	-12.0	-7.0	*(5.0)*

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Regime	Normal Regime	High Uncertainty Regime	High Inflation Regime	*Forecast Annual USD Real Return Over Next Three Years (weighted real return plus premium)*
Emerging Equity	4.5	-15.0	1.0	*(3.9)*
Gold	-2.0	2.0	2.5	*3.8*
Volatility	-25.0	50.0	25.0	*29.9*

Table: Fundamental Asset Class Valuation and Recent Return Momentum

The table at the end of this section sums up our conclusions (based on the analysis summarized in this article) as to potential asset class under and overvaluations at **31 Aug 11**. We believe that asset prices reflect the interaction of three broad forces. The first is fundamental valuation, as reflected in the balance between the expected supply of and demand for returns. The Global Asset Class Valuation Analysis of each month's journal contains an extensive discussion of fundamental valuation issues. One of our core beliefs is that while asset prices are seldom equal to their respective fundamental values (because the system usually operates in disequilibrium), they are, in the medium and long-run strongly drawn towards that attractor.

The second driver of asset prices, and undoubtedly the strongest in the short run, is investor behavior, which results from the interaction of a complex mix of cognitive, emotional and social inputs – the latter two comprising Keynes' famous "animal spirits". We try to capture the impact of investor behavior in each month's Market Implied Expectations Analysis, as well as in two measures of momentum for different asset classes – one covering returns over the most recent three months (e.g., June, July and August), and one covering returns over the previous non-overlapping three month period (e.g., March, April, and May).

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The third driver of asset prices is the ongoing evolution of political and economic conditions and relationships, and the degree uncertainty that prevails about their future direction. We capture these longer term forces in our economic scenarios.

In the table, we summarize our most recent conclusions the current pricing of different asset classes compared to their fundamental valuations.

The extent to which we believe over or underpricing to be the case is reflected in the confidence rating we assign to each conclusion. We believe it is extremely important for the recipient of any estimate or assessment to clearly understand the analyst's confidence in the conclusions he or she presents. How best to accomplish this has been the subject of an increasing amount of research (see, for example, "Communicating Uncertainty in Intelligence Analysis" by Steven Rieber; "Verbal Probability Expressions in National Intelligence Estimates" by Rachel Kesselman, "Verbal Uncertainty Expressions: Literature Review" by Marek Druzdzel, and "What Do Words of Estimative Probability Mean?" by Kristan Wheaton). We use a three level verbal scale to express our confidence level in our valuation conclusions. "Possible" represents a relatively low level of confidence (e.g., 25% – 33%, or a 1 in 4 to 1 in 3 chance of being right), "likely" a moderate level of confidence (e.g., 50%, or a 1 in 2 chance of being right), and "probable" a high level of confidence (e.g., 67% to 75%, or a 2 in 3 to 3 in 4 chance of being right). We do not use a quantitative scale, because we believe that would give a false sense of accuracy to judgments that are inherently approximate due to the noisy data and subjective assumptions upon which they are based.

An exception to this approach is our assessment of the future return to local investors for holding U.S. dollars. In this case, our conclusions are mechanically driven by interest rate differentials on ten-year government bonds. To be sure, the theory of Uncovered Interest Rate Parity, which calls for exchange rates offsetting interest rate differentials is more likely to apply in the long-run than in the short run, as the apparent profitability of the carry trade has shown (i.e., borrowing in low interest rate currencies to invest in high interest rate currencies). However, other research have found that a substantial portion of these profits represents compensation for bearing so-called

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"crash" risk (see "Crash Risk in Currency Markets" by Farhi, Fraiberger, Gabaix, et al) – as many who were long Icelandic Krona in 2007 and 2008 learned the hard way. In sum, exchange rates that are moving at an accelerating rate away from the direction they should move under interest rate parity indicates a rising risk of sudden reversal (i.e., crash risk).

The table also shows return momentum for different asset classes over the preceding three months, as well as the three months before that, to make it easier to see the direction of momentum, and whether it is accelerating, decelerating, or has reversed. The most dangerous situation is where an asset class is probably overvalued on a fundamental basis, yet positive return momentum is accelerating. As so many authors have noted throughout history, trends that can't continue don't continue. In these situations, we strongly recommend either hedging (e.g, via put options) or reducing exposure. In contrast, a situation where an asset class is probably undervalued, but negative return momentum is still accelerating, may be an exceptionally attractive opportunity to increase one's exposure to an asset class. Finally, conclusions about changes in asset class valuations also have to be seen in the longer term context of the possible evolution of alternative political/economic scenarios, and their implications for asset class valuations and investor behavior (see, for example, our monthly Economic Updates). This is also an important input into investment decisions, as we do not believe that the full implications of these scenarios are typically reflected in current asset prices and investor behavior.

Valuation at 31Aug11	***Current Price versus Long-Term Fundamental Valuation Estimate***	***Rolling 3 Month Return in Local Currency***	***Rolling 3 Month Return 3 Months Ago***
AUD Real Bonds	Neutral	6.20%	3.82%
AUD Bonds	Neutral	8.03%	2.40%
AUD Property	Possibly Underpriced	-4.98%	-1.30%
AUD Equity	Possibly Underpriced	-7.66%	-1.70%

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Valuation at 31Aug11	*Current Price versus Long-Term Fundamental Valuation Estimate*	*Rolling 3 Month Return in Local Currency*	*Rolling 3 Month Return 3 Months Ago*
CAD Real Bonds	Possibly Overpriced	2.74%	5.86%
CAD Bonds	Possibly Overpriced	9.61%	-0.94%
CAD Property	Likely Underpriced	-0.07%	4.94%
CAD Equity	Neutral	-7.06%	-1.80%
CHF Bonds	Likely Overpriced	3.71%	1.09%
CHF Property	Likely Overpriced	0.17%	11.16%
CHF Equity	Neutral	253.21%	-76.48%
EUR Real Bonds	Neutral	-1.82%	2.54%
EUR Bonds	Likely Overpriced	7.90%	1.37%
EUR Prop.	Neutral	-9.91%	11.03%
EUR Equity	Possibly Underpriced	-20.15%	-0.67%
GBP Real Bonds	Possibly Overpriced	3.45%	4.11%
GBP Bonds	Possibly Overpriced	4.25%	3.50%
GBP Property	Neutral	-13.03%	7.02%
GBP Equity	Probably Underpriced	-9.17%	0.99%
INR Bonds	Neutral	-3.77%	-0.58%
INR Equity	Possibly Overpriced	-10.38%	4.41%
JPY Real Bonds	Neutral	-0.62%	2.62%
JPY Bonds	Neutral	1.29%	0.99%
JPY Property	Possibly Underpriced	-6.90%	-2.78%
JPY Equity	Neutral	-9.83%	-11.61%
USD Real Bonds	Possibly Overpriced	5.20%	3.65%

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Valuation at 31Aug11	*Current Price versus Long-Term Fundamental Valuation Estimate*	*Rolling 3 Month Return in Local Currency*	*Rolling 3 Month Return 3 Months Ago*
USD Bonds	Possibly Overpriced	3.71%	2.94%
USD Property	Neutral	-7.24%	5.46%
USD Equity	Possibly Overpriced	-9.81%	2.18%
Following in USD:			
Investment Grade Credit (CIU)	Possibly Overpriced	1.95%	2.18%
High Yield Credit (HYG)	Possibly Overpriced	-2.82%	1.74%
Emerging Mkt Equity (EEM)	Neutral	-10.55%	5.79%
Commodities Long	Likely Overpriced	-1.71%	0.00%
Gold	Likely Overpriced	18.77%	8.70%
Timber	Likely Underpriced	-4.90%	1.13%
Uncorrelated Alpha	N/A	7.25%	-6.34%
Volatility (VIX)	Neutral	104.66%	-15.80%
Future Return in Local Currency from holding USD:	***Based on Covered Interest Parity***		
Returns to AUD Investor	Positive	-0.55%	-4.57%
Returns to CAD Investor	Neutral	0.97%	-0.61%
Returns to EUR Investor	Neutral	-0.18%	-4.33%
Returns to JPY Investor	Negative	-6.22%	-0.83%
Returns to GBP Investor	Positive	1.19%	-1.30%
Returns to CHF Investor	Negative	-6.93%	-9.04%
Returns to INR Investor	Positive	2.15%	-0.48%

Investor Herding Risk Analysis

One of our core assumptions is that financial markets function as complex adaptive systems. One of the key features of such systems is their ability to pass through so-called "phase transitions" that materially change their character once certain variables exceed or fall below critical thresholds. A great challenge across multiple scientific disciplines has been to identify indicators that could give an early warning that a system is approaching one or more critical thresholds (also known as a

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tipping points) that if passed could generate a phase transition or regime change. Clearly, this is extremely difficult; indeed, studies in this area are at the leading edge of complexity science (see, for example, "Turning Back from the Brink: Detecting An Impending Regime Shift in Time to Avoid It" by Biggs, Carpenter and Brock, "Early Warning Signals of Extinction in Deteriorating Environments" by Drake and Griffen, "Interacting Regime Shifts in Ecosystems: Implications for Early Warning" by Brock and Carpenter, and "Early Warning Signals for Critical Transitions" by Sheffer et al).

Broadly speaking, the early warning indicators that have been tentatively identified fall into three categories. The first is increased alignment in the behavior of different parts of a system (e.g., individual investors, in a narrowly defined bubble; or multiple asset classes and subsectors, in a broader, systemic bubble). In our September 2009 issue, we reviewed a paper on one of critical variables, "Leverage Causes Fat Tails and Clustered Volatility" by Thurner, Farmer and Geanakoplos. This paper more formally demonstrated the importance of a factor that has been associated with booms and busts throughout financial history: the expansion of the supply of credit at a pace well in excess of real economic growth. In the past we have also noted that rising uncertainty tends to increase the size, degree of connectedness and intensity of communications within social networks that influence investor decision making. In turn, this leads to greater coordination of investor behavior, causing not only a higher tendency toward momentum, but also higher fragility, and susceptibility to rapid changes in asset prices (see, for example, "Asset Pricing in Large Information Networks" by Ozsoylev and Walden, or "Dragon Kings, Black Swans, and the Prediction of Crises" by Didier Sornette).

As a practical matter, the challenge for investors has been to identify variables or statistics that can be used to track the strengthening of networks that is often associated with phase transitions. With this in mind, we call readers' attention to an excellent paper by Lisa Borland, of the asset management firm Evnine and Associates in San Francisco ("Statistical Signatures in Times of Panic: Markets as a Self Organizing System"). Using the phase transition approach, Borland searched for statistical signatures of market panics, and proposes a new order parameter that is

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easy to calculate and appears to capture the changing dynamics of asset return correlations and the underlying social network and herding phenomena that give rise to them. The parameter equals the number of financial markets or assets that have positive returns over a given interval (we use the past month), less the number that have negative returns, divided by the total number of financial markets or asset classes evaluated. If the value is zero, the markets are in a disordered state and far from the potential phase change point. However, as the parameter value approaches positive one or negative one, the markets are in an increasingly ordered state – that is, networks are larger and more active, causing increased alignment in collective investor behavior (more commonly known as "herding"). Under these conditions, a market may be close to a phase change point, and therefore subject to a sudden, and potentially violent, shift in its previous trend. We have calculated this order parameter for the 38 financial markets (excluding foreign exchange) we evaluate each month. Here are the results for each of the most recent 12 months:

Sep10	*Oct10*	*Nov10*	*Dec10*	*Jan11*	*Feb11*	*Mar11*	*Apr11*	*May11*	*Jun11*	*Jul11*	*Aug11*
0.51	0.41	(0.57)	0.46	-	0.50	0.19	0.57	0.19	(0.24)	0.30	(0.28)

The second broad category of indicators is based on analysis of time series data – in our case, our monthly returns data for these 38 financial markets. Researchers have identified three time series indicators that seem to presage regime shifts. The first is known as "critical slowing down", in which a system "approaching a critical point becomes increasingly slow in recovering from small perturbations." As a result of this slowing down in the rate at which a system changes, "the state of the system at any given moment becomes more like its past state." In statistical terms, the autocorrelation factor increases – i.e., the correlation between the current set of monthly asset class returns the preceding set approaches 1.0 as the responsiveness of a complex system slows down. The second time series indicator is known as "flickering", which occurs as a system enters a critical region where it is affected by two so-called "attractors", or alternate states (e.g., the recent trend toward "risk on" and "risk off" trades, involving two broad baskets of asset classes). As a system is

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pulled back and forth between these two states – as it "flickers" – the variance and standard deviation of performance metrics (e.g., financial returns) tend to increase. The third time series indicator is an increase in skewness, as fluctuations in the state of a system (e.g., asset class returns) become more asymmetrical (i.e., skewed) as a critical phase transition approaches.

As financial markets become more fragile, and approach a possible phase transition to a new regime, we would therefore expect to observe some combination of the following indicators: an increase in the order parameter towards 1.0 or (1.0); an increase in autocorrelation; an increase in standard deviation, and an increase in skewness. With that in mind, we have analyzed our historical series of local currency returns data for 38 asset classes (e.g., equities) and subsectors (e.g., Australia and Canadian equities), and used them to construct indicators for monthly average autocorrelation, standard deviation and skewness, in addition to Borland's order parameter. We have approached this analysis from two perspectives. First, at the individual asset class and subsector level, we calculate rolling autocorrelations, standard deviation and skewness for two distinct 12 month periods, ending in the most recent month. For a specific asset class and subsector, an alert is triggered when all three have increased between the two periods. At the end of **August, 2011**, the behavior of the following asset classes has triggered alerts, indicating that regime CAD real return and government bonds; CHF government bonds and equity; EUR equity; INR equity; and JPY government bonds.

To assess the riskiness of the global financial system as a whole, the following table shows levels of autocorrelation, standard deviation and skewness over the past twelve months.

Key Regime Change Time Series Indicators

Deltas	Sep10	Oct10	Nov10	Dec10	Jan11	Feb11	Mar11	Apr11	May11	Jun11	Jul11	Aug11
Autocorrel	(0.68)	0.60	(0.51)	(0.43)	(0.35)	0.00	(0.23)	0.13	(0.25)	(0.02)	0.46	0.75
Std Dev%	4.36	2.99	3.56	5.86	3.77	2.50	3.10	3.75	2.56	2.81	9.39	6.79
Skewness	0.05	(1.53)	1.40	(2.46)	0.61	0.01	(0.10)	(2.98)	(0.84)	0.92	4.57	1.45

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As you can see, all three indicators experienced sharp increases ahead of the sharp price changes seen last month across many asset classes, and remain at high, and therefore dangerous, levels.

The third indicator of system riskiness that we use is the spread between the yields on AAA bonds and ten year, nominal return U.S. Treasuries (based on data published in the Federal Reserve's H15 report). We regard this as a proxy for perceived liquidity risk in the global financial system – as that risk increases, investors sell AAA bonds (bidding down their price and driving up their yields) and buy more liquid Treasuries (bidding up their price, and driving down their yields). Hence, a widening yield spread between AAA bonds and 10 year Treasuries indicates rising systematic liquidity risk in the global financial system. At the end of **August 2011**, this yield was almost two (1.96) standard deviations above its historical mean (based on daily observations between 1986 and 2010). We conclude that this indicates a very substantially elevated level of liquidity risk in the global financial system.

Overall, our analysis of the different early warning indicators described above leads us to conclude that, at the end of **August 2011**, there is a significant and increasing risk of a sudden, substantial, and highly correlated change in prices across multiple global asset classes.

Global Asset Class Valuation Analysis

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 underpricing relative to fundamental value. The attraction of the system to equilibrium means that, at some point, these prices are likely to reverse in the direction of fundamental value. However, the very nature of a complex adaptive system makes it hard to forecast when such reversals will occur. It is also the case

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that, in a constantly evolving complex adaptive system like a financial market, any estimate of fundamental value is necessarily uncertain. Yet this does not mean that valuation analyses are a fruitless exercise – 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.

Equities

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

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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 (Current Dividend Yield x 100) x (1+ Forecast Productivity Growth) divided by (Current Yield on Real Return Bonds + Equity Risk Premium - Forecast Productivity Growth). Our valuation estimates are shown in the following tables, where a value greater than 100% implies overvaluation, and less than 100% implies undervaluation. 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.

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Equity Market Valuation Analysis at 31 Aug 2011

Australia	Low Demanded Return	High Demanded Return
High Supplied Return	45%	74%
Low Supplied Return	72%	105%

Canada	Low Demanded Return	High Demanded Return
High Supplied Return	43%	94%
Low Supplied Return	94%	156%

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Eurozone	Low Demanded Return	High Demanded Return
High Supplied Return	47%	77%
Low Supplied Return	75%	108%

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Japan	Low Demanded Return	High Demanded Return
High Supplied Return	46%	97%
Low Supplied Return	98%	160%

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United Kingdom	Low Demanded Return	High Demanded Return
High Supplied Return	21%	58%
Low Supplied Return	52%	95%

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United States	Low Demanded Return	High Demanded Return
High Supplied Return	47%	106%
Low Supplied Return	109%	183%

Switzerland	Low Demanded Return	High Demanded Return
High Supplied Return	37%	72%
Low Supplied Return	69%	201%

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India	Low Demanded Return	High Demanded Return
High Supplied Return	29%	105%
Low Supplied Return	110%	215%

Emerging Markets	Low Demanded Return	High Demanded Return
High Supplied Return	47%	119%
Low Supplied Return	80%	153%

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. 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 long-term average time preference rate is two percent per year.

However, it is not the case that the economy does not grow; hence, the risk free rate we require also 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

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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 ultimately drives the increase in productivity. Hence, in our analysis, we assume that future economic growth reflects the growth in the labor force and TFP.

Unfortunately, future economic growth is not guaranteed; there is an element of uncertainty involved. Therefore we also need to take investors' 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 all 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	1.0	3.0	2.2
Canada	0.8	1.00	1.8	0.9	1.0	3.0	2.8
Eurozone	0.4	1.20	1.6	0.8	1.0	3.0	2.9
Japan	-0.3	1.20	0.9	0.5	1.0	3.0	2.8
UK	0.5	1.20	1.7	0.9	1.0	3.0	2.8
US	0.8	1.20	2.0	1.0	1.0	3.0	2.5

- 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 spreads indicate that real return bonds are currently overvalued, as their prices must fall in order for their yields

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(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 Aug 2011**:

Region	Risk Free Rate Demanded %	Actual Risk Free Rate Supplied %	Difference	Overvaluation (>100) or Undervaluation (<100)
Australia	2.2	1.8	-0.4	104
Canada	2.8	0.8	-2.0	121
Eurozone	2.9	1.9	-1.0	110
Japan	2.8	0.9	-1.9	121
UK	2.8	0.3	-2.5	128
US	2.5	0.7	-1.8	119

Note that in this analysis we have conservatively used 1%, rather than our normal 2%, as the rate of time preference. This is consistent with recent research findings that as investors' sense of uncertainty increases, they typically reduce their time preference discount rate – that is, they become less impatient to consume, and more willing to save (see, for example, "Uncertainty Breeds Decreasing Impatience" by Epper, Fehr-Duda, and Bruhin). Given our conservative time preference assumption, it is interesting to speculate what accounts for the current situation in which yields on real return bonds are significantly lower than what our mode would suggest. Logically, answer must lie in some combination of reduced expectations for future economic growth, higher variability of future economic growth rates, and/or higher average levels of risk aversion.

Finally, we also recognize that certain structural factors can also affect the pricing (and therefore yields) of real return bonds. For example, some have argued that in the U.K., the large number of pension plans with liabilities tied to inflation has created a permanent imbalance in the market for index-linked gilts, causing their returns to be well below those that models (such as ours) suggest should prevail. A similar set of conditions may be developing in the United States, particularly as demand for inflation hedging assets increases. Finally, valuation of real return bonds is

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further complicated by deflation, which affects different instruments in different ways. For example, US TIPS and French OATi adjust for inflation by changing the principal (capital) value of the bond. However, they also contain a provision that the redemption value of the bond will not fall below its face value; hence, a prolonged period of deflation could produce significant real capital gains (this is known as the "deflation put"). In light of these considerations, we have a neutral view on the valuation of real return bonds in all currency zones.

Government Bonds

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 plus a premium for inflation uncertainty. We use the latter two variables 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 Aug 2011

	Current Real Rate	Average Inflation (89-03)	Inflation Uncertainty Premium	Required Nominal Return	Nominal Return Supplied (10 year Govt)	Return Shortfall or Excess	Asset Class Over or (Under) Valuation, based on 10 year zero coupon	Implied Annual Inflation Over 10 Year Horizon
Australia	1.78%	2.96%	0.25%	4.99%	4.42%	-0.57%	**5.61%**	2.34%
Canada	0.78%	2.40%	0.25%	3.43%	2.47%	-0.96%	**9.79%**	1.42%
Eurozone	1.91%	2.37%	0.25%	4.53%	2.25%	-2.28%	**24.66%**	0.08%
Japan	0.87%	0.77%	0.25%	1.89%	1.03%	-0.86%	**8.88%**	-0.09%

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	Current Real Rate	Average Inflation (89-03)	Inflation Uncertainty Premium	Required Nominal Return	Nominal Return Supplied (10 year Govt)	Return Shortfall or Excess	Asset Class Over or (Under) Valuation, based on 10 year zero coupon	Implied Annual Inflation Over 10 Year Horizon
UK	0.35%	3.17%	0.25%	3.77%	2.62%	-1.15%	**11.76%**	2.02%
USA	0.69%	2.93%	0.25%	3.87%	2.22%	-1.65%	**17.39%**	1.27%
Switzerland	1.06%	2.03%	0.25%	3.34%	1.18%	-2.16%	**23.57%**	-0.14%
India	1.06%	7.57%	0.25%	8.88%	8.61%	-0.27%	**2.55%**	7.22%

*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 over the long-term. 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 risk is especially acute today, when the world economy is operating in unchartered waters, and faces both deflationary pressures (from falling demand relative to productive capacity, and significant debt servicing problems in the private sector) and inflationary pressures (from unprecedented peacetime government deficits, that are largely being financed by central banks under the "quantitative easing" programs). Under these circumstances, one could argue that many nominal return government bonds might in fact be underpriced today, over a shorter time horizon (more likely to experience deflation), while overpriced over a longer time horizon (that is more likely to see higher levels of inflation – e.g., see the recent IMF study, "Fiscal Deficits, Public Debt, and Sovereign Bond Yields" by Baldacci and Kumar). As we like to point out, in the absence of public policy interventions, overindebtedness on the part of private borrowers typically results in widespread bankruptcies and deflation caused by the accelerating liquidation of collateral. In contrast, overindebtedness on the part of governments more often results in some combination of inflation and exchange rate depreciation (e.g., look at the history of Argentina, which we know all too well).

The following two pieces of information may help your to put the current situation in perspective. The last column of the table above shows the average annual

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inflation rate implied by the current spread between ten-year nominal rates and average real rates (note that research has shown that the real yield curve tends to be quite flat, which is consistent with economic theory). As you can see, apart from Japan and India, government bond markets do not appear to be incorporating either deflation or levels of inflation substantially above historical norms. This is not consistent with our view of how the future is likely to unfold. On the one hand, this may be due to wishful thinking by some investors. On the other hand, it may reflect efforts by central banks to maintain interest rates at a constant level, to maximize the impact of fiscal stimulus programs on aggregate demand.

The second piece of information that can help to put our government bond valuation analysis into a larger context is presented in the following table. It shows historical average inflation rates (and their standard deviations) for the U.K. and U.S. over very long periods of time:

	U.K.	***U.S.***
Avg. Inflation, 1775-2007	*2.19%*	*1.62%*
Standard Deviation	6.60%	6.51%
Avg. Inflation, 1908-2007	*4.61%*	*3.29%*
Standard Deviation	6.24%	5.03%
Avg. Inflation, 1958-2007	*5.98%*	*4.11%*
Standard Deviation	5.01%	2.84%

Assuming inflation levels revert to their long-term averages over a long time horizon, many government bond markets appear overpriced today (i.e., prevailing nominal yields appear to be too low). However, over a short-term time horizon, it may well be the case that many countries will first experience declining prices (deflation) before they experience a substantial rise in inflation. From this perspective, government bonds may be underpriced over the expected time horizon for deflation, but overpriced in the context of the substantial reflations that governments will eventually attempt (given that the economic consequences of deflation seem to be much worse than those associated with higher than normal inflation). In sum, when it comes to questions about bond market valuation, one's time horizon assumption is critical.

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Liquidity and 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, 2010. The average standard deviation measures the extent to which observed values vary around the average; about 67% of the time, the outcome should be within one standard deviation, assuming the outcomes are normally distributed (i.e., have a "bell curve" shape); 95% of the time, the outcome should be within two standard deviations. Skewness measures the extent to which the distribution is non-symmetrical around the mean (i.e., departs from the normal distribution); a normal distribution has skewness equal to zero. Positive values indicate that more than half the outcomes are above the average. Kurtosis measures the extent to which a distribution has more or fewer extreme outcomes than a normal distribution, or, put differently, the extent to which the size of the variance (the standard deviation squared) is driven by extreme outcomes. Kurtosis above zero indicates that a distribution has more extreme outcomes than a normal distribution.

Particularly in the case of the BAA spread, it is clear we are not dealing with a normal distribution!

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	AAA – 10 Year Treasury	BAA-AAA
Average	1.26	0.98
Standard Deviation	.47	.41
Skewness	0.81	3.00
Kurtosis	.16	12.56

At **31 August 2011**, the AAA minus 10 year Treasury spread was 2.18%. The AAA minus BAA spread was 1.07%. Since the distributions of AAA and BAA credit spreads are not normal (i.e., they do not have a "bell curve" shape), we need to look at history rather than Gaussian (normal curve) statistics to put them into perspective. Over the past twenty-four years, about 5% of all trading days had a higher AAA-Treasury spread. Over the same period, about 30% of all trading days had a higher AAA-BBB spread. In sum, current yield differentials paint a picture of a debt market in which liquidity risk is rising and credit risk is possibly underpriced (i.e., BBB yields are too low).

Currencies

Let us now turn to currency prices and 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).

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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 August 2011

	To AUD	**To CAD**	**To EUR**	**To JPY**	**To GBP**	**To USD**	**To CHF**	**To INR**
From								
AUD	0.00%	-1.95%	-2.17%	-3.39%	-1.80%	-2.20%	-3.24%	4.19%
CAD	1.95%	0.00%	-0.22%	-1.44%	0.15%	-0.25%	-1.29%	6.14%
EUR	2.17%	0.22%	0.00%	-1.22%	0.37%	-0.03%	-1.07%	6.36%
JPY	3.39%	1.44%	1.22%	0.00%	1.59%	1.19%	0.15%	7.58%
GBP	1.80%	-0.15%	-0.37%	-1.59%	0.00%	-0.40%	-1.44%	5.99%
USD	2.20%	0.25%	0.03%	-1.19%	0.40%	0.00%	-1.04%	6.39%
CHF	3.24%	1.29%	1.07%	-0.15%	1.44%	1.04%	0.00%	7.43%
INR	-4.19%	-6.14%	-6.36%	-7.58%	-5.99%	-6.39%	-7.43%	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

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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. 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 Aug 2011**: We use the dividend discount model approach to produce our estimate of whether a property market is over, under, or fairly priced 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 overpricing, and less than 100% implies underpricing.

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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	5.6%	0.2%	5.8%	1.8%	3.0%	4.8%	82%
Canada	5.2%	0.2%	5.4%	0.8%	3.0%	3.8%	69%
Eurozone	5.1%	0.2%	5.3%	1.9%	3.0%	4.9%	91%
Japan	5.0%	0.2%	5.2%	0.9%	3.0%	3.9%	74%
Switzerland*	2.8%	0.2%	3.0%	1.1%	3.0%	4.1%	140%
U.K.	3.3%	0.2%	3.5%	0.3%	3.0%	3.3%	95%
U.S.A.	3.2%	0.2%	3.4%	0.7%	3.0%	3.7%	108%

**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.*

As you can see, on a long-term view, only a few commercial property markets look underpriced today. Over the next twelve months, however, we believe the balance of risks points in a negative direction. Consumer spending remains weak in many markets, rents are generally stagnant, and landlords still face significant debt refinancing. It is hard to see how further government stimulus will improve this situation very much, as long as the underlying problems – high consumer leverage, a weak financial system, and continuing international imbalances – remain unresolved. Moreover, the development of real return bond and commodity markets has weakened, to some extent, property's traditional attraction as an inflation hedge. While these factors tend to undermine one source of support for property prices, we also recognize that, at least in some markets, they can be offset by property's historical attraction as a means of preserving wealth in very difficult and uncertain times. In sum, we believe that the sharp run up in property security prices in recent months is due to some combination of investor over-optimism about the speed and size of economic recovery, and/or the tendency of institutional investors to herd rather

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than risk losing assets (or their jobs) due to their underperforming an asset class benchmark. Switzerland and the Eurozone may be exceptions to this view, in that rising uncertainty may have triggered increased demand for property in these markets, and in so doing pushed these markets into overpriced territory.

Commodities

Let us now turn to the Dow Jones AIG Commodity Index (now known as the DJ UBS 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, varying degrees of over and under pricing 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

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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).

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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. Moreover, because of changing supply and demand conditions in many physical commodity markets (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

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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 August 2011**:

Commodity	DJAIG Weight	Current Status
Crude Oil	13.8%	Contango
Natural Gas	11.9%	Contango
Gold	7.9%	Contango
Soybeans	7.6%	Contango
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%	

However (and this is a critical however), this Theory of Storage analysis assumes that there is no change in the relative supply of investors willing to purchase futures contracts sold by commodity producers. This assumption has been violated in recent years, which have seen a dramatic increase in the amount of investment committed to long-only commodity futures based index funds. Some observers have argued that this increase in demand for commodity futures has overwhelmed any changes that have taken place on the supply side that are driven by the Theory of Storage. They conclude that this has resulted in a permanent change in the structure of many commodity futures markets that has made contangoed conditions, and hence negative roll returns, much more likely. We are persuaded of the logic of this argument, which is why in our model portfolios we now use products (e.g., the ETF LSC), that can take both long and short positions in commodity futures, based on market supply and demand conditions as evaluated by an algorithm (technically, this produces an index that the fund tracks; however, for all intents and purposes, these are active quantitative strategies).

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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 (using the DJAIG weights), the forward premium (relative to the spot price) at **31 August 2011** was 0.81%, compared to .64% at the end of 2010. Remember, a forward premium means the roll return will be negative (because the futures investor will be selling the maturing contract at a lower price than he or she must pay to replace it with a longer-dated contract). Roll returns are positive only when there is a forward discount (when the average price of a futures contract with a long maturity is lower than the price of a contract with a very short maturity).

This brings us to the third source of return for long-only commodity futures funds: unexpected changes in the price of the commodity during the term of the futures contract. It is important to stress that the market's prevailing consensus about the expected change in the spot price is already included in the futures price that is paid when the contract is purchased. The source of return we are referring to here is the portion of the final realized price change that was unexpected when the futures contract was purchased. Given the large increase in funds committed to long-only, commodity futures based index investments, unexpected price changes have become a much more important source of return than they have been in the past. The good news is that this return driver probably offers skilled active 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). In this regard, large price surprises seem to be more frequent when supply and demand for a commodity are finely balanced – the same conditions which can also give rise to changes in real option values and positive roll returns, under the Theory of Storage. However, given our economic outlook, at this point in time we view negative surprises on the demand side that depress commodity prices as more likely than demand or supply surprises that have the opposite effect. Put differently, on balance we expect price surprises to have a negative impact on commodity returns over the next year.

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The fourth source of returns for a diversified commodity index fund is generated by rebalancing a funds 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 futures based 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 unanticipated changes in demand (where downside surprises currently seem more likely than upside surprises) and/or unanticipated changes in supply conditions (e.g., incomplete investor recognition of slowing oil production from large reservoirs, a major disruption due to war/terrorism or a significant accident, discovery of significant new deposits, or a major breakthrough that makes biofuels much more cost competitive). On balance, at **31 August 2011**, we believe that returns on many commodity futures are more likely to be negative over the next year than positive; hence, using this analytical framework we conclude that commodities are likely overpriced today, using a one-year time horizon.

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

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1991 and 2010, the inflation adjusted (i.e., real) DJAIG had an average value of 90.73, with a standard deviation of 15.62 (skewness of .62, and kurtosis of .05; i.e., it was close to a normal distribution). The inflation adjusted **31 August 2011** closing value of 99.41 was about half a standard deviation above the long term average for the real index. Assuming the possible values of the index are 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. So in this sense, the real value of the DJAIG Index is currently well within its normal range.

Whether the current level of the inflation adjusted DJAIG signifies that commodities are undervalued depends upon the time horizon being used. There are four arguments that, on a medium term (three to five year) view, commodities are underpriced today. The first is the large amount of monetary easing underway in the world, which, at some point, could lead to higher inflation. The second is the recovering growth in the world economy, which is causing demand for many commodities to bump up against supply side constraints (because it takes time to increase the supply of most commodities, in the short term increases in demand beyond a certain point trigger rapid price increases). The third is that the possibility that we will see a substantial fall in the value of the US Dollar versus other currencies, causing investors to increase their holdings of commodities as confidence in fiat currencies wanes. The fourth is that, given a rising world population, and increasing levels of development and affluence in many developing countries, demand for many commodities is rising faster than their supply, which will structurally put upward pressure on future prices. To be sure, where these conditions have existed in the past, some combination of new technology and new discoveries have enabled supply growth to exceed demand growth, and thereby caused the observed long term decline in the real price of many commodities. However, the argument has been made (most cogently by GMO's Jeremy Grantham, in "Time to Wake Up: Days of Abundant Resources and Falling Prices Are Over Forever") that this long term structural trend has reversed in recent years.

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The argument that commodities are overpriced today on a medium term view is based on the belief that (a) investment in clean fuels and the electrification of an increasing share of the transport sector will cause a permanent reduction in global demand for oil relative to supply (and oil receives a relatively heavy weight in most commodity indexes); (b) The inability to quickly resolve the economic challenges facing the world economy will result in a prolonged period of weak or no growth (including a major slowdown in Chinese growth), which will reduce the demand for commodities; and (c) That in a scenario of prolonged global stagnation, investors will prefer to increase their holdings of short term government bonds, and perhaps gold, rather than increasing their holdings of a broader range of commodities.

On balance, we continue believe that, over the next three to five years, a fall in global aggregate demand is more likely than a global inflation and/or US Dollar crisis, as the High Uncertainty Regime typically sees a flight into U.S. dollars rather than a flow out of them. On that basis, we conclude that, over this time horizon, commodities are likely overpriced today.

Gold

Our approach to asset pricing theory is based on a few key assumptions: (1) Asset prices reflect the interaction of the supply of and demand for real returns from a given asset class; (2) The supply of returns reflects the current yield provided by an asset class, plus expected changes in its price over a given period of time; (3) The demand for returns reflects the prevailing real risk free rate plus a required risk premium; (4) Imbalances between the supply of and demand for returns are normal feature of asset markets; (5) While asset markets are drawn to an equilibrium where the supply of returns equals the demand for returns, they can operate far from equilibrium for extended periods of time; and (6) Asset markets return to equilibrium due to changes in all four underlying variables – the current yield of the asset, expectations for future price changes, the real risk free interest rate, and required risk premiums.

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In an article in our January 2010 issue, we described why we would expect the real price of gold to increase by about 1.75% per year under normal conditions. This is the difference between our assumed long-term growth rate of real global GDP of 3.25% per year and our assumed long-term growth rate of the world stock of gold of 1.50% per year. We can further expand our description of the supply of gold returns, viewing 1.75% per year as the normal "income return" from holding gold, and adding to it the change in the price of gold that is driven by regime changes – i.e., changes in perceived uncertainty and expected inflation.

When we looked at the return for holding gold that an investor would logically demand, in terms of a risk premium above the real risk free interest rate, we found that it varied considerably depending on the regime that prevailed. In normal times, the risk premium has been negative, reflecting the fact that gold plays the role of portfolio insurance, for which, in normal times, an investor should logically expect to pay, rather than receive, a risk premium. However, this insurance policy is expected to pay off under the high inflation and high uncertainty regimes, when the risk premium above the real risk free rate turns positive, ranging between 2.5% in the high inflation regime to 2.0% in the high uncertainty regime.

To estimate the extent to which gold is over or undervalued today we had to start at a point in time at which we assumed gold was fairly valued. We chose 1996 as this point, when gold was priced at about $400/ounce. Our logic was that during the mid-1990s, changes in nominal global GDP deflated by the gold price (what we term "gold GDP") reasonably approximated changes in nominal global GDP deflated by consumer prices, suggesting that the gold market was approximately in equilibrium. Our next step was to apply a version of the dividend discount model to check the logic underlying the $400/ounce price. This model states that the fair value of an asset equals is current income divided by an appropriate discount rate that is equal to (a) the risk free rate, (b) plus a risk premium for holding the asset, (c) less the rate at which the income from the asset is expected to grown in the future. Applying the 1.75% per year long term price appreciation rate discussed above to the $400 price gives a current income (we acknowledge this is stretching the theory, but bear with us) of

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$7.00. Since TIPS weren't around in 1996, we next had to estimate the real risk free rate. To do this, we subtracted the 1995 inflation rate of 2.5% from the nominal 6.51% yield on 10 year Treasuries, giving us an estimated real risk free rate of about 4.00%. To this, we added a risk premium of negative 50 basis points (since in good times investors should be willing to pay an insurance premium for asset classes that perform well in bad times). This yielded a required real rate of return to hold gold of 3.50%. From this, we subtracted the 1.75% rate at which real gold prices were expected to increase, due to the difference between the change in economic output and the change in the supply of gold, to obtain our discount rate of 1.75% (3.50% less 1.75%). Discounting $7.00 by 1.75% gave a price per ounce of $400. So far, so good. Now let's bring the analysis forward to **August, 2011.**

As previously noted, in the absence of any other changes, the equilibrium price of gold should have increased by the difference between the growth in global economic output and global gold supply between 1996 and 2011. According to IMF data, real global output (GDP) grew by 72.6% over this period. Other data shows that the global supply of gold increased by an estimated 36.2%. Therefore, in equilibrium, the price of gold should have increased by 36.2%, to about $545/ounce by 2011, assuming increases in the supply of gold lagged behind increases in economic output. The current expected "income" would therefore be $545 x 1.75%, or $9.54. However, other valuation variables have also changed since 1996. Our next step was to replace the 4.00% real risk free rate with the current 0.69% average yield on TIPS (note that the fall in the real risk free yield has been associated with rising uncertainty about future economic growth and inflation, as well as the creditworthiness of the U.S. Government). To this risk free rate we added a risk premium of 2.00%, which our historical analysis found was appropriate for periods of high inflation and/or uncertainty, when investors expected gold returns to offset losses on other asset classes. This generated a current required real rate of return of 2.69% to hold gold. From this we subtracted 1.75% (the "natural" growth rate of the current income level) to obtain a discount rate of 0.94%. Discounting $9.54 at 0.94% yielded an estimated

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fair price of $1,012/ounce. The current price of $1,777/ounce is about 76% above our estimated fair price at the end of **August, 2011.**

To be sure, our analysis is based on a lot of assumptions that can be challenged. However, our conclusion seems consistent our theory, which says that the price of gold should reflect not only long term structural trends (in economic output and growth in physical gold supply), but also shorter term emotional and social factors that reflect changing levels of uncertainty about future growth, inflation, and political conditions.

Timber

The underlying diversification logic for investing in timber is quite simple: the key return driver is biological growth, which has essentially no correlation with factors driving returns on other asset classes. That said, the correlation of timber returns with other asset classes should be different from zero, as it also depends on the price of timber products (which depends, in part, on GDP growth) as well as changes in real interest rates and investor behavior – factors affect returns on other asset classes as well as timber.

However, in valuing timber as a global asset class, we face a number of significant challenges. First, the underlying assets are not uniform – they are divided between softwoods and hardwoods, at different stages of maturity, located in different countries, face different supply conditions (e.g., development, harvesting, and environmental regulations and pest risks), and different demand conditions in end-user markets. Second, the majority of investment vehicles containing these assets are illiquid limited partnerships, and the few publicly traded timber investment vehicles (e.g., timber REITs) provide insufficient liquidity to serve as the basis for indexed investment products. Finally, the two indexes that attempt to measure returns from timberland investing (the NCREIF Index in North America, and IPD Index in Europe) are regional in coverage and utilize an appraisal based valuation methodology based on timber limited partnerships, which tends to understate the volatility of returns and their correlation with other asset classes. Given these challenges, the result of any

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valuation estimate for timber as a global asset class must be regarded as, at best, a rough approximation.

Our valuation approach is based on two timber REITs that are traded in the United States: Plum Creek (PCL) and Rayonier (RYN). We chose this approach because both of these REITs are liquid, publicly traded vehicles, and both derive most of their revenues from their timberland operations. This avoids many of the problems created by appraisal-based approaches such as the NCREIF and IPD indexes. That said, tor the reasons noted above, this approach is still far from a perfect solution to the asset class valuation problem presented by timber.

As in the case of equities, we compare the returns that a weighted mix of PCL and RYN 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, the expected rate of growth and the appropriate risk premium, have to be estimated. The former presents a particularly difficult challenge.

In broad terms, the rate of dividend growth results from the interaction of physical, economic, and regulatory processes. Physically, 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). Another aspect of the physical process is that a certain number of trees are harvested each year, and sold to provide revenue to the timber REIT. A third aspect of the physical process is that trees are exposed to certain risks, such as fire, drought, or disease (e.g., the mountain pine beetle in the northwest

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United States and Canada). And fourth physical process is that, through photosynthesis, trees sequester a portion of the carbon dioxide that would otherwise be added to the earth's atmosphere.

In the economic area, three processes are important. First, 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 occurs 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. At the level of individual timber investments, the rate of in-growth is a key driver of returns; however, at the asset class level, we have decided to assume a constant mix of grades over time. The second economic process (or, more accurately, processes) is the interaction of supply and demand that determines changes in real prices for different types and grades of timber. 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. The average annual change in real prices (derived by adjusting the IMF series for changes in U.S. inflation) between 1981 and 2007 was 0.1% (i.e., average prices over the period remained essentially constant in real terms), but with a significant standard deviation of 9.2% -- i.e., it is normal for real timber prices to be quite volatile from year to year.

The third set of economic processes that affects the growth rate of dividends includes changes in a timber REIT's cost structure, and in its non-timber related revenue streams (e.g., proceeds from selling timber land for real estate development or conservation easements). For example, if wood prices decline, and non-timber

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sources of revenue dry up (as is happening during the current recession), a timber REIT (or timber LP) will have to either cut operating costs and/or distributions to investors, or increase the physical volume of trees that are harvested.

Regulatory processes also affect the future growth rate for timber REIT dividends. In the past, the most important of these included restrictions on harvesting or land development. In the future, the most important regulatory factor is likely to be the imposition of carbon taxes or a cap and trade systems to limit carbon emissions. These new environmental regulations could provide an additional source of revenue for timber REITs in the future (for an early attempt at establishing the CO2 sequestration value of timberland, 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:

Growth Driver	**Assumption**
Biological growth of trees	We assume 6% as the long term average for a diversified timberland portfolio. We stress that biological growth rates can vary widely for different types of timber investment (with softwoods and timber located in tropical countries delivering the highest growth, and hardwoods and timber in more temperate climates delivering the slowest growth rates). We have also changed our valuation model to assume a constant mix of product grades, to present a better approximation for timber as a global asset class.
Harvesting rate	As a long term average, we assume that 5% of tree volume is harvested each year. As a practical matter, this should vary with timber prices and the REITs prevailing dividend level. So 5% is a "noisy" long-

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Growth Driver	**Assumption**
	term estimate for timber as a global asset class.
Change in prices of timber products	In line with IMF data, we assume that over the long term, average timber prices will just keep pace with inflation. Again, this is a "noisy" estimate, because the IMF data also shows that real prices are highly volatile. Moreover, 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, *Science*, 23Jan09). Hence we believe our long-term price change assumption is conservative.
Carbon credits	Until more comprehensive regulations are enacted, we assume no additional return to timberland owners from the CO2 sequestration service they provide (or for timber's use in various biomass energy applications). Again, given the high level of global concern with limiting the increase in atmospheric CO2 levels, we believe this is a conservative assumption.

This leaves the question of the appropriate return premium that investors should demand to compensate them for bearing the risk of investing in timber as an asset class. Historically, the difference between returns on the NCRIEF timberland index and those on real return bonds has averaged around six percent. However, since the timber REITS are much more liquid than the properties included in the NCRIEF index, and since timber has displayed a very low correlation with returns on other asset classes (particularly during the worst of the 2008 crisis, even in the case of liquid timber vehicles), we use three percent as the required return premium for investing in liquid timberland assets. Arguably, because a portion of timber's return generating process (physical growth) has zero correlation with the return generating processes for other asset classes, we should use an even lower risk premium. Again, we believe our approach is conservative in this regard. Given these assumptions, our

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assessment of the valuation of the timber asset class at **29 April 2011** 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 (Current Dividend Yield x 100) x (1+ Forecast Dividend Growth) divided by (Current Yield on Real Return Bonds + Timber Risk Premium - Forecast Dividend Growth). A value greater than 100% implies overvaluation, and less than 100% implies undervaluation.

Average Dividend Yield (70% PCL + 30% RYN)	4.25%
Plus Long Term Annual Biological Growth	6.00%
Less Percent of Physical Timber Stock Harvested Each Year	(5.00%)
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	**5.25%**
Average Real Return Bond Yield	0.69%
Plus Risk Premium for Timber	3.00%
Equals Average Annual Real Return Demanded	**3.69%**
Ratio of Returns Demanded/Returns Supplied Equals Valuation Ratio (less than 100% implies undervaluation)	**63%**

We stress that this is a long-term valuation estimate that contains a higher degree of uncertainty that valuation estimates for larger and more liquid asset classes. Over a one-year time horizon, you could easily reach a different valuation conclusion. For example, if you believe that real timber prices will decline over the next year, and/or that physical harvesting rates will increase to cover costs and dividends, then you could argue that, in so far as PCL and RYN are roughly accurate proxies for the asset class as a whole, timber, as measured by PCL and RYN, is likely overpriced today. On the other hand, whether looking over a short or long-term time horizon, if you

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believe that future revenues from timber's CO2 sequestration service are likely to be significant, and/or that four percent is too high a risk premium to use, then you could argue that timber is likely underpriced today.

In sum, timber valuation is an issue upon which reasonable people can and do disagree, in no small measure because of their different time horizons and the different underlying assumptions and methodologies they use to reach their conclusions. On balance, taking a long-term view, we continue to believe that timberland is likely underpriced today, for three reasons: (1) future revenue growth related to CO2 sequestration is likely to be significant; (2) the negative impact on timber prices caused by the recession and long-term slowdown in North American housing construction will be moderated or offset by the impact of supply side changes, such as the mountain pine beetle problem, and by rising demand for wood products that will accompany rising incomes in China.

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 31, 2010, the average daily value of the VIX Index was 20.5 (median 19.0), with a standard deviation of 8.2 (skewness 2.0, kurtosis 7.3 – i.e., a very "non-normal" distribution). On **31 August 2011**, the VIX closed at 31.62. To put this in perspective, only about 7% of the trading days in our sample had higher closing values of the VIX. In sum, at the end of last month, volatility was at a level that we believe reflects the high uncertainty regime that we expect to prevail in global financial markets over the next year. For these reasons we concluded that volatility is probably close to fairly priced over a one year time horizon.

Sector and Style Rotation Watch

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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

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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 mathematically 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.

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

Rolling 3 Month Returns Through	***31 August 2011***			
Economy	Bottoming	Strengthening	Peaking	Weakening
Interest Rates	Falling	Bottom	Rising	Peak
Style and Size Rotation	Small Growth (DSG) **-12.57%**	Small Value (DSV) **-12.07%**	Large Value (ELV) **-11.54%**	Large Growth (ELG) **-6.08%**
Sector Rotation	Cyclicals (RXI) **-9.51%**	Industrials (EXI) **-13.69%**	Staples (KXI) **-4.17%**	Utilities (JXI) **-6.35%**
Bond Market Rotation	Higher Risk (HYG) **-2.89%**	Short Maturity (SHY) **0.63%**	Low Risk (TIP) **5.27%**	Long Maturity (TLT) **11.73%**

This Month's Letters to the Editor

How do you explain the swings in the equity market? One day it is Greece, the next day it is unemployment and the next day it's a natural disaster. What do you think is causing this volatility?

As we have written in the past, we continue to believe that a number of forces have led to an increase in the average level of price volatility in many asset classes. The first is the rise in uncertainty about the future actions of political leaders and the fundamental value of many financial assets. The second is the aggregation of many trading strategies into "risk on" and "risk off" trades, that result in simultaneous changes in supply/demand conditions across multiple asset classes. The third is growing concerns about global liquidity and funding conditions, due to worsening conditions in Eurozone sovereign debt markets, and their uncertain impact on bank balance sheets

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and funding. Changes in liquidity conditions can cause changes in lender collateral requirements, and precipitate waves of selling of liquid assets (e.g., large cap equities) in order to raise the required cash (for more on this, see "Haircuts" by the Bank of England's Andrew Haldane). The fourth is the increasing profusion of locations in which such transactions can be executed (e.g., the declining market share of traditional exchanges, and the rise of crossing networks and dark pools), which has only increased the price impact of forced selling. Finally, and perhaps most important, is the increasing volume of daily trading in many asset classes that is driven by evolutionary algorithms that track a wide variety of technical factors. In such a "Borg-driven market", not only are events like the May 6, 2010 "flash crash" more likely, but so too are high volume waves of buying and selling that collectively result in higher volatility levels. To us, the truly strange thing about the mainstream media's commentary about rising volatility has been its failure to fully explore and explain the implications of a market that is now largely algo-driven. Instead, they have continued to push an outmoded story line that somehow daily price movements are mostly explainable by the flow of news. We believe that this is no longer the case, and a range of other important factors are now at work that are underappreciated by most investors.

What do you view as the risk free asset today?

In general, we continue to believe that the best proxy for the risk free asset in the world today is short term government debt in an investor's functional currency (the currency in which the majority of his or her future liabilities are denominated). Granted, there are nuances to this definition – for example, within the Eurozone, it is clear that German government securities are a better proxy for the risk free asset than those issued by Greece. Short term government securities generally have excellent liquidity, and little inflation risk, which are two primary characteristics of a risk free asset. Of course, the third characteristic of a risk free asset is the absence of default risk. Theoretically, any government that controls the issuance of the currency in which its

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debt is denominated should always have the capability to repay its debt. Today, among the functional currencies we cover in our model portfolios, this includes the governments of Australia, Canada, India, Japan, Switzerland, the UK and the US. The Eurozone is more problematic, as technically Germany does not control the European Central Bank. In this case, our theory of short term German government debt being the Eurozone's proxy for the risk free asset would rely on the assumption that any scenario that would lead to questions about Germany's default risk would also likely lead to the breakup of the Eurozone, and Germany recovering its ability to print its own currency. More broadly, the question of government default risk, in the absence of the monetization of debt via money creation by the central bank, requires that a number of factors related to economic growth potential and government fiscal management be taken into account. In terms of economic growth potential, the two most important factors are future demographics and the expected future rate of productivity growth (with plenty of subsidiary factors that contribute to these two). In terms of government fiscal management, in our view key issues to assess include the classic "debt trap" factors of the country's expected real rate of economic growth, the weighted real rate of interest on the government's debt, and the size of the primary budget surplus or deficit (i.e., the balance before debt service payments). In turn, the primary budget balance is considerably affected by the state of the nation's private sector and external balances (see following article), as well as the health of its health care, pension, and tax systems. In addition, the primary budget balance is also affected by the functioning and popular legitimacy of a nation's political institutions. The latter is critical, not only because it affects a government's ability to institute reform measures needed to improve the ability to pay creditors, but also its willingness to do so, especially when a substantial amount of debt is held by foreign creditors.

Economic Situation Analysis: The Gordian Knot and Its Implications for Asset Class Returns

Let's start our update with what we wrote back in December, 2010:

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"Our assessment of global economic conditions, and their implication for asset class returns and portfolio allocation, is that the world faces four challenges, whose implications are interrelated and non-linear. The first challenge is the fragile nature of the global financial system, in which a very large amount of debt of highly uncertain quality rests on a very thin capital base. Another aspect of this issue is the precarious position of many parties that are struggling to repay and/or rollover that debt, including households, some corporations (e.g., commercial property developers), financial institutions and various levels of government, up to and including some sovereign nations. A final aspect of this issue is the fact that in some countries, leverage has continued to increase in recent years (e.g., China), giving rise to new asset bubbles that will one day burst (e.g., Chinese property). In addition, strong money supply growth in the United States has not only helped to fund a substantial expansion of U.S. government debt (while keeping interest rates on that debt artificially low), but also led to strong capital flows into many emerging markets, where they have inflated both consumer and asset prices.

The second challenge facing the global economy is inadequate and imbalanced aggregate demand. In many countries, private sector balances (i.e., the difference between savings and investment) have swung from strongly negative to strongly positive since the global financial crisis exploded in 2008, as investment has been cut back and strenuous efforts have been made to save more in order to reduce outstanding debt. The resulting reduction in private sector demand has usually been balanced by a sharp expansion of government deficits and attempted expansion of the money supply, in order to avoid an even deeper economic contraction and more severe rise in unemployment. However, many countries are now either approaching or have reached the limit of this approach, with growing concerns about the sustainability of sovereign debt levels forcing consideration of policy alternatives. On top of this, in a world that has become globally interconnected to a degree not seen since the early 1900s, the benefits of these government stimulus programs have spread beyond domestic borders. This has benefited those nations that have been most reliant on exports for economic and employment growth, such as China, Germany, and Japan.

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In theory this has bought time for these nations to take steps to expand domestic demand (which in turn would allow nations running substantial current account deficits, such as the U.S. and U.K., to reduce them, and replace government deficits with rising exports as a source of GDP growth). Indeed, this is one of the fundamental assumptions that underlie the "muddling through" scenario, which describes a slow, but steady recovery from the Great Recession. In practice, however, we are seeing once again the truth of the old adage that "no plan survives its first contact with reality." It is proving very difficult (for political, social and economic reasons) to increase domestic demand (and in particular, private consumption spending) in current account surplus countries, while in current account deficit countries a rising number of people are questioning the logic of a policy which seems to burden them and their children with debt in order to create jobs in China and other surplus countries, while unemployment remains stubbornly high at home.

The third challenge facing the world economy is how to avoid having more developed economies slip into an extended period of deflation, similar to Japan's experience since the bursting of its property and equity bubble in 1989.

The final challenge facing the global economy is how to maintain the legitimacy of various political institutions, both international (e.g. multilateral trading rules) and domestic in the face of economic and social stresses not seen since in most countries since the 1930s.

In essence, the "muddling through" scenario assumes that all these challenges will somehow be met, and that the main price we will pay is a prolonged period of slower economic growth (the truly rosy scenario assumes that rising domestic demand in emerging markets will cause them to become the new motor of the world economy, which in turn will return global growth to its previously high levels). The downside view assumes that we will fail to meet one or more of these challenges, and, given their complex and most likely non-linear interrelationships, the result will be a downside scenario whose severity will take many people by surprise."

In point of fact, the words we wrote in December only summarized concerns we had been writing about since 2008. In turn, these concerns grew out of our experience in

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the 1980s in Latin America with what we had hoped would be the biggest debt crisis we would ever see. Indeed, as the following quotes from an article in the 25 Jan 2001 edition of *The Economist* ("Debt Trap!") reminds us, concerns about these issues have been building, at least in some parts, for quite some time: "Japan's decade of feeble growth can be blamed on policy errors more than on the bursting of the bubble itself…Japan's policymakers failed to encourage enough monetary expansion, or to purge the country's banking system [of its bad loans]…All that said, there are enough eerie similarities between American today [in the aftermath of the tech stock crash] and Japan in 1989-90 to be worrying. The biggest is excessive debt. Too much debt was always at the heart of Japan's weakness. So it is alarming that America's boom has also been fueled by massive borrowing…[and] has left lenders exposed to some nasty risks…By borrowing against paper gains in share values, households have been able to shop until they dropped, not bothering to save…Optimists retort that private sector balance sheets look healthy, because the increase in debt has been more than matched by increased asset values. However, balance sheets also looked remarkably healthy in Japan in the late 1980s – until asset prices tumbled…Japan, in short, is not unique. America is but one more example of an age-old phenomenon, in which rapid increases in asset prices encourage a credit binge and overinvestment that prove unsustainable once asset prices fall. It is no coincidence that the deepest and most protracted recessions in recent decades have taken hold in countries that experienced booms in property or share prices and a large build-up of debt, such as Britain and Sweden in the early 1990s."

So here we are again, almost a year after we wrote about the four critical challenges confronting the world economy. The good news is that our concerns have become much more mainstream. The bad news is that those challenges haven't changed. The even worse news is that the accumulated evidence seems to indicate we are doing a very poor job of meeting them. Let's look at this evidence in more detail:

Challenge One: How to Reduce Excessive Leverage?

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- Yale's John Geanakoplos has written a number of excellent papers about the impact of leverage on the economy, which most macroeconomic models neglect to take into account (see, for example, "The Leverage Cycle", and "Leverage Causes Fat Tails and Clustered Volatility", with Stefan Thurner and J. Doyne Farmer). Moreover, having run fixed income research long ago at Kidder, Peabody, Geanakoplos, more so than most academics, has a very good feeling for how the real world works, so we usually find his writing very worthwhile. In another paper, "Solving the Present Crisis, and Managing the Leverage Cycle", Geanakoplos succinctly summarized our current predicament: "The present crisis is the bottom of the leverage cycle. Understanding that tells us what to do, in what order, and with what sense of urgency. Public authorities have acted aggressively, but because their actions were not rooted in (or explained with reference to) a solid understanding of the causes of our present distress, we have started in the wrong place and paid insufficient attention and devoted insufficient resources to matters – most notably, the still growing tidal wave of foreclosures and the sudden deleveraging of the financial system – that should have been first on the agenda…The steps we must take at the end of the current cycle emerge from an understanding of what makes a leverage cycle swing up, sometimes to dizzying extremes, and then come crashing down, often with devastating consequences. All leverage cycles end with (1) bad news that creates uncertainty and disagreement; (2) sharply increasing collateral rates; and (3) losses and bankruptcies among the leveraged optimists. These three factors reinforce and feed back on each other…The crisis stage of the leverage cycle always seems to unfold in the same way. First there is bad news. That news causes asset prices to fall based on worse fundamentals. Those price declines create losses for the most optimistic buyers, precisely because they are typically the most leveraged. They are forced to sell off more assets to meet their margin restrictions, even when the margin restrictions [i.e., collateral as a percentage of market value] stay the same. Those forced sales cause asset prices to fall further, which makes leveraged buyers lose more. Some of them go bankrupt. And then typically things shift: the loss spiral seems to stabilize – a moment of calm in the hurricane's eye. But that calm typically gives way when the bad news is the scary kind that does not clarify but obscures the situation and produces widespread uncertainty and disagreement about what will happen next. Suddenly, lenders increase the margins and thus deliver the fatal blow. At that point, even modestly leveraged buyers are forced to sell. Prices

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plummet. The assets eventually make their way into hands that will take them only at rock-bottom prices…In the aftermath of the crisis, we always see depressed asset prices, reduced economic activity, and a collection of agents that are not yet bankrupt but hovering near insolvency. How long the aftermath persists depend on how deep the crisis was, and how effective government intervention is. Once the crisis has started, the [general] solution is to reverse the three symptoms of the crisis: contain the bad news, intervene to bring down collateral margins, and carefully inject 'optimistic' equity back into the system…To be successful, any government plan must respect all three remedial [actions] and their order."

- Geanakoplos goes on to argue that, by failing to deal more effectively with the excess leverage in the housing sector, the U.S. government has failed to effectively complete the first step in dealing with a leverage crisis: containing the bad news. And now this accusation which can also be leveled at the European Union, and its handling of crisis encompassing the sovereign debt of Greece, Portugal, Ireland (and potentially Spain and Italy), and the European banks that hold substantial amounts of it on their balance sheets (see the excellent paper by Buchheit and Gulati, two experienced sovereign workout players, titled, "Greek Debt: The End Game Scenarios").
- To be sure, the path governments have followed thus far is consistent with the description of eight centuries of financial crises, as described by Reinhart and Rogoff in their outstanding financial history book, This Time is Different, in which banking crises morph into sovereign debt crises as governments indulge in deficit spending as they try to contain the initial phase of leverage crises. More recently, Reinhart and Sbrancia have added further detail to how the resulting sovereign debt crises have played out in the past, in their new paper, "The Liquidation of Government Debt". They note the frequent historical use of what they (like Michael Pettis) term "financial repression" – artificially holding down yields on government debt, forcing domestic banks and other intermediaries to buy it (e.g., by raising bank reserve requirements or imposing capital controls), while running a moderate level of inflation to slowly erode the real value of the debt. However, as Pettis has repeatedly noted in his excellent writing on the use of financial repression to finance China's high investment spending, and to deal with the consequences of its last leverage crisis, this approach always comes with a price, which is usually a reduced level of personal consumption spending.

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- In point of fact, around the world household leverage levels have not come down by much in the three years since the 2008 crisis; rather, they are still very high in historical terms. For example, the June 2011 issue of the OECD Economic Outlook contains the most recent (2009) comparable data on the ratio of household debt to disposable personal income across a range of countries, including the UK (171%), Australia (156%), Canada (148%), USA (127%), Japan (126%), France (107%), Germany (99%) and Italy (88%). As the IMF noted in this year's Global Financial Stability Report, "the build-up of gross debt accumulated by the private sector in a number of advanced markets has in most cases been only partly reversed, if at all." This is the same conclusion reached in a series of reports on "Debt and Deleveraging" by McKinsey & Company, and in a disturbing new paper that was just presented at the Federal Reserve's Jackson Hole conference ("The Real Effects of Debt" by Cecchetti, Mohanty and Zampolli), which concludes that the current levels of private and public sector debt are more dangerous than was previously thought. As former NY Gubernatorial candidate Jimmy McMillan might put it, the problem is clear: "The leverage is too damn high."
- At best, we have seen some reduction in household sector debt and financial sector debt, but that has been more than offset by the rise in public sector debt. As a result, overall ratios of debt/GDP have rapidly been rising, not falling (see, for example, "Debt Burden in Advanced Countries Now a Global Threat" by Prasad and Ding of the Brookings Institution). In turn, rapidly increasing public sector debt raises concerns about the so-called "debt trap". The essence of this issue is that, when the real rate of interest on government debt is greater than the real growth rate of the economy, a country must run "primary" budget surplus (i.e., a surplus before interest and principal payments on outstanding debt) if the level of debt/GDP is to stay stable or decline. In the absence of such a surplus, debt will increase exponentially. This helps to make clear one of the reasons why the U.S. Federal Reserve and other central banks have been so aggressive in their monetary policy – to hold real interest rates on government debt at as low a level as possible to minimize the increase in debt/GDP caused by the substantial growth in government budget deficits.
- Elsewhere in the United States, researchers at two different Federal Reserve Banks recently published articles that summarized the current dilemma that lies at the heart of the household leverage crisis. In "The Seductive But Flawed Logic of Principal

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Reduction" the Federal Reserve Bank of Atlanta's Foote, Gerardi and Willen explain how lenders will not consent to writing down mortgage principal (even in exchange for a share of future upside price appreciation) because they cannot resolve a fundamental information asymmetry: they cannot determine which borrowers could or would pay their current mortgages and which could or would not. However, as Mian and Sufi from the Federal Reserve Bank of San Francisco point out (in "Consumers and the Economy: Household Debt and the Weak U.S. Recovery"), "Overall U.S. county-by-county evidence strongly suggests that credit demand is weak because of an overleveraged household sector. This view is supported by survey evidence that the main worry of businesses is sales, not financing….If the main problems facing businesses relative to depressed consumer demand due to a household sector weighed down by debt, investment tax subsidies and lower interest rates may have only a limited effect on business investment and employment growth." As this view has gained wider credence, we have also noted the appearance of an increasing number of articles and commentaries that call for a much more aggressive approach to debt reduction as the linchpin of a strategy to escape the "Great Recession". See, for example, "Massive Default is The Best Way to Fix the Economy" by Brett Arends (*Marketwatch*, 12Sep11), and John Hussman's excellent note, "An Imminent Downturn: Whom Will Our Leaders Defend?" (hussmanfunds.com, 5Sep11).

- The leverage problem in not limited to the United States. As previously noted, the interrelated problems of periphery countries' sovereign debt and inadequate bank capital continue to serve as an acid or cancer on confidence in Europe, and holds the potential to trigger a severe banking crisis, which would further depress Eurozone and global aggregate demand
- In Japan, commentators continue to wonder how much longer governments there will be able to run budget deficits that are financed by bonds bought by an ageing domestic population. At some point, domestic capacity will run out, and a sovereign debt crisis will likely ensue.
- In Australia, Canada and the UK, mortgage debt is also at very high levels, though none of these countries has yet to experience a property market leverage crisis as has already occurred in the United States. But that day may not be far off. In Australia, the supply of new residential units is catching up with demand, and commentators have noticed that first time buyers are increasingly priced out of the market (usually a good

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early warning sign). At the national level, Australia's prosperity, and ability to service is property debt, continues to be strongly dependent on its trade with China, and commodity prices in particular. Similar conditions can be found in Canada, where strong energy and commodity prices have supported the economy, and levels of household debt have grown, not fallen, since 2008.

- In the UK, inflation is rising, which is not good news for the large number of people who are highly leveraged with floating rate property loans. It shouldn't be a surprise that most housing price indexes have recently seen a fall (and having lived through the property collapse in the UK in the late 80s, I have seen first-hand how savage a fall in that market can be).
- However, along with the Eurozone sovereign debt/banking crisis, the potential leverage crisis building in China is the only other one globally that is potentially on a scale with the housing/banking leverage crisis in the U.S. China responded to the global slowdown that followed the 2008 crisis by substantially increasing loan growth (in both the formal and informal banking systems) in order to finance a very aggressive increase in investment spending. In the short-term, that strategy achieved its goal of maintaining acceptable levels of economic growth (with acceptable in this case being defined as a level that generated enough job growth to maintain a reasonable level of social peace, and thus the Chinese Communist Party in power). Yet it is impossible to expand lending and investment by these amounts without financing fundamentally uneconomic investments, that will eventually generate bad loans. For evidence that such a crisis is likely not far off, we point to the declining rate of increase in GDP growth per unit of additional credit growth (which itself is likely understated in official data because of the rapid growth of a lending outside traditional banking channels). Whether at the household, company, or national level, when your outstanding debt is growing faster than your income, the seeds of an eventual leverage crisis are being sown. The real unknown, and a critical uncertainty going forward, is the scale of this potential bad loan/leverage problem in China, and the extent to which its resolution will inhibit China's transition from a nation dependent on exports and investment for GDP growth, to one that is much more driven by private consumption expenditures (and imports). For more on this, see the always incisive writing of Michael Pettis, and an excellent article by GMO's Edward Chancellor in the 10 July 2011 *Financial Times* ("China's Bad Debts a Cause for Concern").

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- As we have long written, based on both theory and our experience in the 80s working out emerging market debt, there are five ways to deal with a leverage crisis. The first is austerity – an extended period of consuming less than you make, in order to pay down your debts. As we have seen in Greece, prolonged austerity is almost guaranteed not to work in nations where (a) a substantial amount of the debt is held by foreign creditors; (b) the institutions of government and civic society are weak; and (c) there is a high degree of inequality. That brings us to everyone's favorite alternative: grow your way out of debt. Unfortunately, history shows it is rarely possible to reduce leverage to an acceptable level through this means alone. Moreover, as we will see in the next section, this approach looks to be especially difficult in many areas in the years ahead. If neither austerity nor growth will do the trick, what about inflating away the real value of the debt? As Professor Raghuram Rajan notes in a recent *Financial Times* article ("Why We Cannot Inflate Our Way Out of Debt", 15 August 2011), this is unlikely to work in today's environment. For example, the average maturity of the U.S. government's outstanding debt is about four years, which would make inflating it away quite difficult (at least in the absence of financial repression). This brings us to the last way of resolving the problem of excessive leverage: some type of default – e.g., via foreclosure and the seizure and sale of collateral (as occurs in mortgage markets); restructuring and forgiveness (the classic bankruptcy court approach); the "Brady Bond" exchange offer approach that was used in Latin America sovereign workouts thirty years ago, outright liquidation (as Borders is currently undertaking), or debt/equity swaps and other types of recapitalizations. Having been a workout professional for many years, I admit to a preference for these latter "default and restructuring" type solutions, which have the virtue of quickly resolving the problems at hand. As we saw in Japan in the early 1990s, there is a high cost associated with prolonging the uncertainty that leverage crises bring; a relatively quick and thorough default process is usually the fastest route to renewed growth. Unfortunately, governments around the world seem extremely reluctant to pursue this course, whether in the U.S. home mortgage market, peripheral Eurozone sovereign debt markets (such as Greece), or, as increasingly seems to be the case, commercial and property lending in China.

Challenge Two: How to Increase and Rebalance Aggregate Demand?

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- We'll start our discussion of this issue with one of our favorite analytical tools: The Economic Balance Equation, which is based on a fundamental macroeconomic accounting identity: Over any period of time, the Private Sector Balance (GDP less Private Consumption less Private Investment) plus the Public Sector Balance (Government Spending less Taxes) by definition must equal the External (or Current Account) Balance (essentially, exports of goods and services less imports). There are a few key points to keep in mind about this equation. First, it measures flows – that is, economic activity that occurs over a given period of time, such as a calendar year. Second, while the equation must always balance, it does not directly tell us how changes in its components over time will affect the level of output – that is, GDP growth. For example, a sharp reduction in private consumption and investment spending in a recession would, all else being equal, cause GDP to fall, even as the private balance as a percentage of GDP changed from a deficit to a surplus (as happened in the US between 2007 and 2008). To offset this fall in GDP, the government might increase its spending and the size of its deficit, and also take steps to increase exports and improve the current account balance, in order to reduce the size of the government deficit needed to offset the change on the private sector balance.
- Third, the counterpart to a surplus or deficit on any of the balances is the creation of financial claims – e.g., a deficit on the Public Sector Balance represents the issuance of government debt. Similarly, a surplus on the Private Sector Balance or Current Account Balance represents those sectors net purchase of claims issued by the Public Sector. Fourth, and perhaps most critically, this equation does NOT capture the size of the stock of claims that exist at any point in time. As we frequently wrote in the early to mid 2000s, we could see that, by consistently running deep deficits on the Private Sector and Current Account Balances, the United States was hastening the day when the counterparties holding those claims would say "enough!" In the case of claims on private sector issuers, we reached that point in 2008, with disastrous results. However, in the case of claims on the U.S. federal government we have yet to reach this day of reckoning, thanks to the continued indulgence of foreign central banks and other state entities, as well as private investors seeking a safe home for capital fleeing rising risk in other asset classes.

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- The Economic Balance Equation, viewed as a time series, provides an excellent perspective on the dynamics of the world's macroeconomy over the past five years. The following table is based on data from the IMF's World Economic Outlook Database. All balances have been rescaled to a common basis – a percentage of global GDP. As you can see, the table tells a consistent global story of sharp change in private sector balances as a result of the 2008 crash, which governments attempted to offset with greater deficit spending (e.g., in the United States in 2Q 2011, transfer payments from government to households accounted for 18.1% of personal income, up from 12.7% in 2000).
- However, the less well-known, but equally important story is the evolution of current account balances. As you can see in the following table, in Asian countries, in aggregate (including China, Japan, the Asian "Newly Industrialized Countries" of Hong Kong, South Korea, Singapore and Taiwan, and the "ASEAN-5 Countries" of Indonesia, Malaysia, Thailand, Philippines, and Vietnam), the current account balance has remained in rude health over the past five years. The counterparts of this were (a) the continued accumulation by these nations of financial claims on nations running current account deficits; (b) the shift in the composition of these claims from private sector to public sector borrowers, as the public balances went into greater deficit, while private balances went into surplus; and (c) the effective transfer of demand creation generated by these public sector deficits from the nations in which they were run to the economies of the Asian exporters. To some extent this latter effect reflected reduced production capacity for many goods outside of Asia, following 15 years of global supply chain integration in the search for further cost savings. However, it also reflected the "dollar peg" exchange rate policies followed by many Asian nations, which limited changes in exchange rates that would have normally occurred in response to changing macroeconomic conditions.
- Put differently, in the world before 2008, global aggregate demand was significantly driven by an unsustainable combination of debt financed private consumption in the United States (and to a lesser extent, other Anglosphere countries) and exports and investment spending in Asia. Since 2008, the deficit on the U.S. private sector balance has swung into surplus, and been replaced by debt-financed deficits in the public sector balance, with minimal change in Asian current account balances and investment spending. But as the economist Herbert Stein famously put it, "if something cannot go

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on forever, it will stop." At some point, there will be a limit on other parties willingness to accumulate more financial claims on the U.S. government (and, indirectly, taxpayers), just as there was on their willingness to continue accumulating claims on the private sector (e.g., bonds backed by dodgy mortgages).

- Another current account story you can see in the following table is the strength of the current account balances of major energy exporters in the Middle East and Russia. As previously noted, China in particular reacted to the 2008 crisis by sharply increasing credit growth and investment spending, which in turn raised a wide range of commodity prices, including energy. In addition to this cyclical effect, there were also structural factors at work, including increased consumption of various commodities triggered by higher levels of development in Asia (e.g., oil, wood, some type of food), and normal delays in the response of supply to an increase in commodity demand (as well as the rising marginal cost of producing additional supplies of some commodities). Again, however, from the point of view of global aggregate demand, this represented a further transfer of the benefits of increased government spending in current account deficit countries to producers in countries that continued to run current account surpluses.

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		2007	2008	2009	2010	2011
Global GDP (Billion 2007 US Dollars)		$ 55,702	$ 56,590	$ 55,404	$ 57,590	$ 59,614
-- Percent change in Real GDP		*3.94*	*1.59*	*-2.10*	*3.95*	*3.52*
Australia						
-- Share of Global GDP		*1.19*	*1.19*	*1.21*	*1.19*	*1.18*
-- Percent change in Real GDP		*4.59*	*2.59*	*1.33*	*2.75*	*2.97*
-- Private Sector Balance (pct Global GDP)		(0.09)	(0.05)	(0.00)	0.02	0.03
-- Public Sector Balance		0.02	(0.01)	(0.05)	(0.06)	(0.03)
-- Current Acct Balance		(0.07)	(0.05)	(0.05)	(0.03)	(0.00)
Canada						
-- Share of Global GDP		*1.90*	*1.86*	*1.82*	*1.80*	*1.77*
-- Percent change in Real GDP		*2.20*	*0.52*	*-2.46*	*3.07*	*2.75*
-- Private Sector Balance (pct Global GDP)		(0.01)	0.01	0.05	0.04	0.03
-- Public Sector Balance		0.03	0.00	(0.10)	(0.10)	(0.08)
-- Current Acct Balance		0.02	0.01	(0.05)	(0.06)	(0.05)
China						
-- Share of Global GDP		*11.00*	*11.74*	*12.90*	*13.61*	*14.32*
-- Percent change in Real GDP		*14.20*	*9.60*	*9.20*	*10.30*	*9.59*
-- Private Sector Balance (pct Global GDP)		1.07	1.18	1.17	1.06	1.04
-- Public Sector Balance		0.10	(0.05)	(0.40)	(0.35)	(0.23)
-- Current Acct Balance		1.17	1.13	0.77	0.71	0.82
ASEAN-5 Plus Asian NICs						
-- Share of Global GDP		*7.19*	*7.21*	*7.29*	*7.47*	*7.52*
-- Percent change in Real GDP		*6.05*	*2.88*	*0.14*	*7.79*	*5.11*
-- Private Sector Balance (pct Global GDP)		0.69	0.55	1.33	0.87	0.76
-- Public Sector Balance		0.20	0.01	(0.34)	(0.08)	(0.08)
-- Current Acct Balance		0.89	0.56	1.00	0.79	0.68
Eurozone						
-- Share of Global GDP		*19.03*	*17.76*	*18.18*	*17.19*	*16.19*
-- Percent change in Real GDP		*2.86*	*0.45*	*-4.08*	*1.74*	*1.63*
-- Private Sector Balance (pct Global GDP)		0.17	0.24	1.11	1.06	0.72
-- Public Sector Balance		(0.12)	(0.35)	(1.14)	(1.04)	(0.71)
-- Current Acct Balance		0.05	(0.11)	(0.03)	0.02	0.00
India						
-- Share of Global GDP		*4.68*	*4.84*	*5.16*	*5.40*	*5.62*
-- Percent change in Real GDP		*9.88*	*6.18*	*6.76*	*10.37*	*8.24*
-- Private Sector Balance (pct Global GDP)		0.15	0.28	0.34	0.31	0.25
-- Public Sector Balance		(0.19)	(0.38)	(0.48)	(0.48)	(0.45)
-- Current Acct Balance		(0.03)	(0.10)	(0.15)	(0.17)	(0.21)
Japan						
-- Share of Global GDP		*6.45*	*6.20*	*5.92*	*5.82*	*5.67*
-- Percent change in Real GDP		*2.36*	*-1.17*	*-6.29*	*3.94*	*1.40*
-- Private Sector Balance (pct Global GDP)		0.46	0.46	0.78	0.76	0.70
-- Public Sector Balance		(0.15)	(0.26)	(0.61)	(0.55)	(0.57)
-- Current Acct Balance		0.31	0.20	0.17	0.21	0.13
Middle East						
-- Share of Global GDP		*4.76*	*4.86*	*4.99*	*4.97*	*5.01*
-- Percent change in Real GDP		*6.16*	*5.12*	*1.78*	*3.76*	*4.07*
-- Private Sector Balance (pct Global GDP)		0.20	0.08	0.19	0.21	0.36
-- Public Sector Balance		0.49	0.64	(0.07)	0.11	0.29
-- Current Acct Balance		0.68	0.72	0.12	0.32	0.65

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		2007	2008	2009	2010	2011
Switzerland						
-- Share of Global GDP		*0.46*	*0.45*	*0.45*	*0.44*	*0.43*
-- Percent change in Real GDP		*3.65*	*1.90*	*-1.91*	*2.55*	*2.36*
-- Private Sector Balance (pct Global GDP)		0.03	0.00	0.05	0.06	0.06
-- Public Sector Balance		0.01	0.01	0.00	0.00	0.00
-- Current Acct Balance		0.04	0.01	0.05	0.06	0.06
United Kingdom						
-- Share of Global GDP		*3.25*	*3.16*	*3.03*	*2.94*	*2.88*
-- Percent change in Real GDP		*2.69*	*-0.07*	*-4.88*	*1.25*	*1.66*
-- Private Sector Balance (pct Global GDP)		0.00	0.10	0.26	0.23	0.18
-- Public Sector Balance		(0.09)	(0.15)	(0.31)	(0.31)	(0.25)
-- Current Acct Balance		(0.08)	(0.05)	(0.05)	(0.07)	(0.07)
United States						
-- Share of Global GDP		*21.08*	*20.52*	*20.14*	*19.74*	*19.38*
-- Percent change in Real GDP						
-- Private Sector Balance (pct Global GDP)		(0.50)	0.37	2.01	1.46	1.46
-- Public Sector Balance		(0.58)	(1.33)	(2.55)	(2.09)	(2.09)
-- Current Acct Balance		(1.08)	(0.96)	(0.54)	(0.63)	(0.63)
Brazil						
-- Share of Global GDP		*2.79*	*2.85*	*2.87*	*2.94*	*2.94*
-- Percent change in Real GDP		*6.09*	*5.16*	*-0.65*	*7.49*	*4.46*
-- Private Sector Balance (pct Global GDP)		0.08	(0.01)	0.05	0.02	(0.01)
-- Public Sector Balance		(0.08)	(0.04)	(0.09)	(0.09)	(0.07)
-- Current Acct Balance		0.00	(0.05)	(0.04)	(0.07)	(0.08)
Russia						
-- Share of Global GDP		*3.17*	*3.25*	*3.02*	*3.00*	*3.00*
-- Percent change in Real GDP		*8.54*	*5.23*	*-7.80*	*3.96*	*4.83*
-- Private Sector Balance (pct Global GDP)		(0.03)	0.04	0.31	0.25	0.21
-- Public Sector Balance		0.21	0.16	(0.19)	(0.11)	(0.05)
-- Current Acct Balance		0.19	0.20	0.12	0.15	0.17

- By this point, the core problem facing the world economy should be increasingly clear: with leverage constraints already holding down private sector spending in many developed countries, with those same countries rapidly approaching leverage constraints on their public sector deficits, and with Asia still heavily dependent on exports, the world faces a growing demand shortage, and an increasingly intense fight over this shrinking pie.
- More ominously, this weakness in global aggregate demand has continued to persist even after many governments have delivered very large amounts of fiscal and monetary stimulus to the global economy, leaving them with fewer resources with which they can respond to another global downturn (e.g., as could be triggered by a worsening sovereign debt and banking crisis in Europe). This evidence strongly implies that there are strong structural factors at work in the global economy that remain unaddressed and continue to produce strong headwinds.

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- The most obvious structural factor is excess leverage, in the household and increasingly in the public sector, which we have already discussed. But there are others as well. Some of these were noted by Tyler Cowen in his summer e-book sensation, The Great Stagnation. His main thesis that the "low hanging fruit" that previously drove high levels of economic growth, including increasing levels of education and the impact of revolutionary technological innovations (e.g., electricity) had largely been picked, implying lower levels of real global GDP growth in future years. This trend would also be further reinforced by demographic changes in many developed countries, including slowing population growth and an ageing population. To be sure, Cowen's view finds support in the writings and research findings of other authors. For example, he cites the writings of Stanford's Charles I. Jones, who concludes that (a) "over the last 125 years, the average growth rate of per capita GDP in the U.S. economy has been a steady 1.8% per year, and that (b) faster growth in recent years has resulted rising educational attainment and research intensity – both of which are areas that exhibit declining marginal returns over time ("Sources of U.S. Economic Growth in a World of Ideas", and also "The New Kaldor Facts: Ideas, Institutions, Population, and Human Capital" by Jones and Romer, which extends his thesis to include the impact of population growth and the quality of institutions on growth rates). More recently, Robert J. Gordon, perhaps the world's leading expert on productivity growth, has published a new paper assessing the sources of productivity growth since 1891, and forecasting its likely course over the next twenty years ("Revisiting U.S. Productivity Growth Over the Past Century with a View of the Future"). He estimates that growth in real per capita U.S. GDP over this period will be below its long-term average, at 1.5% per year, due to declines in productivity growth, which have their roots in the factors cited by Jones.
- Another set of structural headwinds exist in the labor market, where technological change and globalization have eliminated many jobs while facilitating the outsourcing of others to nations where they can be performed at a lower price. Perhaps the best analysis of this trend has been done by MIT's David Autor (see, for example, "Skills, Tasks, and Technologies: Implications for Employment and Earnings" with Daron Acemoglu, "The Polarization of Job Opportunities in the U.S. Labor Market", and "U.S. Labor Market Challenges over the Longer Term"). Autor begins by defining jobs in terms of tasks that require certain skills to perform. He then shows how technology

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have evolved to the point that it can perform certain tasks more cost-effectively than can a skilled human (note that he does not, unfortunately, discuss how algorithms have displaced human beings on trading desks and the floors of stock exchanges). Finally, he also shows how globalization and technology have combined to enable the outsourcing of more tasks to people located around the world. This has led to the by now familiar "two tier" job market that has driven worsening income inequality around the world: (1) a top tier of educated workers whose skills are complemented by new technology and who can now at much lower cost earn high incomes by serving a global market in which they are in high demand; and (2) a bottom tier of workers whose tasks cannot be outsourced globally nor replaced by technology, but also for whose productivity (and wage) growth has lagged far behind their globally competitive peers.

- Another paper ("The Evolving Structure of the American Economy and the Employment Challenge") examines "trends in employment, value added, and value added per employee" in the United States from 1990 to 2008. The authors highlight how virtually all the growth in employment over this period was in the non-tradable side of the economy, particularly in construction (which has since severely declined), government and health care. The authors conclude that "the evolution of the U.S. economy supports the notion of there being a long-term structural challenge with respect to the quantity and quality of employment opportunities in the United States. A related set of challenges concerns the income distribution; almost all the incremental employment growth has occurred in the nontradable sector, which has experience much slower growth in value added per employee…which goes a long way to explain the stagnation of wages across large segments of the workforce."
- The obvious solution to this problem of insufficient global aggregate demand is to increase domestic demand, and particularly private consumption spending, in developing nations that have heretofore relied heavily for demand generation on exports and investment spending to support them. As Stephen Roach recently wrote in the 15 June 2011 Financial Times ("Zombie Consumers Lead U.S. Into Lost Decade"), "There are important implications for the global economy. A protracted shortfall in the world's largest consumer economy [USA], as well as weakness in Japan and debt-ravaged Europe spells lasting pressure on external demand for export led economies. Barring a quick rebalancing towards internal demand, so-called growth miracles in the developing world could be in for a rude awakening."

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- The poster child for this change is, of course, China, with multiple analysts highlighting the potential benefits that would accrue to the world economy if China reduced exports and increased consumption (i.e., reduced the size of the private sector and current account surpluses, or moved them into deficits) spending, while the U.S. and Europe increased exports and domestic private investment (which would allow the reduction of deficits on the public sector balance). Unfortunately, and is often the case in life, this strategy is far easier to describe than it is to implement. To begin with, as Michael Pettis, Andy Xie and other analysts have pointed out, no major change is likely to happen in advance of the change in the Chinese leadership in 2012, unless it is forced upon the current leadership. Their great fear, which was undoubtedly intensified by the "Arab Spring" uprisings, has been that any attempt to shift from the current investment/export orientation to one focused on higher consumer spending would generate a politically destabilizing rise in unemployment (which could be the tipping point in a nation where a growing number of people are already highly frustrated by corruption, environmental problems, and rising inequality). In addition, within the Chinese leadership, there is a close balance of power between those who favor continuation of the current system, and those who favor a shift to higher domestic consumption. Finally, if China experiences a sudden increase in bad debts, it will likely have to repeat the process of financial repression (forced transfers of income from consumers to banks and government) it used a decade ago to work out the consequences of a similar increase in non-performing loans. Such repression would leave households with fewer resources to increase their spending on consumption.
- Elsewhere in the developing world, potential increases in domestic consumption spending face a problem we have repeatedly raised over the past 15 years: the relative weakness of political, judicial, and financial institutions in these countries. In our experience, there is a vast difference between strong consumption spending that is based on a commodity export boom and rising imports of consumer goods, and one that is based on a self-sustaining increase in domestic investment and consumption. More specifically, the latter critically depends on producers' and investors' confidence in the fairness and long-term stability of the institutional environment (which over the centuries proved to be perhaps the Anglosphere's ultimate competitive advantage). In too many cases, we do not see strong evidence that such an environment is present today, which implies that, should the current commodity boom weaken, so too will

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domestic demand growth in many developing countries. For an excellent recent paper on this point, see "The Future of Economic Convergence" by Dani Rodrik (which was presented at the Federal Reserve's Jackson Hole Conference this summer).

Challenge Three: How to Avoid Debt Deflation?

- We currently face a unique situation, with evidence supporting the threat of both deflation and inflation.
- Deflation is traditionally (and certainly by central bankers) thought to be the more dangerous of the two, as policymakers have much more confidence in their ability to control inflation compared to deflation. However, as we have noted in the past, not all deflationary episodes are created equal. Sometimes falling prices simply result from dramatic increases in productivity – think of the price of a 2 terabyte storage drive today compared to five years ago. In this case, falling prices are actually a very positive indicator, as they enable people to either reduce the cost of a given level of satisfaction, or potentially increase their satisfaction for the same cost (e.g., think about how much computing capability $2,000 can purchase today compared to five years ago, or, how much the economy benefited in terms of effective cost per Btu of energy from the shifts over time from wood to coal to oil and gas).
- On the other hand, as the economist Irving Fisher noted, deflation can be very damaging when it results from the collapse of an over-indebted economy, with large amounts of assets being offered at fire sale prices to repay creditors. We need look no further than the ongoing aftermath of the bursting of America's mortgage and housing bubbles to see what Fisher meant. Or, to cite another example, look at what happened in financial markets when the collapsing value of certain mortgage related securities forced institutional investors to meet increased collateral calls as the assets supporting their borrowing declined in value. It was not the lowest quality assets that were sold, as there were few if any buyers for them. Instead, it was the most liquid assets, including large equities and government bonds that were sold into falling markets in order to meet collateral calls. And even in these cases, uncertainty about the volume of collateral call driven sales caused buyers to pull back from these markets, reducing liquidity, worsening the imbalance in supply and demand, and causing prices to fall even more quickly. Via this mechanism, problems in mortgage markets quickly affected other asset classes and via worsening liquidity began to jeopardize the survival of

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many financial institutions. Under these circumstances, the logic of the Troubled Asset Relief Program and expanded Federal Reserve operations in the bond market, to say nothing of recent actions by the European Central Bank becomes clear – they were aimed at heading off a rapidly worsening debt deflation (or "liquidation" as classical economists sometimes called it).

- The actions of China over the past decade (aided and abetted by complacent policymakers and regulators in the developed world) have generated both types of deflationary pressures in the world today. On the good side, the expansion of global supply chains to China over the past decade has certainly led to falling prices for a range of goods, that has enabled citizens of developed nations to enjoy rising standards of living (and politicians a good measure of social peace) even in the face of a decade of relatively stagnant real wages. On the bad side, however, the shift of a significant portion of the global manufacturing base to China was also due to the deliberate undervaluation of the Yuan versus developed country currencies.
- From the perspective of a business producing in the west, China's policy left them with three choices. First, find enough productivity improvements/cost reductions to allow the company to cut prices to remain competitive with imports from China while still generating acceptable shareholder returns. For a number of years, this is just what happened (anybody remember the "reengineering era", back in the 1990s?). Second, a company could raise funds in Yuan, so that falling financing costs would allow for the necessary price reductions. Unfortunately, by limiting access to its capital market, China effectively closed off this option. Third, move production to China, or another low cost center in Asia. When China entered the World Trade Organization, and when the rapid falls in information technology costs made this option viable, many companies pursued this course of action, as incremental cost reductions in their domestic operations became harder and harder to achieve, while productivity improvements in China (as more companies moved there and knowledge diffused) continued to increase the competitiveness of Chinese exports. Of course, this option was not without its downside, as many companies who have seen their intellectual property stolen, their margins eroded by a range of unforeseen costs (e.g., the high cost of corruption), and now their labor costs increasing due to a changing supply/demand balance for labor have learned the hard way. But as many managers who took these decisions will tell you, they really had little choice – especially when U.S. courts (and

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institutional investors) have made clear that for U.S. managers, delivering high shareholder returns is their primary goal.

- At the macro level, China's exchange rate policy has had two effects. First, it generated a very high current account surplus in China, the counterpart of which was China's accumulation of financial claims on the west, where interest rates were artificially low and a credit boom ensued, with loans outstanding sharply rising in relation to income (i.e., relative to the ability to repay them). Second, inside China, the undervaluation of the exchange rate led to excess investment in export capacity that would not be economically competitive but for the undervalued exchange rate. The counterpart to this has been an increase in loans whose repayment is tied to assets that, should the exchange rate rise, will undoubtedly fall in value. Moreover, this rise in investment also necessitated the repression of growth in domestic consumption spending. And all this happened before the Chinese government supercharged this credit and investment expansion process in the wake of the 2008 crisis. The net result has been a rolling series of debt deflation episodes, first in the U.S. housing market, now in the Eurozone's sovereign debt and banking system, and one day, inevitably, in China. In fact, the latter may already have begun. With inflation rising to levels that are perceived to raise the risk of social unrest, the Peoples Bank of China (the central bank) has begun to raise interest rates, which has led to increased reports of credit problems, particularly among small and medium privately owned enterprises which have had to rely more heavily on the unregulated non-bank credit market.
- As previously noted, the U.S. Federal Reserve has rapidly increased the monetary base in an attempt to limit the effects of debt deflation in the United States. However, the deliberate reduction in bond yields along the maturity spectrum by the U.S. Federal Reserve also served other policy purposes. Lower interest rates would, it was hoped, promote renewed buyer interest in housing markets, while limiting the pressure on borrowers who held floating rate loans. At the same time, lowered interest rates would help to avoid a collapse in equity prices by reducing the rate at which future cash flows to shareholders were discounted by investors. Lower interest rates would also generate increased flow into higher risk/higher return assets like emerging markets bonds and equities. The resulting inflow of U.S. dollars into these assets would in turn force either exchange rate appreciation in these nations, or, if local governments increased the money supply in order to buy dollars and thereby maintain the local

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currency/USD exchange rate, then the result would be an increase in the local rate of inflation (assuming the sale of local currency was imperfectly sterilized via offsetting sales of local currency government bonds, our of a desire to avoid increasing local interest rates). In either case, the real effective exchange rate (i.e., the exchange rate adjusted for the difference in domestic inflation rates) would appreciate versus the dollar, which would make U.S. exports more competitive, and foreign exports less competitive, and thereby help to reduce the U.S. current account deficit (and thus the size of the public sector deficit needed to offset the shift of the private sector balance from deficit to surplus).

- The unique and confusing circumstances we face today – with aspects of health "productivity-based" deflation, unhealthy debt deflation, and inflation (whether due to rising commodity prices or increases in money supply growth in emerging markets) – are reflected in asset class returns. On the one hand, rising prices for government bonds (and falling yields) likely reflect a combination of central bank policy (to hold down yields), rising uncertainty (and therefore an increased desire to hold a higher proportion of a portfolio in the most liquid assets, as evidenced by the widening spread between yields on government and AAA corporate bonds), and increasing concern about deflation (given rising doubts about prolonged austerity, growth, and inflation as means to address the excess leverage problem, and therefore a rising probability of rising defaults and collateral/asset liquidations).
- On the other hand, there is the prolonged increase in the price of gold, which logically reflects some combination of (a) rising fear of inflation; (b) increasing doubts about the creditworthiness of government bonds; and (c) purchases by momentum traders.
- On balance, given the relatively short weighted average maturity of most developed nations' government debt (in the US it is only around four years), not to mention the sensitivity of bond market investors, it strikes us that the fear of prolonged inflation hypothesis is likely overblown, at least in the absence of other policies (again, see "The Liquidation of Government Debt" by Reinhart and Sbrancia on the range of "financial repression" policies that would also be needed in order for an "inflate away the debt" approach to succeed). Instead, we believe that most of the rise in the gold price has been driven by investors who are attempting to hedge their increasing uncertainty about the creditworthiness and/or liquidity (and especially cross-border liquidity) of government bonds, and the actions of momentum traders. A further piece of evidence

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that supports this view is the slight difference in pricing that has appeared between those gold ETFs that can be physically redeemed (e.g., JBGOUA.SW) and those that cannot (e.g., GLD).

- In sum, we believe that the underlying forces of deflation at work in the world today – of both the healthy, productivity driven and unhealthy debt driven variety – are stronger than the inflationary forces. The latter are a function of (a) demand for certain commodities, which in turn depends on continued strong growth in developing markets that remain export focused and therefore at risk of a downturn in the U.S. and other developed markets, and (b) the consequences of the current monetary policies being pursued by different central banks in order to retain or increase their shares of weakening global aggregate demand.

Challenge Four: How to Maintain the Legitimacy of Political Institutions?

- In an excellent post on his website (www.moisesnaim.com), Moises Naim recently forecast that "the main cause of coming conflicts will not be clashes between civilizations, but the anger generated by unfulfilled expectations of a middle class, which is declining in rich countries and booming in poor countries…both feed social and political instability…Governments in the poorer countries are under enormous pressure to meet the booming demands of the new middle class, while those of the richer nations are struggling to contain the fall in living standards of the existing bourgeoisie…Frustrations due to the unsatisfied aspirations of the middle class in China and Brazil are just as politically explosive as the anger of the middle class over the new economic insecurity in [developed countries]."
- The root causes of this latter challenge lie in the substantial erosion in recent years of the sense of security – broadly defined – that developed country middle class families once enjoyed. Arguable, because of the structure of its political economy, this change has been felt most strongly in the United States, across a range of critical areas:
    - *Employment and Household Income*: The aforementioned structural changes in labor markets have sharply increased employment and income variability for many households, and in particular those with two earners in the labor force (see, for example, "Household Income Uncertainties Over Three Decades" by Feigenbaum and Li of the U.S. Federal Reserve, and High Wire by Peter Gosselin. And for many middle class households, this change has been made

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more difficult to bear by worsening inequality, and the more visible existence of an upper class whose source of wealth (often from financial services of various types) is viewed as questionable, and apparently growing distance from and lack of concern with the struggles of the middle class is a growing source of frustration and anger (see, "Can the Middle Class Be Saved?" by Don Peck in the September 2011 edition of *The Atlantic*).

- *Education*: At a time when parents are acutely conscious of the importance of education to their children's future economic success and security, there is great dissatisfaction with K-12 education (and with the teachers unions' strident resistance to attempts to improve it), while the cost of higher education has increased for thirty years at a rate higher than inflation, putting university and graduate degrees increasingly out of reach for more and more families.
- *Retirement Income*: Retirements savings of all forms have been drained by unemployment, poor market performance, rising education costs, and the collapse of housing prices. Meanwhile, no progress has been made on putting Social Security on more solid financial footing.
- *Health Care*: The Obama Administration's attempts to address the Gordian Knot of access to healthcare and its cost and quality ended in a morass of policy confusion (just ask the average American to explain what was enacted into law) and political bitterness. As a result, America remains a nation where you have secure access to government financed care if you are poor, aged, or work for the government, but not if you are middle class and working in the private sector.
- *Physical Security*: About the only bright spot over the past decade has been the success by intelligence, military, and police forces in preventing further domestic terror attacks after 9/11/2001. However, we continue to live with its threat, much as we did the threat of nuclear attack during the worst years of the Cold War. More recently, however, as frustrations with prolonged austerity have led to riots in Greece, and as London exploded into riots whose causes still leave most Americans perplexed, a new underlying source of worry about physical security has entered Americans' consciousness (see, for example, "The U.K. Riots and the Coming Global Class War" by Joel Kotkin; and "The

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Intifada of the Underclass" by Danny Kruger in the 9August2011 *Financial Times*).

- *Values*: A final source of middle class insecurity is creeping sense of social malaise, that results from the cumulative impact of many changes in American life. Consider some recent papers that capture various aspects of this issue: In "What's Happening to Men", Kay Hymowitz describes how, at the same time that women's academic achievements continue to advance, men's are going the other way, with disastrous consequences for their economic achievement and social relationships. As *The Economist* recently noted in its 25June2011 issue, "the traditional family is now the preserve of a minority…traditional marriage has evolved from a near-universal rite to a luxury for the educated and affluent…less marriage means less income and more poverty", and worsening inequality ("For Richer for Smarter"). In "Broken Families, Broken Economy", Mitch Pearlstein elaborates on the latter point, highlighting the very heavy social and economic cost of declining marriage rates and a rising percentage of children raised in single parent families. And in her 13August2011 *Wall Street Journal* column, "Apres le Deluge, What?" Peggy Noonan writes, "Where does this leave us? In a hard place, knowing in our guts a lot of troubled kids are coming up, and not knowing what to do about it." Finally, in "No Money, No Honey, No Church", Wilcox, Cherlin, Uecker and Messel detail the declining religious participation of the white working class (as do Putnam and Campbell in their recent book American Grace. The *Financial Times* presented a similar analysis of decline in Matthew Engle's 29July2011 article on "British Institutions: The Church of England").

- Ultimately, as Naim notes, the rising challenge to the legitimacy of many political institutions has been caused not by the declining security of the middle class, but rather by the abject, and too often cynical failure of today's political leaders to effectively address and reverse the causes of that decline.
- In their excellent paper "Constraints on Leadership in Washington", the Brookings Institution's Sarah Binder and Thomas Mann provide an excellent analysis of the multiple root causes of the current political paralysis. They divide them into electoral and institutional causes. In the first category, the authors include widening policy differences between the major parties on key issues, and, more importantly, a sharp

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increase in polarization and partisanship, driven by a range of forces, including (1) improvements in communications and marketing technology (e.g., microsegmenting and message targeting, as well as the growing body of research that finds that the internet, rather than expanding the range of opinions and news which people regularly access, has tended to narrow it down to sources that reflect their pre-existing views); (2) the cumulative effect of decades of interest group politics, which has led to gridlock on many issues (which is essentially the argument put forward in 1982 by Mancur Olson in his great book, The Rise and Decline of Nations); and (3) the increasing separation of Americans into like minded communities (for more on this, see the book, The Big Sort: Why The Clustering of Like Minded America is Tearing Us Apart by Cushing and Bishop, and before that, Bowling Alone by Robert Putnam). One effect of this change has been the elimination of many "centrist" legislators – both conservative Democrats and liberal Republicans are high on the endangered species list, with their moderate colleagues not far behind. It is therefore no surprise that the number of voters registering as Independent has skyrocketed in recent years. The authors note that "polarization seems to be making legislative brinkmanship a recurring practice – diminishing, we suspect, Congress's legislative capacity and the country's ability to govern itself responsibly." In the category of institutional causes, the authors note how "the excesses of majority party rule in the House of Representatives [where extreme partisanship has effectively blocked compromise on a range of issues] are matched in reverse by excessive minority party rights in the Senate [where 60 vote supermajorities are now effectively required to avoid filibusters and pass legislation]."

- In our view, these trends have produced four dangerous results in the United States. The first is widespread ignorance and naïvete about the difficult economic tradeoffs the nation is facing, particularly when it comes to restoring economic growth and getting the nation's federal and state budget deficit under control. Too many Americans continue to demand higher government spending on their favored programs, and lower taxes. The second dangerous result is policy gridlock, on critical issues ranging from control of deficits to improving K-12 education to immigration to resolving unsustainable pension and post-retirement health care promises that have been made to too many public sector employees (see, for example, Michael Lind's excellent column in the 22 August 2011 *Financial Times* on "The Intellectual Collapse of Left and Right"). The third dangerous result is painfully evident in the results of Gallup and

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other pollster's reports of American's confidence in the nation's institutions – in most cases this confidence is at an all time low. The exception is the military, in which confidence is close to all time highs.

- Of course, the growing crisis of political legitimacy isn't limited just to the United States. The Arab Spring has provided new examples that support Naim's thesis of the danger posed by a frustrated middle class in emerging markets. And while the Chinese Communist Party has cracked down hard to reduce the risk of a "Jasmine Revolution" in that country, there is plenty of evidence that middle class frustrations are growing there too (see, for example, press reports about the widespread outpouring of frustration in the aftermath of the Chinese high speed rail crash, or about the growing frustration of the large number of Chinese university graduates who are now struggling to find jobs commensurate with their education). However, the most vivid crises of political legitimacy in the world today are probably taking place in Europe, where, on the one hand, the prospect of prolonged austerity has provoked repeated outbursts of political action (and in some cases, political violence) in Greece, while on the other hand, the institutions of the European Union seem ill equipped to stop the growing sovereign default crisis that threatens to create a new financial crisis and split the Eurozone apart.
- Far more than was the case a year ago when we last wrote about it in depth, the crisis of political legitimacy is increasingly recognized today. For example, in his 3August 2011 *Financial Times* column on "The Coming Crisis of Governments", Robert Barro writes that "the global crises of financial and housing markets are now being superseded by new crises of governments…Without action, this new crisis of state competence could soon become just as damaging as its recent financial predecessor." On 9 August 2011, George Friedman published similar thoughts on Stratfor.com. In "Global Economic Downturn: A Crisis of Political Economy", he begins by noting that "for classical economists, it was impossible to understand politics without economics, or economics without politics…The current crisis is best understood as a crisis of political economy… enveloping the United States, Europe and China, that has different details but one overriding theme: the relationship between the political order and economic life…Think of a national system as a series of subsystems – political, economic, military and so on [each with their own elite]…There is a political crisis over the way the political elite managed the global financial crisis and its aftermath…It is this

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political crisis that is the most dangerous, because as the political elite weakens it loses the ability to manage and control the other elites…It is vital to understand that this is not an ideological challenge. Left-wingers opposing globalization and right-wingers opposing immigration are engaged in the same process – challenging the legitimacy of the elites. Nor is it simply a class issue. The challenge emanates from many areas…The real problem is that, while the challenge to the elites goes on, the profound differences in the challengers make an alternative political elite difficult to imagine…In the United States, this would lead to paralysis. In Europe, it would lead to a devolution to the nation state. In China it would lead to regional fragmentation and conflict."

- On 16 August 2011, George Magnus also wrote about this crisis, in a research note for UBS ("The Convulsions of Political Economy"). As he notes, "during the last several months, we have seen a succession of … challenges to the power, authority and legitimacy of the existing political and economic order in the Eurozone, U.S. and even, in embryonic form, in China. The recent skittishness in financial markets and increase in risk premiums reflect not only a rise in anxiety about the deteriorating health of the global economy, but the draining of confidence that political elites are up to the task of addressing it."

Is There Any Good News?

- The picture painted by our discussion of the four challenges/Gordian Knot facing the world political economy today is admittedly a grim one. Yet there are also causes for hope.
- Seen from the perspective of complex adaptive systems theory, Tyler Cowen's conclusion (in The Great Stagnation) that the low hanging fruit of economic growth has been picked in the developed world is correct as far as it goes; however there is more to the story that he fails to mention. Think about economic progress as a process of searching for and climbing the highest peak on a rugged landscape. When starting in a valley, heading off in any direction will produce, with minimal effort, an increase in altitude. However, as you climb further up a peak, incremental progress gets harder with each increment in altitude. Moreover, as anyone who has climbed mountains can attest, it is often the case that you can reach a peak and only as you near the top

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obtain a sufficiently clear view to realize that there are others a bit further off that are higher than the one you are on. That is why complex adaptive systems theory describes the search for higher fitness functions (i.e., the higher peaks, or faster growth in GDP) as a combination of "hill climbing" (which Cowen accurately described) and "long jumps", in which you sometimes need to head back down off one peak (i.e., suffer some short term performance decline) in order to start climbing up one that is higher.

- Here is an excellent example of what we mean: Shortly after his election in 1992 (after a campaign that was famously summed up by James Carville's quote that "It's the economy, stupid"), Bill Clinton held a conference of experts in Little Rock to assess different ideas for moving the U.S. economy out of its prolonged slump. In the volumes of briefing books that were prepared for that meeting, the word "internet" appeared only once or twice. The point is this: economic history teaches us that "long jumps" that generate prolonged increases in growth rates occur with some regularity; however, it also teaches us that, as emergent phenomena, they are notoriously difficult to predict in advance.
- That said, another body of research (on surprise attack) teaches us that so-called "weak signals" are usually present that provide an indication of the substantial changes that are the horizon. Moreover, as Snowden, Klein, Chew and Teh show, these weak signals are usually perceived by some members of a group ("A Sensemaking Experiment: Techniques to Achieve Cognitive Precision"). However, in the authors' study, "no team took these early signs seriously. Usually, they weren't mentioned at all [by the people who noticed them]. If mentioned, they were dismissed…and the groups did not act on them." So another aspect of the good news story is that hints about long-jumps that lie ahead should already be present in our environment.
- We have two candidates for what these may be. Fundamental innovations in energy have historically been associated with step function changes in economic productivity – think of the changes that occurred as mankind shifted from widespread use of wood, to coal, and then to oil. There are plenty of signals today that we are on the verge of another such fundamental change. The cost of renewable energy sources of electricity has been falling at an accelerating rate, though grid control technologies (the so-called "Super Grid") still lag behind, and more breakthroughs are needed. More exciting, though less well known, is the increasing amount of resources that are being spent to

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develop bacteria-based fuels (e.g., genetically reengineering bacteria to produce liquids that can be processed into replacements for today's petroleum based transport fuel). While commercialization still seems far away, the key fact is that, as with all fundamental innovations, while progress appears slow it is being made at an exponentially accelerating rate.

- Our second candidate for a long-jump change lies in the tremendous potential to realize productivity increases in two sectors that consume very substantial shares of GDP in developed countries, yet thus far have largely escaped the types of improvements that have become routine over the past 20 years in the private sector: government (and especially education) and health care. In the United States, depending on the statistics used, education and health care consume as much as 25% of GDP today. Achieving just a 20% improvement in cost effectiveness would free up 5% of GDP – an enormous amount of resources.
- Turning to the political challenges we face, many commentators, such as Walter Russell Mead, Michael Barone, and Michael Lind, have noted that we are approaching the end of what Mead terms the "Blue State Model" of progressive politics that grew out of the New Deal, and was predicated on growing welfare states and the activities of large bureaucratic organizations, be they corporations, unions, or government. As Lind points out, the partisan positions of both parties in the United States – or at least their most vocal and politically active wings – seem increasingly out of step with the challenges facing the nation. Most voters recognize that the solution to our problems lies not in mindlessly cutting taxes, nor in mindlessly expanding the activities of government. Rather, as both Australia and Canada have already shown, what many will enthusiastically support, and what sufficiently focused political leaders can achieve, is a substantial increase in the value for money delivered by the state – i.e., improvements in effectiveness, efficiency and adaptability.
- The larger question is what will replace the "Blue State Model" and, just as important, a global aggregate demand model that for too long was based on increasingly leveraged U.S. consumers and Chinese producers, and more recently on increasingly leveraged Western governments. Lind's view is that, at least in the developed countries of the west, and especially in the United States, voters are more interested in a government that strikes a better balance between providing the middle class with individual opportunity and collective security (in all its forms). Mead has used the analogy of the

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wrenching political transition in the United States at the end of the 19th century from a family-farm based culture that was focused on savings, investment and production to an industrial culture that was focused on consumption spending and distribution. In his view, going forward entrepreneurial small businesses could replace the family farm as the centerpiece of a new culture of savings, investment and production. And virtually every commentator hopes that increased domestic consumption and investment spending in developing countries, and especially China, will provide the new driver of global aggregate demand.

- Finally, as we have noted in the past, the history of political economy provides many examples of a cycle of rising economic complexity, integration and globalization that outgrows the ability of existing political institutions to control its potential for excess, culminating in a sharp fall in economic activity and a fragmentation of the system into smaller units that can be better controlled by existing institutional structures. In complex adaptive system terms, this is called "patching", which is intended to renew the growth of a sluggish system by breaking it down into smaller, more adaptive units.
- It has long been our view that the current global system would inevitably reach this point, as happened at the turn of the 20th century, the last time the world economy was as integrated and political control as tenuous as it is today. Clearly, this process is underway in the Eurozone today, as that institutional arrangement moves towards either collapse or the expulsion of some countries from the single currency bloc. You can also see it globally in countries' rising use of different mechanisms (e.g., transaction taxes) intended to stem destabilizing international capital flows, and in the steps different nations have taken to limit uncontrolled cross-border labor migration. The key uncertainty in our mind is how long it will be before nations take the next logical step, and begin to more aggressively limit trade flows in order to increase domestic growth and employment. Our best estimate is that prolonged high unemployment in western nations (as will likely occur in the absence of greater domestic demand growth in China, and/or more widespread mortgage debt reduction in the United States), and growing populist resentment of the use of rising U.S. government deficits to preserve Chinese workers jobs will eventually bring about more widespread use of trade controls, and the evolution of the world economy into de-facto blocs.

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Alternate Scenarios and the Relative Evidence Against Them

- The purpose of our scenarios is not to predict what will occur; rather, it is to help investors prepare for a range of possible future events. Moreover, in assessing the likelihood that a scenario will or is developing, we again reiterate one of our favorite sayings on this critical subject, Richards Heuer's caution that "the most likely hypothesis is the one with the least evidence against it, not the one with the most evidence for it."
- Unfortunately, it is not hard today to identify different causal paths that would lead to a renewed downturn and crisis, with higher controls on the cross-border movement of capital and goods. For example, the inevitable default on Greece's sovereign debt could be mismanaged by the Eurozone authorities, leading to worsening sovereign debt crises in Italy and Spain, the shrinking of the Eurozone, and another global financial system crisis. So too, China's inevitable financial system/bad loan crisis could trigger a prolonged period of low growth and possibly political crises there, as well as (thanks to rising nationalism in a nation with an excessively high male/female ratio) increasing conflict internationally, which in turn would disrupt global supply chains and lead to a sharp a fall in commodity prices. In the United States, authorities could choose to continue the current policy of tolerating high levels of unemployment and running large government deficits while allowing an extended and painful liquidation process to play out in the housing sector, and quite possibly in area of state and municipal debt as well. We generally believe that prolonged stagnation would most likely dampen current inflationary forces, and lead to occasional bouts of low level deflation, as has occurred n Japan, in spite of that nation's attempts to reflate. On the other hand, the disruption in global supply chains that would accompany a restructuring of the global trading system into deface blocs trigger a renewed period of inflation. Most dangerously, we would expect that this scenario would also be characterized by rising political conflict around the world, and quite possibly a rise in authoritarian and populist tendencies.
- On the other hand, it is also easy to identify different reactions that might be triggered by a renewed downturn and crisis, which could limit its duration and eventually increase the growth rate of global aggregate demand. Possible actions in this category include the development of new political parties, candidates and coalitions to lead a

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renewed drive to increase the value for money delivered by the government, education, and health care sectors; restructuring of national retirement income security systems (e.g., along the lines of Australia's mandatory superannuation funds); more aggressive action to reduce household sector leverage (which could also involve temporary nationalization of some banks, following severe reductions in their capital); the restructuring of the global economy into a system of better managed trading blocs; progress in different energy related technologies that cumulates to a historical step function change in efficiency, the restructuring of the Eurozone and fundamental political change in China.

- Unfortunately, as we have already noted above, it is also easy to see how a renewed downturn and crisis could trigger a much more serious crisis of political legitimacy, which could worsen and extend the downturn, with potentially unpredictable and dangerous possibilities reminiscent of 1930s. We therefore conclude that, although it is undoubtedly the most difficult of our four challenges to understand, it is the growing crisis of political legitimacy that is the critical uncertainty that will drive future developments should a renewed crisis and downturn occur.
- Finally, we must also acknowledge the "rosy scenario" which, though highly unlikely in our view, would have (1) China smoothly adjusting from its current mercantilist strategy of high export and investment spending (as well as "vendor financing" of its foreign customers) to one focused on increasing domestic consumption spending, and spending on imports as the Yuan appreciates against the U.S. dollar; (2) The U.S. agreeing on a medium term strategy to reform government entitlement and tax programs, and gradually bring down both the deficit and the debt/GDP ratio, while implementing creative short run strategies to reduce mortgage debt (e.g., debt for equity swaps of some type), increase employment, and accelerate business investment spending; and (3) The Eurozone arranging for the controlled default on and restructuring of sovereign debt burdens, limited exits from the Eurozone, and recapitalization of the banking system.
- On balance, we conclude that today there is more evidence against the rosy scenario than there is against the renewed downturn and crisis. We therefore conclude that the latter is the most likely outcome, given the evidence available today.

Implications for Asset Class Returns

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- *Real Return Bonds*: With few exceptions (Australia being the most notable), yields on real return bonds are already extremely low, and would only rise if economic growth rises and investors' uncertainty falls. Furthermore, as we have noted, we believe that the secular deflationary forces at work in the world today are only temporarily being masked by cyclical inflation being produced by extraordinary monetary policy measures. Unless the real return bond in question contain a deflation hedge (as is the case with U.S. TIPS), they are not attractive in the current environment and seem most likely to produce negative returns. We acknowledge the argument that an extended downturn could also be accompanied by higher levels of central bank monetization of persistent government fiscal deficits. In response, we note that Japan has also seen persistent deficits and repeated attempts at reflation, which have not succeeded in producing higher inflation, and in fact have been accompanied by repeated episodes of low level deflation. However, we also acknowledge that movement to a global system of de-facto trading blocs could lead to higher inflation, to the extent it disrupts supply chains. In sum, real return bonds have provided excellent returns for many investors' portfolios in recent years that in most cases we do not expect will be repeated over the next five years. That said, we continue to believe that portfolios should still contain some allocation to this asset class, to hedge the inflation scenarios noted above.
- *Nominal Return Government Bonds*: With nominal yields at extremely low levels, nominal return government bonds will only produce attractive real returns in the case of persistent deflation. As noted above, we continue to believe that this remains a distinct possibility. In so far as investors perceive future inflation to be a greater risk than we do, this would argue for holding shorter maturities in this asset class, which also have the benefit of providing superior liquidity. While some would argue that this requires losing some yield, we would reply that the current situation is sufficiently dangerous that losing your capital is the more appropriate concern today.
- *Currencies*: In the new downturn and crisis scenario, we would expect the U.S. dollar to rise versus the Euro due to flight/safety seeking capital flows, based not only on turmoil in the Eurozone, but also on the more favorable demographic trends and structural conditions (e.g., innovation history) in the U.S. (see, for example, the conclusions reached by Eric Edelman in the Center for Strategic and Budgetary Assessments paper, "Understanding America's Contested Primacy"). We view the argument for Japan as a haven for safety-seeking capital to be limited by the nation's

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adverse demographic trends, and seemingly inevitable government deficit financing/debt rollover crisis that will occur when the government's funding need exceeds the absorptive capacity of its domestic savers. As for the Swiss Franc, the authorities there have made it clear that there is a limit to the amount of appreciation they can tolerate. The future of the Australian dollar is uncertain. On the one hand, with its strong domestic policies (e.g., the government has gone much further towards addressing health care and post-retirement income security issues than most other countries), skill-based immigration laws, and natural resource endowments, it is very attractive. On the other hand, its exports are heavily focused on China. In comparison with the AUD, the Canadian dollar appears to be a somewhat better bet, with more diversified markets for its natural resources exports, and its integration with the U.S. economy (though it lags somewhat behind Australia in addressing health care cost containment and post-retirement income security issues). Finally, as it has stayed outside of the Eurozone, and with a relatively more flexible economy, and a still solid position at the heart of the global financial system, we would also expect the UK pound to perform relatively well versus the Euro and Yen, perhaps lag the AUD and CAD, and trade in a relatively tight range around the U.S. dollar, based on our view that the UK and US will be at the heart of the Anglosphere bloc we expect to develop in the years ahead.

- *Credit Bonds*: We would expect increasing controls on cross border flows of capital and goods to raise uncertainty about the pricing of most corporate debt, as retrenchment into a world of blocs will be a very difficult adjustment for many companies. Mid-sized companies with more limited international sales may end up delivering superior returns. That said, a world of renewed downturn and crisis will be an exciting one for holders of credit risk. It will undoubtedly be much more pleasant under the rosy scenario, which would see credit risk premiums fall and returns increase.
- *Commodities*: It seems to us that either a credit crisis and/or a shift to more domestic consumption focused growth is inevitable in China, and that most other developing countries lack the scale and institutional factors to replicated the last decade of investment led growth in China that has proven so favorable for commodity prices. It therefore seems that commodity returns are more likely to disappoint than excite over the next five years. Again, however, we can point to alternative scenarios and possible

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inflation threats that continue to warrant holding some commodities in a portfolio. For example, commodities should continue to perform well under the rosy scenario.

- *Gold*: In a renewed downturn and crisis characterized by rising political uncertainty, we would expect gold prices to continue to remain elevated, particularly in the case of increased turmoil in China and or a worsening political crisis in the United States (as, absent the return of the Deutschemark, gold is the most logical second-best alternative to short term U.S. Treasuries as a home for liquid "fear capital"). That said, in worsening conditions, we would also expect to see a widening spread between gold investments that either are or can be redeemed in physical form, and those (such as most ETFs) which are purely financial instruments. However, there is also a clear risk that, in either the rosy or "post-stagnation/turnaround" scenario, investors will move out of gold for greener pastures as their fears recede, and returns will once again, as they have in the past, turn sharply negative.
- *Timber*: We continue to be bullish on timber. Due to the independence of biological processes, well-structured timber investments should continue to offer investors a hedge that offsets both inflation and deflation risk while also having a minimal correlation with returns on other asset classes. In addition, timber should do particularly well under the rosy scenario, which would extend the currently high and rising demand for timber in developing countries, and China in particular, which has provided support for wood prices, despite the downturn in housing construction in the United States.
- *Commercial Property*: So far this year, property has generally delivered a better performance than equity, though not as good as nominal government bonds. This is logical, given that current rental income on commercial property should, like the coupon on a bond, provide an advantage in a deflation scenario, while property's replacement cost, and hopefully value, should also rise in an inflation scenario (which would also reduce current real returns as the catch of rental rates is delayed by the timing of lease expirations, and potentially problems in fully renting a property). Moreover, in certain regions, notably Europe (and Switzerland in particular), property has historically been, and continues to be, a refuge in times of high uncertainty. Under the stagnation scenario, we would expect property to continue to do well, particularly due to increased demand for this asset class as the move toward blocs and capital controls restricts investors' ability to access other diversifying investments. On the

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other hand, property should also perform well under both the post-stagnation recovery and the rosy scenario. Hence there are multiple arguments for including it in a portfolio, as an asset class which should deliver returns somewhere between government bonds and equities.

- *Equities*: While the case for equities under the "rosy scenario is clear, they will clearly suffer under the renewed crisis/downturn scenario. In addition, as is the case with bonds and commercial property, foreign equity investments could suffer additional pain if the world trading system is restructured into de-facto blocs, with increased controls on cross-border capital movements. Conversely, this could provide extra stimulus for some domestic equity markets depending upon the eventual configuration of the trading blocs.
- *Volatility*: We expect that volatility will continue to be a historically high levels over the next five years, and that well-designed tail risk hedging investments, such as volatility (and also cash, as James Montier has famously noted), will continue to provide valuable benefits to overall portfolio returns.
- *Uncorrelated Alpha Strategies*: While uncorrelated alpha products remain mathematically attractive to many portfolios, events since 2008 have certainly put paid to the claims of many managers that they can deliver it when it is most needed. That said, the simple combination of four strategies that we include in our model portfolios – equity market neutral, global macro, currencies, and equity long/short has demonstrated its ability to deliver the modest levels of relatively uncorrelated returns that we anticipated. So we continue to believe that there is a valuable role for these products to play over the long-term in many portfolios.

Model Portfolios Year-to-Date Nominal Returns

We offer over 2,000 model portfolio solutions for subscribers whose functional currencies (that is, the currency in which their target income and bequest/savings are denominated) include Australian, Canadian, and U.S. Dollars, Euro, Yen, Pounds-Sterling, Swiss Francs and Indian Rupees. In addition to currency, each solution is based on input values for three other variables:

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- The target annual income an investor wants her or his portfolio to produce, expressed as a percentage of the starting capital. There are eight options for this input, ranging from 3 to 10 percent.

- The investor's desired savings and/or bequest goal. This is defined as the multiple of starting capital that one wants to end up with at the end of the chosen expected life. There are five options for this input, ranging from zero (effectively equivalent to converting one's starting capital into a self-managed annuity) to two.

- The investor's expected remaining years of life. There are nine possible values for this input, ranging from 10 to 50 years.

We use a simulation optimization process to produce our model portfolio solutions. A detailed explanation of this methodology can be found on our website. To briefly summarize its key points, in order to limit the impact of estimation error, our assumptions about future asset class rates of return, risk, and correlation are based on a combination of historical data and the outputs of a forward looking asset pricing model. For the same reason, we also constrain the maximum weight that can be given to certain asset classes in a portfolio. These maximums include 30% for foreign equities, 20% for foreign bonds, domestic and foreign commercial property, and commodities (including a sub-limit of 10% on timber), and 10% for emerging markets equities. There are no limits on the weight that can be given to real return and domestic bonds, and to domestic equities.

Each model portfolio solution includes the following information: (a) The minimum real (after inflation) internal rate of return the portfolio must earn in order to achieve the specified income and savings/bequest objectives over the specified expected lifetime. (b) The long-term asset allocation strategy that will maximize the probability of achieving this return, given our assumptions and constraints. (c) The recommended rebalancing strategy for the portfolio. And (d) the probability that the solution will achieve the specified income and savings/bequest goals over the specified time frame.

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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 2011, our USD cash benchmark is .27% (in nominal terms). The second benchmark we use is a portfolio equally allocated between the ten asset classes we use (it does not include equity market neutral). This portfolio assumes that an investor believes it is not possible to forecast the risk or return of any asset class. While we disagree with that assumption, it is an intellectually honest benchmark for our model portfolios' results.

The year-to-date nominal returns for all these model portfolios can be found here: http://www.retiredinvestor.com/Members/Portfolio/USA.php

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