The Index Investor

Invest Wisely…Get an Impartial Second Opinion.

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This Month's Issue: Key Points

Our first article this month summarizes the most recent release of the IMF's World Economic Outlook. It first describes the "goldilocks" scenario that would prolong the relatively benign conditions prevailing today in the global economy and financial markets. Housing doesn't crash in the United States, U.S. consumers keep borrowing and only gradually slow down their savings to give domestic demand in Europe and Japan time to pick up. In the meantime, China's economy keeps growing at a fast pace, and foreign investors keep financing the United States' unprecedented current account deficit. Oh, yes, and no oil shocks, problems with Iran, bird flu or any other nasty surprises. Regarding the likelihood that all these assumptions will prove to be true, the IMF notes that the main risks to their baseline scenario are "increasingly tilted to the downside, even more so than at the time of the April 2006 *World Economic Outlook*…In the IMF staff's view there is a one in six chance of growth in 2007 falling to 3/4 percent or less, a significant slowdown compared to the last four years. Given this, our asset allocation recommendations remain unchanged from the defensive posture we have adopted in recent months.

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Our second feature article provides a primer on what may soon become a much hotter topic: volatility. We describe what it is, how it behaves, how people try to forecast it, and how it is likely to evolve in the future (hint: as the economy turns down, volatility goes up). Our product and strategy notes review newly launched actively managed ETFs, a new ETF that will track private equity returns, a new timber product, the latest research on hedge funds, and the IMF's views on the future of commodity prices.

This Month's Letter to the Editor

Your blended return for equity market neutral is based on equal holdings in five funds: Hussman Strategic Growth (HSGFX), James Market Neutral (JAMNX), Analytic Global Long/Short (ANGLX), JP Morgan Market Neutral (OGNAX) and Rydex Absolute Return (RYMQX). If an investor can't afford to buy all of these, and could afford to buy just one, how would you decide between them?

You asked an excellent question about a topic we have been meaning to revisit, as many more mutual funds have recently been launched that utilize either a long/short or equity market neutral strategy. The following table compares recent results for four of the funds we have used, plus two new ones: Alpha Hedged Strategies (ALPHX) and Schwab Hedged Equity (SWHEX for the select shares, and SWHIX for the investor shares).

Fund	JAMNX	OGNAX	HSGFX	ALPHX	ANLGX	SWHEX
Avg. Return (3 yrs)	8.2%	3.2%	6.4%	10.0%	13.2%	14.8%
3 Year Volatility (Std. Dev.)	6.7%	3.6%	6.4%	5.6%	7.9%	6.7%
Correl with SP500	.04	.01	.38	.33	.38	.55
Assets	$83 m	$201 m	$2,970 m	$270 m	$8.3 m	$910 m*
Expenses	1.95%	1.50%	1.24%	3.99%	1.30%	2.44%**

* both share classes ** Investor shares

Let's start with the row labeled "Correl with SP500." This shows the extent to which each fund's returns have been correlated with the returns on the S&P 500 Index over the past three years. This is an important statistic because it is an indicator of the extent to which each fund

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is producing uncorrelated alpha. As you recall, the addition of alpha to a portfolio that is uncorrelated with the beta returns on broad asset classes produces very powerful diversification benefits. The diversification benefit of adding alpha that is strongly correlated with the return on broad asset classes is much lower. On this criterion, JAMNX and OGNAX are in a class by themselves, while, at the other end, SWHEX also stands out for its relatively high correlation with the S&P 500.

Let us next compare JAMNX and OGNAX more closely. The former has produced higher returns and higher return per unit of volatility (one measure of risk), though its expenses are somewhat higher. Finally, it has fewer assets under management. This is important because as an actively managed fund receives more money to manage, its returns often decline. First, larger value creation opportunities are probably far less numerous than smaller opportunities. Second, pursuing large opportunities tends to generate higher market impact costs, in the form of not only brokerage commissions, but also the tendency of the bid/ask spread to widen as a large buy or sell order is executed over time. So on the basis of the decision criteria we like to use, JAMNX would be our most logical choice. HSGFX may be a perfect example of this phenomenon. Finally, if we could invest in just two funds, the second would be ANGLX. As you can see, its assets are still low, its expenses reasonable, and its performance stellar over the past three years. While its correlation with the S&P500 is higher than that of JAMNX, what carries the day for us is the exceptional strength of Analytic Investor's team, which, apart from ANGLX and one other mutual fund, manages only (large amounts) of institutional money using active quantitative strategies.

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Global Asset Class Returns

YTD 29Sep06	In USD	In AUD	In CAD	In EURO	In JPY	In GBP	In CHF	In INR
Asset Held								
US Bonds	2.90%	1.26%	-1.12%	-4.09%	3.05%	-5.67%	-1.75%	4.70%
US Prop.	23.80%	22.16%	19.78%	16.81%	23.95%	15.23%	19.15%	25.60%
US Equity	7.90%	6.26%	3.88%	0.91%	8.05%	-0.67%	3.25%	9.70%
AUS Bonds	-1.17%	-2.81%	-5.19%	-8.16%	-1.02%	-9.74%	-5.82%	0.63%
AUS Prop.	17.95%	16.31%	13.92%	10.95%	18.10%	9.38%	13.30%	19.75%
AUS Equity	12.71%	11.07%	8.68%	5.71%	12.86%	4.14%	8.06%	14.51%
CAN Bonds	8.05%	6.41%	4.03%	1.06%	8.20%	-0.52%	3.40%	9.85%
CAN Prop.	20.95%	19.31%	16.92%	13.95%	21.10%	12.38%	16.30%	22.75%
CAN Equity	9.59%	7.95%	5.57%	2.60%	9.74%	1.02%	4.94%	11.39%
Euro Bonds	8.52%	6.88%	4.50%	1.53%	8.67%	-0.05%	3.87%	10.32%
Euro Prop.	36.58%	34.94%	32.55%	29.58%	36.73%	28.01%	31.93%	38.38%
Euro Equity	21.30%	19.66%	17.28%	14.31%	21.45%	12.73%	16.66%	23.10%
Japan Bonds	-0.02%	-1.66%	-4.04%	-7.01%	0.13%	-8.59%	-4.67%	1.78%
Japan Prop.	8.60%	6.96%	4.58%	1.61%	8.75%	0.03%	3.95%	10.40%
Japan Equity	0.15%	-1.49%	-3.88%	-6.85%	0.30%	-8.42%	-4.50%	1.95%
UK Bonds	10.85%	9.21%	6.83%	3.86%	11.00%	2.28%	6.20%	12.65%
UK Prop.	36.45%	34.81%	32.43%	29.46%	36.60%	27.88%	31.80%	38.25%
UK Equity	17.81%	16.18%	13.79%	10.82%	17.97%	9.25%	13.17%	19.62%
World Bonds	3.70%	2.06%	-0.32%	-3.29%	3.85%	-4.87%	-0.95%	5.50%
World Prop.	23.16%	21.52%	19.14%	16.17%	23.31%	14.59%	18.51%	24.96%
World Equity	10.90%	9.26%	6.88%	3.91%	11.05%	2.33%	6.25%	12.70%
Commodities	-5.70%	-7.34%	-9.72%	-12.69%	-5.55%	-14.27%	-10.35%	-3.90%
Timber	-2.05%	-3.69%	-6.08%	-9.05%	-1.90%	-10.62%	-6.70%	-0.25%
EqMktNeutral	4.78%	3.14%	0.76%	-2.21%	4.93%	-3.79%	0.13%	6.58%
Volatility	-0.75%	-2.38%	-4.77%	-7.74%	-0.59%	-9.31%	-5.39%	1.06%
Currency								
AUD	1.64%	0.00%	-2.39%	-5.36%	1.79%	-6.93%	-3.01%	3.44%
CAD	4.02%	2.39%	0.00%	-2.97%	4.18%	-4.54%	-0.62%	5.83%
EUR	6.99%	5.36%	2.97%	0.00%	7.15%	-1.57%	2.35%	8.80%
JPY	-0.15%	-1.79%	-4.18%	-7.15%	0.00%	-8.72%	-4.80%	1.65%
GBP	8.57%	6.93%	4.54%	1.57%	8.72%	0.00%	3.92%	10.37%
USD	0.00%	-1.64%	-4.02%	-6.99%	0.15%	-8.57%	-4.65%	1.80%
CHF	4.65%	3.01%	0.62%	-2.35%	4.80%	-3.92%	0.00%	6.45%
INR	-1.80%	-3.44%	-5.83%	-8.80%	-1.65%	-10.37%	-6.45%	0.00%

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Asset Class Valuation Update

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

Australia	**Low Demanded Return**	**High Demanded Return**
High Supplied Return	61%	95%
Low Supplied Return	96%	134%

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Canada	Low Demanded Return	High Demanded Return
High Supplied Return	91%	154%
Low Supplied Return	171%	252%

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Eurozone	Low Demanded Return	High Demanded Return
High Supplied Return	66%	111%
Low Supplied Return	114%	167%

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Japan	Low Demanded Return	High Demanded Return
High Supplied Return	99%	197%
Low Supplied Return	248%	395%

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United Kingdom	Low Demanded Return	High Demanded Return
High Supplied Return	46%	85%
Low Supplied Return	84%	130%

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United States	Low Demanded Return	High Demanded Return
High Supplied Return	118%	182%
Low Supplied Return	208%	290%

Switzerland	Low Demanded Return	High Demanded Return
High Supplied Return	80%	147%
Low Supplied Return	163%	237%

India	Low Demanded Return	High Demanded Return
High Supplied Return	131%	221%
Low Supplied Return	278%	410%

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

	Current Real Rate	**Average Inflation Premium (89-03)**	**Required Nominal Return**	**Nominal Return Supplied (10 year Govt)**	**Return Gap**	**Asset Class Over or (Under) Valuation, based on 10 year zero**
Australia	2.23%	2.96%	5.19%	5.51%	0.32%	-3.00%
Canada	1.68%	2.40%	4.08%	4.01%	-0.07%	0.70%
Eurozone	1.73%	2.37%	4.10%	3.71%	-0.39%	3.83%
Japan	1.03%	0.77%	1.80%	1.68%	-0.12%	1.21%
UK	1.26%	3.17%	4.43%	4.52%	0.09%	-0.87%
USA	2.28%	2.93%	5.21%	4.65%	-0.56%	5.47%
Switz.	1.31%	2.03%	3.34%	2.41%	-0.93%	9.46%
India	2.68%	7.57%	10.25%	7.68%	-2.57%	26.60%

*Derived from ten year yield and forecast inflation

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

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

All three of these variables can only be estimated with uncertainty. For example, a time discount rate of 2.0% and risk aversion factor of 4 are considered to be average, but studies show that there is wide variation within the population and across the studies themselves. The analysis in the following table starts with current real return bond yields and the OECD's estimates of multifactor productivity growth between 1995 and 2002 (with France and Germany proxying for the Eurozone). We then try to back out estimates for risk aversion and the time discount rate that would bring theoretical rates into line with those that have been observed in the market. The real rate formula is [Time Discount Rate + ((1/Risk Aversion Factor) x MFP Growth)].

Real Rate Analysis	AUD	CAD	EUR	JPY	GBP	USD
Risk Aversion Factor	4.0	5.0	5.0	6.0	6.0	4.0
Time Discount Rate	2.00%	1.50%	1.50%	1.00%	1.00%	2.00%
MFP Growth	1.60%	1.20%	1.40%	0.60%	1.40%	1.40%
Theoretical Real Rate	2.40%	1.74%	1.78%	1.10%	1.23%	2.35%
Real Rate on 31Aug06	2.23%	1.68%	1.73%	1.03%	1.26%	2.28%

Our analysis also uses historical inflation as an estimate of expected future inflation. This may not produce an accurate valuation estimate, if the historical average level of inflation is not a good predictor of average future inflation levels. For example, if expected future inflation is lower than historical inflation, required returns will be lower. Also, if one were to assume a very different scenario, involving a prolonged recession, accompanied by deflation, then one could argue that government bond markets are actually undervalued today.

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Let us now turn to the subject of the valuation of non-government bonds. Some have suggested that it is useful to decompose the bond yield spread into two parts. The first is the difference between the yield on AAA rated bonds and the yield on the ten year Treasury bond. Because default risk on AAA rated companies is very low, this spread may primarily reflect prevailing liquidity and jump (regime shift) risk conditions. The second is the difference between BBB and AAA rated bonds, which may tell us more about the level of compensation required by investors for bearing default risk. For example, between August and October, 1998 (around the time of the Russian debt default and Long Term Capital Management crises), the AAA-Treasury spread jumped from 1.18% to 1.84%, while the BBB-AAA spread increased by much less, from .62% to .81%.

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

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

At 29 September 2006 the AAA minus 10 year Treasury spread was .77%. This was somewhat below the long-term average compensation for bearing liquidity and jump risk (assuming our model is correct).

At the end of the month, the BBB minus AAA spread was .94%, basically unchanged since the end of May. This was below the long-term average compensation for bearing default risk. The stability of this spread in the face of other developments (e.g., rising concern over

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the future strength of the global economy) lead us to conclude that it is more likely that corporate bonds today are overvalued than undervalued.

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

Annual Exchange Rate Changes Implied by Bond Market Yields

	To AUD	**To CAD**	**To EUR**	**To JPY**	**To GBP**	**To USD**	**To CHF**	**To INR**
From								
AUD	0.00%	-1.50%	-1.80%	-3.83%	-0.99%	-0.86%	-3.10%	2.17%
CAD	1.50%	0.00%	-0.30%	-2.33%	0.51%	0.64%	-1.60%	3.67%
EUR	1.80%	0.30%	0.00%	-2.03%	0.81%	0.94%	-1.30%	3.97%
JPY	3.83%	2.33%	2.03%	0.00%	2.84%	2.97%	0.73%	6.00%
GBP	0.99%	-0.51%	-0.81%	-2.84%	0.00%	0.13%	-2.11%	3.16%
USD	0.86%	-0.64%	-0.94%	-2.97%	-0.13%	0.00%	-2.24%	3.03%
CHF	3.10%	1.60%	1.30%	-0.73%	2.11%	2.24%	0.00%	5.27%
INR	-2.17%	-3.67%	-3.97%	-6.00%	-3.16%	-3.03%	-5.27%	0.00%

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

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Country	Real Bond Yield	Plus Commercial Property Risk Premium	Less Dividend Yield on Commercial Property Securities	Equals Expected Rate of Future Real Dividend Growth
Australia	2.23%	2.50%	6.1%	-1.4%
Canada	1.68%	2.50%	2.7%	1.5%
Eurozone	1.73%	2.50%	4.2%	0.1%
Japan	1.03%	2.50%	1.2%	2.3%
Switzerland	1.31%	2.50%	1.5%	2.3%
United Kingdom	1.26%	2.50%	2.2%	1.5%
United States	2.28%	2.50%	3.9%	0.9%

A very rough way to test the reasonableness of these expected growth assumptions is to compare them to the expected real annual change in commercial rental income over the next five years. If you think the real growth estimates are too high, that implies overvaluation. On the other hand, if you think they are too low, that implies undervaluation. Since we expect a significant slowdown in the global economy over the next few years, we are inclined to view most of these implied real growth assumptions as too optimistic, and therefore to believe that the balance of business cycle and valuation evidence suggests that commercial property in many markets is probably overvalued today.

Our commodities asset class valuation analysis is focused on two drivers of short-term returns: the "roll yield" (sale of futures contracts at close to the spot price as they mature, and reinvestment of the proceeds in a new, longer-dated contract) and unexpected changes in the spot price. With respect to the roll yield, the DJ AIG commodities index futures contract traded on the Chicago Board Options Exchange (CBOT) is currently contangoed (i.e., the futures price is higher than the spot price), with a difference of approximately (4.3%) between spot and futures prices. To estimate the likely direction of short term commodity futures price changes, we compare the current price to the historical distribution of futures index prices. Between 1991 and 2005 period, the Dow Jones AIG Commodities Index (DJAIG) had an average value of 107.6, with a standard deviation of 21.9. The September 29th closing price of 159.96 was 2.4 standard deviations above the average. This places it outside the range within

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which prices are expected to lie 95% of the time (i.e., the average price plus or minus two standard deviations). Given this, the probability of a near term decline in the spot price of the DJAIG seems much higher than the probability of an increase. Given the current spot/futures price relationship, and the current DJAIG price relative to its long-term average, we conclude that commodities are probably overvalued today.

Our approach to assessing the current value of equity market volatility (as measured by the VIX index, which tracks the level of S&P 500 Index volatility implied by the current pricing of put and call options on this index) is similar to our approach to commodities. Between January 2, 1990 and December 30, 2005, the average value of the VIX Index was 19.45, with a standard deviation of 6.40. The one standard deviation (67% confidence interval) range was 13.05 to 28.85, and the two standard deviations (95% confidence) range was from 6.65 to 32.25. On September 29, 2006, the VIX closed at 11.98. This is below the VIX's long term average value (i.e., it is more than one standard deviation below it), and seems unusual in light of rising uncertainty in the economy and financial markets. Hence, we conclude that equity volatility is probably undervalued today.

Sector and Style Rotation Watch

The following table shows a number of classic style and sector rotation strategies that attempt to generate above index returns by correctly forecasting turning points in the economy. This table assumes that active investors are trying to earn high returns by investing today in the styles and sectors that will perform best in the next stage of the economic cycle. The logic behind this is as follows: Theoretically, the fair price of an asset (also known as its fundamental value) is equal to the present value of the future cash flows it is expected to produce, discounted at a rate that reflects their relative riskiness.

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

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forecast future economic conditions, and their impact on future cash flows and the future discount rate. Moreover, an investor also needs to do this before the majority of other investors reach the same conclusion about the asset's fair value, and through their buying and selling cause its price to adjust to that level (and eliminate the potential excess return).

We publish this table to make an important point: there is nothing unique about the various rotation strategies we describe, which are widely known by many investors. Rather, whatever active management returns (also known as "alpha") they are able to generate is directly related to how accurately (and consistently) one can forecast the turning points in the economic cycle. Regularly getting this right is beyond the skills of most investors. In other words, most of us are better off just getting our asset allocations right, and implementing them via index funds rather than trying to earn extra returns by accurately forecasting the ups and downs of different sub-segments of the U.S. equity and debt markets. That being said, the highest rolling three month returns in the table give a rough indication of how investors expect the economy and interest rates to perform in the near future. *The highest returns in a given row indicate that most investors are anticipating the economic and interest rate conditions noted at the top of the next column* (e.g., if long maturity bonds have the highest year to date returns, a plurality of bond investor opinion expects rates to fall in the near future). Comparing returns across strategies provides a rough indication of the extent of agreement (or disagreement) investors about the most likely upcoming changes in the state of the economy.

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

Rolling 3 Month Returns Through September, 2006

Economy	Bottoming	Strengthening	Peaking	Weakening
Interest Rates	Falling	Bottom	Rising	Peak
Style and Size Rotation	Small Growth (DSG) **-1.21%**	Small Value (DSV) **1.25%**	Large Value (ELV) **7.17%**	Large Growth (ELG) **3.02%**
Sector Rotation	Cyclicals (IYC) **3.15%** Technology (IYW)	Basic Materials (IYM) **-4.60%** Industrials (IYJ)	Energy (IYE) **-3.72%** Staples (IYK)	Utilities (IDU) **4.85%** Financials (IYF)

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Rolling 3 Month Returns Through September, 2006

Economy	Bottoming	Strengthening	Peaking	Weakening
Interest Rates	Falling	Bottom	Rising	Peak
	8.20%	**-1.24%**	**6.02%**	**6.66%**
Bond Market Rotation	Higher Risk (LQD)	Short Maturity (SHY)	Low Risk (TIP)	Long Maturity (TLT)
	4.58%	**1.85%**	**2.71%**	**7.25%**

The next tables describe the typical cycles in the markets for commercial property and commodities. We believe they should be read in conjunction with current situation in the bond market. However, rather than being leading indicators of future economic conditions, commercial property and commodity market returns tend to coincide with current economic and interest rate conditions (i.e., those at the top of the same column, rather than the next one to the right). When many investors share the same expectations about future economic conditions, one would expect to see alignment between bond and equity market year-to-date returns, and conditions in commodity and commercial property markets. However, we also note that this is when markets are most fragile; large moves can occur if something happens to change these closely aligned expectations. In contrast, when investors do not share the same expectations for the future, you would expect to see misalignment between year-to-date returns in bond, equity, commodity and commercial property markets.

Economy	Bottoming	Strengthening	Peaking	Weakening
Interest Rates	Falling	Bottom	Rising	Peak
Commodities				
Commodity Inventories	Peaking	Falling	Bottoming	Rising
Spot Prices	Bottoming	Rising	Peaking	Falling
Futures Prices Relative to Spot Price	Contango (futures higher than spot)	Uncertain	Backwardation (futures lower than spot)	Uncertain

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Economy	Bottoming	Strengthening	Peaking	Weakening
Interest Rates	Falling	Bottom	Rising	Peak
Profitability of long commodity futures position, before diversification and collateral yields	Negative (falling spot and negative roll yield)	Uncertain (rising spot, uncertain roll yield)	Positive (rising spot and positive roll yield)	Uncertain (falling spot, uncertain roll yield)
Comm'l Property				
Commercial Property Vacancy Rates	Peaking	Falling	Bottoming	Rising
Rents	Low	Rising	High	Falling
New Construction Completion (space coming onto the market)	Falling	Bottoming	Rising	Peaking
Property Valuation Ratios	Bottoming	Rising	Peaking	Falling
Expected Future Property Returns	Peaking	Falling	Bottoming	Rising

The following table sums up our subjective view of possible asset class under and overvaluations at the end of September 2006. The distinction between possible, likely and probable reflects a rising degree of confidence in our conclusion.

Probably Overvalued	Commodities, Corporate Bonds
Likely Overvalued	Commercial Property, Most Equity Markets
Possibly Overvalued	
Possibly Undervalued	UK Equity, Real Return Bonds
Likely Undervalued	Equity Volatility
Probably Undervalued	Non-U.S. Dollar Bonds

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Key Conclusions from the IMF World Economic Outlook

Our third quarter economic update traditionally reviews the September publication of the IMF's World Economic Outlook. Overall, analysts at the IMF continue to be pleasantly surprised at the resilience of the global economy in the face of unprecedented global current account imbalances. As they note," the global expansion was broad-based in the first half of 2006, with activity in most regions meeting or exceeding expectations, and recent indicators suggest that the pace of expansion is being maintained in the third quarter. Growth was particularly strong in the United States in the first quarter, although it slowed in the second quarter in the face of headwinds from a cooling housing market and rising fuel costs. The expansion gathered momentum in the euro area, notwithstanding a slow start to the year in Germany, and the Japanese economy continued to expand. Growth in China has accelerated even further, emerging Asia and Europe have continued to grow rapidly, and the pace of activity has picked up in Latin America. Middle Eastern oil exporters and low- income countries in Africa have also maintained impressive growth rates."

However, there are signs that this can't last much longer. "Sustained high rates of global growth have absorbed spare capacity and led to some emerging signs of inflationary pressures…Headline inflation in many of the major advanced economies has for some time been above central bank comfort zones, pushed up by rising oil prices, but there are now signs of increases in core inflation, in market-based and survey measures of inflation expectations, and in unit labor costs, particularly in the United States…Against this background, central banks in the major advanced economies have taken steps to tighten monetary conditions. The U.S. Federal Reserve continued to raise the Fed funds rate through June, although pausing in August, seeking to balance inflation concerns against signs that the U.S. expansion is beginning to slow. The European Central Bank has raised its policy rate further, and the Bank of Japan has moved away from quantitative easing and in July raised the overnight policy rate from zero to 25 basis points. Central banks in Australia, Sweden, and the United Kingdom have also tightened in recent months."

Looking toward the future, the IMF lays out what has become known as the "goldilocks scenario" that sees the global economy continuing to grow strongly, with moderate inflation and no financial market disruptions. "Notwithstanding tightening financial conditions, [our] baseline forecast for world output growth has been marked up to 5.1 percent

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in 2006 and 4.9 percent in 2007, 1/4 percentage point above the April 2006 WEO projection in both years. This would be the strongest four-year period of global expansion since the early 1970s." However, this forecast assumes "that inflationary pressures will be successfully contained with modest further interest rate increases by the major central banks, that the growth of domestic demand will be better balanced across the advanced economies [as faster growth in Europe and Japan compensate for a slowdown in the United States], …and that global financial market conditions will [remain stable]."

Regarding the likelihood that all these assumptions will prove to be true, the IMF notes that the main risks to their baseline scenario are "increasingly tilted to the downside, even more so than at the time of the April 2006 *World Economic Outlook*…In the IMF staff's view there is a one in six chance of growth in 2007 falling to 3/4 percent or less, a significant slowdown compared to the last four years… Markets have been concerned that a continued buildup of inflation pressures in advanced economies could require a more aggressive monetary policy response to cool the growth momentum, particularly in the United States. Clearly, there are risks in this direction coming from tightening capacity constraints and the continuing potential for high headline inflation to seep into price expectations and bolder wage demands. Cost push pressures have risen in the United States in recent quarters, reflecting both rising employee compensation and slowing productivity as the expansion matures, although unit labor cost growth has remained subdued in the Euro area and Japan. A related risk to the outlook comes from the continued potential for supply-side shocks in the oil market, which could give a further upward impetus to international oil prices, thus exacerbating inflationary pressures while cooling household demand. In the baseline forecast, the international oil price is expected to average $75 a barrel in 2007, close to the peak reached in early August. As emphasized in past issues of the *World Economic Outlook*, up to now the global economy has been able to absorb quite well the run-up in oil prices, reflecting that—to a considerable degree—the price increases have been driven by strong demand growth rather than supply constraints, and that central banks have had the credibility to focus on core rather than headline inflation. The decline in energy intensity of global output compared to the 1970s has also played a role in containing the impact of oil price increases. However, with spare capacity remaining at recent very low levels, supply concerns have played a growing role in pushing up oil prices, and a major disruption in a large producer or a

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further escalation of security concerns in the Middle East could well lead to another upward oil price spike…

"The key risk on the demand side is that the continued cooling of advanced-economy housing markets will weaken household balance sheets and undercut aggregate demand. At this point, concerns center on the United States, although other markets, such as those in Ireland, Spain, and the United Kingdom, also still seem overvalued by most conventional measures. In the United States, the April 2006 issue of the *World Economic Outlook* suggested that, by 2005, average home prices had risen around 10–15 percent above levels consistent with fundamentals. Recent data indicate that the market is now softening quite rapidly, with home sales and mortgage applications weakening, housing starts falling, and house price increases dropping. The baseline U.S. growth forecast assumes house price growth will continue to slow, implying a drag on domestic demand from the housing market of approximately 1/2 percentage point in each of 2006 and 2007. However, if the housing market were to cool more abruptly, IMF staff estimates suggest that this could subtract up to an additional 1 percentage point from GDP growth relative to the baseline…Other demand-side risks relate to the extent to which expansions in Europe and Japan will be sustained by increasing strength of household demand, reducing reliance on exports and exposure to a slowdown of demand in the United States. Such a rebalancing appears to be under way, but concerns remain, particularly in Europe, where both job growth and wage increases remain modest in the face of slow productivity growth and labor market rigidities."

Finally, the IMF also notes that "the underlying problem [of unsustainable global current account imbalances] remains little diminished…Eventually, the buildup of U.S.-based assets in global asset portfolios [will] approach saturation, and an adjustment of current account imbalance [will] be required. The most likely outcome is still a gradual and orderly unwinding of the imbalances over a number of years. With the housing market cooling in the United States, private saving is likely to rise as the asset price boost to wealth accumulation fades away. By contrast, consumption growth would accelerate in emerging Asia (especially China) as precautionary savings motives moderate, and absorption by oil exporters is also expected to rise, particularly in the Middle East where the authorities are advancing ambitious investment plans. This shift in relative growth of domestic demand, accompanied by a sustained depreciation of the U.S. dollar in real terms and real exchange rate appreciation in

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surplus countries, notably in parts of Asia and oil exporters, would contribute to a more normal pattern of current accounts over a number of years. Such an adjustment could occur as a market-led process, without the need for major shifts in policy frameworks. *However, such a smooth, market-led process is likely to succeed only if investors are prepared to continue increasing the share of their portfolios in U.S. assets for many years. If not, there would be some risk of a disorderly unwinding, involving a more rapid fall of the U.S. dollar, volatile conditions in financial markets, rising protectionist pressures, and a significant hit to global output*. [Our italics].

In sum, the underlying dynamics of the world economy remain unchanged, and deeply worrisome. Overleveraged American consumers, who now face falling housing values, cannot continue to overspend to support the world economy. It remains to be seen whether the Eurozone can find the political courage to enact the labor market reforms upon which increased domestic demand growth crucially depends. China remains trapped between the need to keep growing rapidly to slow the pace of worsening social unrest (see, for example, "Social Unrest in China", a recent report by the United States Congressional Research Service) despite the rising pressures unbalanced growth is placing on the Asian economy (see, for example, "Dual Surplus in China: Imbalance versus Codependency by Feng Lu of Peking University, and "Has China Displaced Other Asian Countries' Exports?" by Greenaway, Mahabir, and Milner). Similarly, relations between Iran and the West remain tense (see, for example, "Iran: U.S. Concerns and Policy Responses", an excellent new analysis by the Congressional Research Service). Meanwhile, particularly in Indonesia, H5N1 influenza continues its genetic evolution toward a more easily transmitted form. For all of these reasons, our basic outlook and asset allocation recommendations (detailed in last month's letter to the editor) remain unchanged.

Volatility: A Primer

For too many people, investing is synonymous with the search for assets with high expected returns. Consider the following example: you currently have $1,000 in your portfolio, and your objective is to maximize the probability that it will grow to at least $1,200 in ten years. You can choose from three portfolios. The first has an expected annual return of 6%, with 10% volatility; the second has an expected return of 7%, with 13% volatility, and the third has

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an expected return of 5%, with 6% volatility. Which portfolio do you think most people will choose? Our guess is the one with the 7% expected return. The fact that this portfolio's volatility is higher than the other two probably wouldn't carry much weight in their evaluation of the three investment options.

Now guess which one has the highest probability of being worth at least $1,200 after ten years. Based on 10,000 simulations, the 7% portfolio has an 85% chance of achieving the $1,200 goal, the 6% portfolio has an 88% chance, and the 5% portfolio has a 94% chance. What accounts for that? The difference in volatility. To see why, consider another example. You start the year with $100, and earn 20% on it, leaving you with $120. The next year you lose 20%, leaving you with $96. Just to get back to $120, you now have to earn not 20%, but 25% in year three. When it comes to multiyear asset allocation problems, minimizing your exposure to large loses – which means carefully managing your exposure to volatility -- is often more important than further boosting your expected return. Unfortunately, too few investors clearly understand this. Hence this primer.

So what is volatility?

Technically, it is a measure of the dispersion of returns (be they historical or forecast) around their average – in other words, volatility is another term for the standard deviation of returns. More colloquially, volatility refers to the process that generates variability in an asset's annual returns.

What do we know about volatility's behavior?

While returns are extremely difficult to predict in advance, volatility tends to follow more established patterns. First, it is not constant, and varies over time. Second, periods of high volatility tend to occur in clusters. Third, these high periods exponentially give way to a new period of relatively low volatility (this power law decay process is why volatility is technically referred to as a "long memory" process, where today's volatility depends, to varying degrees, on volatility in previous periods). Fourth, changes in volatility tend to be negatively correlated with changes in asset prices. Increases in asset prices often occur at the

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same time as falls in volatility, and vice versa. Finally, these responses tend to be asymmetric; a 10% fall in an asset's price is usually associated with a larger change in volatility than a 10% increase in its price.

Why does volatility behave this way?

One of the best recent papers on this subject is "Stock Returns and Volatility, by Adrian and Rosenberg of the Federal Reserve Bank of New York. They decompose equity volatility into distinct short-run and long-run components. The latter is closely related to changes in the real economy, and the business cycle in particular. As the business cycle turns down, volatility typically increases. In contrast, short run volatility responds to unexpected market shocks. Many papers have been written that describe how various shocks could lead to an increase in short run volatility. The process they describe usually involves some combination of information effects, individual psychology, and the evolution of dominant beliefs in a group. Information effects are associated with the revelation of new information, for example, due to a sharp movement in the price of a relatively illiquid asset caused by a large trade.

Changes in individual beliefs are often associated with the confirmation bias, where investors hold onto outmoded views until they reach a "tipping point" that triggers action (a good example of this is the old saying that "it takes twice as much information to change a belief than it does to form it in the first place"). Finally, changes in individual beliefs and uncertainty can be transmitted to larger groups either through the actions of social networks or the release of new information that garners widespread attention (e.g. the first Fortune magazine and Wall Street Journal stories questioning Enron's accounting). An excellent recent description of how these factors can interact to drive up volatility can be found in "Trading, Price Setting and Volatility in Equity Markets Under Divergent Expectations and Adaptive Valuations" by Paroush, Schwartz and Wolf (also see "Dispersion of Beliefs and Market Volatility in the Foreign Exchange Market" by Jongen, Verschoor, Wolff, and Zwinkels, and "Determinants of Stock Market Volatility and Risk Premia: by Kurz, Jin, and Motolese, "Time to Digest and Volatility Dynamics" by Peng and Xiong, and "Heterogenous Expectations and Bond Markets" by Xong and Yan).

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How do people forecast volatility?

Many different players need to forecast volatility. For an options trader, volatility forecasts are critical to accurate asset pricing. For a risk manager, they are critical to accurate calculation of value at risk. And for a portfolio manager, volatility (and correlation) forecasts are critical inputs into the optimization process that yields the most effective asset allocation. Broadly speaking, these forecasts come from three different sources (for an excellent review of this subject, see "Forecasting Volatility" by Stephen Figlewski).

The first is historical data, which assumes that over some future time horizon, average volatility will be the same as it was over a given sampling period in the past. Obviously, this is an assumption that doesn't always turn out to be true in practice. But beyond this, there are more subtle issues with the use of historical volatility data. One is related to the interval over which it is calculated. Unlike returns data (for which accuracy theoretically can only be increased by lengthening the sampling period), the accuracy of volatility data can theoretically be improved by sampling more frequently within a given time interval (e.g., going from twelve monthly observations to 250 daily observations, or even minute by minute observations). The problem is that at very short intervals, observations can be seriously distorted by what is called "market microstructure noise". For example, if bid/ask midpoint prices are being used, they can be affected by market makers widening their spreads due to falling liquidity or large trades being made by well-informed institutions. While these factors do not reflect the underlying return generating process for the asset (and should therefore not affect the estimation of its volatility), in practice they can have a large impact on calculations (see, for example, "Volatility Forecasting with Microstructure Noise" by Ghysels and Sinko).

A second issue with the use of historical data is the accuracy of the estimated average (mean) return that is used to calculate volatility. Technically, volatility is the square root of the variance of a set of returns. The variance is calculated by summing the square of each observation less the average, and dividing this sum by the number of observations less one. This means that if the average return is inaccurately estimated from the sample data, the volatility estimate will also be inaccurate. Unfortunately, studies have repeatedly found that,

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particularly when short sample periods are used, the sample average is often a very poor estimate of the true population average. For example, the average return on the U.S. equity market between 2000 and 2002 is a very inaccurate estimate of its average over, say, the 1926 to 2005 period. One way that researchers have attempted to get around this problem is to assume that the average return for a given asset or asset class is zero. The following table shows the impact of this approach across multiple asset classes.

Estimates of Real Asset Class Volatility
Between 1989 and 2004
Monthly Observations

Asset Class	Traditional Estimate (Using sample average return)	Zero Average Return Estimate
Real Return Bonds*	4.4%	4.9%
Domestic Bonds	4.3%	4.9%
Foreign Bonds	10.4%	10.7%
Domestic Comm'l Property	14.4%	15.3%
Foreign Comm'l Property*	21.2%	21.4%
Commodities (DJAIG)*	11.4%	11.6%
Timber	8.8%	10.2%
Domestic Equity	16.7%	17.4%
Foreign Equity	18.7%	18.8%
Emerging Equity	28.0%	28.6%
Equity Mkt Neutral*	5.0%	6.0%
Equity Mkt Volatility*	60.4%	60.5%

- Shorter sample period used.

As you can see, the differences are generally minor (except for timber and equity market neutral), which reflects the relatively long sample period we used in our estimates (most volatility estimates are based on three or five years of data).

The second way people forecast future volatility is with the use of models. The most common approach uses something called a GARCH model (for Generalized Autoregressive Conditional Heteroskedasticity – say that three times fast). In essence, this approach assumes that the next period's volatility (technically, variance) is a weighted combination of the long-run average and the last period's volatility. GARCH models have proven highly effective at forecasting volatility over short periods; hence, they are frequently used by option traders and risk managers concerned with measuring value at risk (VAR) over a day or week. Over

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longer periods, however, GARCH models have proven to be less accurate than historical samples. Various explanations have been offered for this, including difficulty in determining the right coefficients for the GARCH model variables (since the financial markets are a complex adaptive system, these coefficients are inevitably evolving), and many GARCH model's inability to handle the asymmetric response of volatility to positive and negative changes in asset prices. This is not a problem when you are trying to forecast volatility over a short time horizon; however, as the horizon lengthens, this problem looms larger. (For an excellent review of volatility models, see " A Forecast Comparison of Volatility Models" by Hansen and Linde. And for an example of even more sophisticated volatility forecasting techniques, see "An Engineering Approach to Forecast Volatility of Financial Indices" by Ma, Wong, and Sankar).

The third approach to forecasting volatility is, basically, to figure out what everybody else is assuming it will be. The technical name for this is "implied volatility." For example, the VIX index measures the volatility that is implied (over the subsequent thirty days) by the price of put and call options on the S&P 500 Index. There are three problems with this approach. First, volatility over the next thirty days may be a very poor estimate of volatility over longer time horizons (say, ten years if you are doing a multi-period portfolio optimization analysis). Second, because people buying and selling options may have very different needs (and therefore different approaches to estimating the fair value of volatility), it may be a very biased estimate of what realized volatility will actually be thirty days later. In fact, this has proven to be the case, with the VIX generally overestimating subsequently realized volatility. Third, the majority of the people trading options may simply be wrong about their forecast for future volatility.

How is volatility likely to evolve in the future?

The best analysis of this question we have seen is found in two papers just published by the Bank for International Settlements. In "The Recent Behavior of Financial Market Volatility", the BIS begins by noting that "a striking feature in recent years has been the low level of price volatility over a wide range of financial assets and markets." The BIS notes that three factors seem to have contributed to the observed decline in volatility. First, the macroeconomic

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environment has been relatively benign, and the volatility of real output growth has declined around the world. Second, central banks around the world have become more transparent and consistent in their conduct of monetary policy. Along with structural changes (e.g., labor market reforms and globalization), this has probably reduced volatility related to inflationary expectations. Finally, changes in financial markets also seem to have played a role, with the growth of derivative products making it easier to transfer risk and an increase in institutionally managed funds providing more liquid markets for trading it.

Whatever it was that caused the recent decline in volatility, another paper from the BIS suggests that the current situation is unlikely to last. In "150 Years of Financial Market Volatility", the BIS surveys the long term evidence from eight countries' stock and bond markets. It notes that financial market "volatility is dominated by large temporary increases that appear correlated with episodes of economic weakness, political instability and financial turmoil." The paper concludes that, in light of the conditions facing the world economy, "financial institutions and policymakers alike would be well advised to note that a sharp increase in volatility form the [low] level observed in the last few years would not be unprecedented." In the language of central bankers, this is about as strong as a warning gets. In sum it is far more likely that volatility will increase in the future than it is that it will either stay at its current level or further decline.

Product and Strategy Notes

Private Equity Index Fund Registered

We all knew it would eventually happen. And now it has. In early August, Powershares registered with the U.S. Securities and Exchange Commission a new "index fund" that will track the yet to be finalized "Red Rocks Listed Private Equity Index." Said "index" will include "stocks of securities and American depositary receipts ("ADRs") of approximately [_] publicly listed private equity companies, including business development companies ("BDC") and other financial institutions or vehicles whose principal business is to invest in and lend capital to privately-held companies (collectively "listed private equity companies")." Let's put it this way: we're not going to rush out to invest in this ETF when it is launched. Why not? Because on average, the returns from investing in private equity are no higher than those

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from investing in a broad public equity market index. But this average hides a more important fact: most positive private equity returns are earned by the top quartile of private equity managers – the rest earn far less.

Two recent research papers highlight why this is the case. In "Divisional Reverse Leveraged Buyouts: Finishing School or Financial Arbitrage?", Braun and Sharma compare a matched sample of divisions that were spun off by their parent companies via initial public offerings, to those which first go through an LBO before being IPO'd. They observe the latter outperform the former, and ask why this is so. They find that the LBO'd divisions start out with relatively superior operating performance, which remains unchanged while they are privately owned. The authors therefore conclude that the key driver of the superior IPO performance of the LBO'd divisions is superior deal selection and negotiation by private equity managers (in essence, their ability to buy the division from its owners for less than it is worth) rather than their ability to improve its operations before it is IPO'd. In another paper, "The Performance of Reverse Leveraged Buyouts", Cao and Lerner analyze 496 buyouts that were IPO'd between 1980 and 2002. They find much of the outperformance of these IPOs is concentrated in the larger deals. In the context of the soon-to-be-launched private equity "index" ETF, these studies raise a simple question: What are the chances that the relatively few private equity funds that will generate most of the returns from future buyout deals are going to be among those included in the index? In our view, the answer lies somewhere between slim and none.

Three Interesting New Hedge Fund Studies

We recently read three fascinating new studies of hedge fund performance. In "Hedge Funds: Performance, Risk and Capital Formation", Fung, Hsieh, Naik and Ramadorai study an extremely comprehensive database covering the performance 1,603 funds of funds between 1995 and 2004. They study funds of funds rather than individual hedge funds, because in today's environment more and more money is invested in hedge funds via this indirect route. Unsurprisingly, the authors find that there are significant differences across FOF's in terms of their ability to generate alpha for their investors. They also find differences among investors themselves, with some apparently skilled at identifying alpha generating FOFs, while others seem to simply chase returns, with no apparent skill at identifying alpha generators. Yet, like

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Berk and Green before them (in their famous paper, "Mutual Fund Flows and Performance in Rational Markets"), Fung, Hsieh, Naik and Ramadorai also find that in the hedge fund world, good times don't last. Funds that generate alpha receive larger inflows of new investment, which is associated with a decline in their future alphas. The authors conclude that their "findings suggest that there is an apparent mismatch between the supply and demand for alpha. On the one hand, capital appears to be seeking alpha. On the other hand, the supply of alpha appears to be drying up."

In "A Portrait of Hedge Fund Investors: Flows, Performance and Smart Money", Baquero and Verbeek shed more light on the behavior of hedge fund investors by separating their investment and divestment decisions. Specifically, outflows take place relatively quickly, based on quarterly performance, while inflows are more closely linked to annual performance. The authors speculate that the former phenomenon may lead underperforming hedge fund managers to take on excessive risk to avoid losing assets. They also speculate that the slow pace of inflows may lead to investor overconfidence about hedge fund manager skills, as it leads to apparent performance persistence at the quarter-to-quarter time horizon. The authors show that this confidence is not warranted, as on average hedge funds receiving substantial inflows tend to underperform their respective style indexes.

Finally, in "Can Hedge Fund Returns Be Replicated: The Linear Case", Hasanhodzic and Lo analyze the extent to which different hedge fund style returns can be replicated using linear combinations of six tradeable instruments: the U.S. dollar index futures, intermediate terms corporate AA rated bonds, the credit spread between BBB rated corporate bonds and U.S. treasury bonds, the S&P 500, GSCI, and VIX. Put differently, the authors attempt to replicate hedge fund returns using different combinations of stock, bond, credit, currency, commodity, and volatility risk. While full replication of hedge fund results proves impossible (due to the presence of alpha), the results the authors achieve will probably come as a surprise to many investors. Put another way, Hasanhodzic and Lo show that a surprisingly high proportion of hedge fund returns come not from alpha (i.e., exposure to unsystematic risk and manager skill), but rather from exposure to systematic risk (beta). This is not good news if you are paying 2% of the assets and 20% of the profits to a hedge fund manager, and perhaps another layer of fees to a fund-of-funds manager on top of that.

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More New Actively Managed ETF Products

Frequent readers know that we like to distinguish between active management, passive management and indexing. The return on a security reflects compensation for bearing two types of risk. Systematic risk is common to all securities in an asset class; unsystematic risk is unique to either a single security or group of securities. At the level of an asset class, the positive and negative returns from holding unsystematic risk (alphas) cancel out, leaving only the return from holding systematic risk (beta). Passive investors seek only the beta return from holding systematic risk. Active investors seek to earn returns from holding either a combination of systematic and unsystematic risk, or only unsystematic risk (e.g., via a market neutral fund). In both cases, earning positive alpha from active management depends on some combination of good luck and/or forecasting skill. Finally, indexing is nothing more or less than a rules based method for identifying a group of securities whose returns can be aggregated (using some weighting scheme) and tracked. You can index systematic risk at the broad asset class level, and you can index different combinations of systematic and unsystematic risk. The most commonly known examples of this latter type of indexing are based on size, style (e.g., value versus growth), industry and country tilts. However, more and more new combinations of indexed systematic and unsystematic risk (or, more specifically, indexed active management products) are now coming to market.

Among these are three new ETFs by Claymore Securities. The Claymore/Zacks Sector Rotation Fund (XRO; annual expenses .65%) will use a proprietary model (based on relative valuation, price momentum and earnings growth) to switch between 16 sectors of the U.S. equity market. A similar product has been registered by PowerShares. According to its prospectus, the Claymore/Sabrient Stealth ETF (STH; .65%) will invest in stocks tracked by two or fewer analysts that have good fundamentals, and the Claymore/Sabrient Insider ETF (NFO; .65%) will buy stocks with good fundamentals and unusual insider buying activity. All of these new ETFs are expected to generate high turnover in their portfolios – up to 200% per year, according to some press reports. This implies a hefty tax bill each year if these products are not held in tax exempt accounts. So, should you invest in one of these products? Or all of them? Well, that depends. The first point to make is that these funds all deliver a mix of systematic returns and unsystematic returns. They are not "uncorrelated alpha" products like a market neutral fund. The second point is that there are a lot of quantitatively

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oriented active managers out there who use models that are similar to the ones employed by these new ETFs. Unfortunately, all of them suffer from the same limitations, which eventually cause them to become ineffective. Either their models become widely copied, or the structure of the real economy changes and undermines their key assumptions. Why should you expect these ETFs' models to be any better than those employed by lots of hedge funds? And, if you believe they are better today, how long will it be before they lose their edge? If you can answer these questions to your own satisfaction, maybe these new ETFs are for you. But we can't, and won't be investing in them.

Another newly launched ETF is quite different from the equity products mentioned above. The PowerShares DB G10 Currency Harvest Fund (DBV; .81% expenses) brings currency speculation to the masses. The question is whether this is a game the masses ought to be playing. A new research paper sounds a cautionary note. In "The Returns to Currency Speculation", Burnside, Eichenbaum, Kleshchelski, and Rebelo first describe in detail the strategies followed by funds like DBV, and note their theoretical attractions. However, they then show how market frictions – such as the tendency of prices to move against a trader as he or she adds to his or her position – make profits far smaller in practice than they appear in theory. Of course, the other aspect to currency trading is that it is a very high turnover game. Once again, the tax bills associated with DBV are likely to be high, unless it is held in a tax advantaged account. So, on balance, where do we come down on this one? To begin with, currency speculation is an active strategy that should have a relatively low correlation of returns with most asset classes. For example, between 1994 and 2005, the return on the index tracked by DBV had a (.14) annual correlation with the S&P 500, with about the same return and a somewhat lower standard deviation (volatility). On the other hand, this was also a period characterized by a relatively stable global macroeconomic environment and falling interest rates. It remains to be seen how this strategy will perform under less benign economic and financial market conditions. And the same cautions about the inevitable deterioration of all trading models' effectiveness apply here too. That being said, we are still attracted to DBV's potential for generating uncorrelated alpha. With that in mind, we believe that it could (assuming it is held in a tax advantaged account) play a role in an investor's portfolio, in the portion that is allocated to uncorrelated alpha products, such as equity market neutral funds and now, possibly, DBV.

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Finally, we have encouraging developments to report on the timber front. At least in Europe (we're not sure about their availability elsewhere), UBS has started to sell "certificates of participation" linked to the returns on their "Global Timber Index." This index tracks the returns on fifteen publicly traded timber-oriented companies. It includes Plum Creek and Rayonier, the two timber REITS we use to implement our allocation to this asset class. The advantage of the GTI is that it offers exposure to an internationally diversified mix of timber-oriented companies. Regional weights are the USA, 44%, Canada, 28%, Eurozone, 21% and Australia, 7%. The disadvantage is that some of these companies (e.g., Weyerhaeuser and Louisiana Pacific) are exposed to a wide range of return generating factors besides timber. Still, any progress toward making it easy for retail investors to gain broad exposure to this asset class is good news.

The IMF on Future Commodity Prices

The most recent World Economic Outlook, issued in September by the IMF, contains a special chapter on the future of commodity prices. As always, it is well written and insightful. The IMF begins by noting that "some observers have suggested that the rise of China and other large emerging markets may have led to a fundamental change in long-term price trends, and that the world has now entered a period of sustained high prices, particularly of metals. In contrast, others believe that speculative forces have largely decoupled metals prices from market fundamentals, and that prices will inevitably fall back and continue to decline gradually in real terms, as during most of the past century" It then sets out to determine which view is best supported by the available evidence.

The IMF analysts begin by noting that "despite recent increases, the prices of most nonfuel commodities remain below their historical peaks in real terms. Over the past five decades, commodity prices have fallen relative to consumer prices at the rate of about 1.6 percent a year. This downward trend is usually attributed to large productivity gains in the agricultural and metals sectors relative to other parts of the economy. Compared with the prices of manufactures, however, commodity prices stopped falling in the 1990s as the growing globalization of the manufacturing sector slowed producer price inflation. On a year-to-year basis, commodity prices can significantly deviate from the long-term downward trend, as price volatility is much higher than the average real price decline (one standard deviation of

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annual price changes is about 11.5 percent, compared with the long-term price decline of 1.6 percent a year)." The authors stress that "the current volatility in nonfuel commodity markets is not unusual by historical standards. In fact, the volatility of food and raw agricultural material prices seems to have fallen on average over the past couple of decades, as growing geographical diversification of production and technological advances have reduced the sensitivity of prices to supply shocks, such as bad weather or natural disasters."

Another important point is that "nonfuel commodity prices—especially metals— have a strong business-cycle component. The correlation between world growth and annual changes in real metals prices is about 50 percent. Moreover, almost all periods of large upward movements in metals prices have been associated with strong world growth. Prices of agricultural commodities also tend to rise during cyclical upturns, but their response is much more muted than in the case of metals because of more flexible supply and the low income elasticity of demand."

This is the reason why, "over the past four years, commodity prices have evolved very differently across various subgroups of the nonfuel index. Metals prices have risen sharply since 2002 to the present (by 180 percent in real terms), while food and agricultural raw materials prices have increased much less (by 20 and 4 percent, respectively). As a result, metals contributed almost 90 percent to the cumulative 60 percent real increase in the IMF nonfuel commodity index since 2002. The current price dynamics of food and agricultural raw material prices are similar to earlier cyclical episodes…. Until recently, metals prices have also tracked historical patterns —but the continued run-up in metals prices this year has made the cumulative price increase significantly larger than usual. A part of the unusually strong run-up in metals prices can be attributed to low investment in the metals sector in the late 1990s and the early 2000s that followed a period of earlier price declines. Some analysts have also suggested that the intensity of the price upswing in this cycle has been amplified by new factors—the increasing weight of rapidly growing emerging markets (especially China) in the world economy and investment activity of financial investors in commodity markets."

"China has become a key driver of price dynamics in the metals markets. During 2002–05, China contributed almost all of the increase in the world consumption of nickel and tin (Table 5.3). In the cases of lead and zinc, China's contribution even exceeded net world consumption growth. For the two most widely traded base metals (aluminum and copper) and

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for steel, the contribution of China to world consumption growth was about 50 percent. Compared with the last decade, the relative contribution of China to global demand for commodities has increased considerably, as a result of both its rising weight in the world economy and its particularly rapid industrial production growth—including industrial exports—which is closely linked to the demand for metals. Other emerging market countries have also contributed significantly to demand in specific metals markets but, overall, their contribution was not as broad-based as China's. Is the strength of Chinese demand for metals temporary or permanent? Historical patterns suggest that consumption of metals typically grows together with income until about $15,000–$20,000 per capita (in purchasing power parity, or PPP, adjusted dollars) as countries go through a period of industrialization and infrastructure building. At higher incomes, growth typically becomes more services-driven and, therefore, the use of metals per capita starts to stagnate. So far, China (with its current PPP-adjusted real income of about $6,400 per capita) has generally tracked the patterns of Japan and Korea during their initial development phase. For some metals, China's per capita consumption at a given income level is higher than in the other emerging markets, partly because it has a much greater share of industry in its gross domestic product than is typical for other countries at a similar stage of development. This outcome reflects historical antecedents as well as the strong competitiveness of the Chinese economy and relocation of manufacturing production from advanced economies and other emerging markets to China. Looking ahead, rapid industrial output growth, construction activity, and infrastructure needs could sustain the growth of demand of emerging markets for metals at high rates in the medium term. That said, some of the current demand strength could be temporary—especially as the Chinese government is aiming at a rebalancing of growth from investment to consumption over the medium term. "

Just as important to future metals prices is the supply side response they trigger. "The market price of base metals is typically close to the production costs of marginal (i.e., relatively less-efficient) producers—especially at the bottom of the cycle. During booms, the market price can rise to a multiple of the production cost, although over the past couple of decades, the market price has tended to return to a little above costs within a few years. For aluminum, copper, and nickel, the current ratios of market price-to-cost in the range of 1.50 – 2.75 are similar to, or somewhat higher than, those experienced during the cyclical peak in the

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late 1980s. Back then, it took approximately two years for the market price to come down from the peak to near the cost level...Production costs vary considerably over time, mainly reflecting energy prices, exchange rate changes, and cyclical factors, such as availability of skilled personnel and hardware. During 2002–05, production costs escalated for all metals—by about 20 to 50 percent for the marginal producers—with rising energy costs playing a significant part. It is clear, however, that the doubling to tripling of market prices over the past four years cannot be fully explained by the cost structure of the industry. Since demand for metals seems to be rising due to higher global growth and rapidly increasing income and industrial production in large countries such as China, the speed and costs of supply additions will determine whether metals prices retreat from the current high levels in the medium term."

The IMF's modeling results lead them to conclude that "rising commodities supply will be able to meet robust demand growth [and lead to] falling prices. The price decline is generated by a combination of factors: (1) recent accumulated price increases will have some dampening impact on demand; (2) considerable supply expansion is projected in the next five years; and (3) some additional supply is expected to come on stream in the short term." The IMF also notes that "the speed of supply response is significantly faster in the agricultural sector than in metals—for example, crops can be switched from harvest to harvest relatively quickly in response to price signals. Moreover, the demand for agricultural commodities is less cyclical and therefore more predictable. Given these factors, long-term agricultural prices will mostly be determined by productivity gains, which are expected to continue in the future due to technological progress."

Finally, the IMF examines the contribution of financial speculation in futures markets to the recent increase in commodity prices. They conclude that "the short-run causality generally runs from spot and futures prices to speculation, and not vice versa...These findings are consistent with the hypothesis that speculators play a role in providing liquidity to the markets and may benefit from price movements, but do not have a systematic causal influence on prices." For the IMF, the conclusion is clear. "Most of the recent increase in nonfuel commodity indices is due to metals. The current upturn in their prices has been amplified by rapid growth in emerging market economies, particularly in China. Over the medium term, however, metals prices are expected to retreat from recent highs as new capacity comes on stream, although probably not falling back to earlier levels—in part because higher energy

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prices have increased production costs. That said, the timing and the speed of the price reversal is uncertain, because with current high capacity utilization rates and low inventories, markets are very sensitive to even small changes in supply and demand.

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2006-2007 Model Portfolios Update

Our model portfolios are constructed using a simulation optimization methodology. They assume that an investor understands the long-term compound real rate of return he or she needs to earn on his or her portfolio to achieve his or her long-term financial goals. We use SO to develop multi-period asset allocation solutions that are "robust". They are intended to maximize the probability of achieving an investor's compound annual return target under a wide range of possible future asset class return scenarios. More information about the SO methodology is available on our website. Using this approach, we produce model portfolios for six different compound annual real return targets: 7%, 6%, 5%, 4%, 3%, and 2% We produce two sets of these portfolios: one assumes only investments in broad asset class index funds. These are our "all beta" portfolios. The second set of model portfolios includes equity market neutral (uncorrelated alpha) funds as a possible investment. These assume that an investor is primarily investing in index funds, but is willing to allocate up to ten percent of his or her portfolio to equity market neutral investments.

We use two benchmarks to measure the performance of our model portfolios. The first is cash, which we define as the yield on a one year government security purchased on the last trading day of the previous year. For 2006, our Australian Dollar cash benchmark is 5.25% (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 are shown in the tables on the following pages. Mutual and exchange traded funds that can be used to implement these model portfolios' asset allocations are listed on our website.

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These portfolios seek to maximize the probability of achieving at least the target real return over twenty years, at the lowest possible risk.			
	YTD 29Sep06	Weight	Weighted Return
	In A$		In A$
7% Target Real Return	*YTD Returns are Nominal*		
Asset Classes			
Australian Real Return Bonds	4.3%	0.0%	**0.0%**
Australian Bonds	-2.8%	25.0%	**-0.7%**
Global Bonds	2.1%	0.0%	**0.0%**
Domestic Commercial Property	16.3%	10.0%	**1.6%**
Foreign Commercial Property	22.1%	0.0%	**0.0%**
Commodities	-7.3%	10.0%	**-0.7%**
Timber	-3.7%	10.0%	**-0.4%**
Australian Equity	11.1%	20.0%	**2.2%**
Foreign Equity (USA)	6.3%	7.5%	**0.5%**
Foreign Equity (EAFE)	13.0%	7.5%	**1.0%**
Emerging Equity	8.8%	10.0%	**0.9%**
Equity Market Neutral	3.1%	0.0%	**0.0%**
		100.0%	**4.4%**

	YTD 29Sep06	Weight	Weighted Return
	In A$		In A$
6% Target Real Return	*YTD Returns are Nominal*		
Asset Classes			
Australian Real Return Bonds	4.3%	0.0%	**0.0%**
Australian Bonds	-2.8%	27.5%	**-0.8%**
Global Bonds	2.1%	2.5%	**0.1%**
Domestic Commercial Property	16.3%	2.5%	**0.4%**
Foreign Commercial Property	22.1%	0.0%	**0.0%**
Commodities	-7.3%	15.0%	**-1.1%**
Timber	-3.7%	2.5%	**-0.1%**
Australian Equity	11.1%	22.5%	**2.5%**
Foreign Equity (USA)	6.3%	9.0%	**0.6%**
Foreign Equity (EAFE)	13.0%	8.5%	**1.1%**
Emerging Equity	8.8%	10.0%	**0.9%**
Equity Market Neutral	3.1%	0.0%	**0.0%**
		100.0%	**3.5%**

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	YTD 29Sep06	Weight	Weighted Return
	In A$		In A$
5% Target Real Return	*YTD Returns are Nominal*		
Asset Classes			
Australian Real Return Bonds	4.3%	12.5%	**0.5%**
Australian Bonds	-2.8%	15.0%	**-0.4%**
Global Bonds	2.1%	10.0%	**0.2%**
Domestic Commercial Property	16.3%	12.5%	**2.0%**
Foreign Commerical Property	22.1%	0.0%	**0.0%**
Commodities	-7.3%	15.0%	**-1.1%**
Timber	-3.7%	5.0%	**-0.2%**
Australian Equity	11.1%	12.5%	**1.4%**
Foreign Equity (USA)	6.3%	5.0%	**0.3%**
Foreign Equity (EAFE)	13.0%	5.0%	**0.6%**
Emerging Equity	8.8%	7.5%	**0.7%**
Equity Market Neutral	3.1%	0.0%	**0.0%**
		100.0%	**4.1%**

	YTD 29Sep06	Weight	Weighted Return
	In A$		In A$
4% Target Real Return	*YTD Returns are Nominal*		
Asset Classes			
Australian Real Return Bonds	4.3%	17.5%	**0.7%**
Australian Bonds	-2.8%	17.5%	**-0.5%**
Global Bonds	2.1%	7.5%	**0.2%**
Domestic Commercial Property	16.3%	7.5%	**1.2%**
Foreign Commercial Property	22.1%	0.0%	**0.0%**
Commodities	-7.3%	15.0%	**-1.1%**
Timber	-3.7%	2.5%	**-0.1%**
Australian Equity	11.1%	15.0%	**1.7%**
Foreign Equity (USA)	6.3%	6.5%	**0.4%**
Foreign Equity (EAFE)	13.0%	6.0%	**0.8%**
Emerging Equity	8.8%	5.0%	**0.4%**
Equity Market Neutral	3.1%	0.0%	**0.0%**
		100.0%	**3.7%**

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	YTD 29Sep06	Weight	Weighted Return
	In A$		In A$
3% Target Real Return	*YTD Returns are Nominal*		
Asset Classes			
Australian Real Return Bonds	4.3%	17.5%	**0.7%**
Australian Bonds	-2.8%	20.0%	**-0.6%**
Global Bonds	2.1%	10.0%	**0.2%**
Domestic Commercial Property	16.3%	10.0%	**1.6%**
Foreign Commercial Property	22.1%	0.0%	**0.0%**
Commodities	-7.3%	10.0%	**-0.7%**
Timber	-3.7%	10.0%	**-0.4%**
Australian Equity	11.1%	17.5%	**1.9%**
Foreign Equity (USA)	6.3%	2.5%	**0.2%**
Foreign Equity (EAFE)	13.0%	2.5%	**0.3%**
Emerging Equity	8.8%	0.0%	**0.0%**
Equity Market Neutral	3.1%	0.0%	**0.0%**
		100.0%	**3.3%**

	YTD 29Sep06	Weight	Weighted Return
	In A$		In A$
2% Target Real Return	*YTD Returns are Nominal*		
Asset Classes			
Australian Real Return Bonds	4.3%	45.0%	**1.9%**
Australian Bonds	-2.8%	17.5%	**-0.5%**
Global Bonds	2.1%	5.0%	**0.1%**
Domestic Commercial Property	16.3%	0.0%	**0.0%**
Foreign Commercial Property	22.1%	0.0%	**0.0%**
Commodities	-7.3%	10.0%	**-0.7%**
Timber	-3.7%	7.5%	**-0.3%**
Australian Equity	11.1%	10.0%	**1.1%**
Foreign Equity (USA)	6.3%	0.0%	**0.0%**
Foreign Equity (EAFE)	13.0%	0.0%	**0.0%**
Emerging Equity	8.8%	5.0%	**0.4%**
Equity Market Neutral	3.1%	0.0%	**0.0%**
		100.0%	**2.1%**

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	YTD 29Sep06	Weight	Weighted Return
	In A$		In A$
Equally Weighted Portfolio	*YTD Returns are Nominal*		
Asset Classes			
Australian Real Return Bonds	4.3%	10.0%	**0.4%**
Australian Bonds	-2.8%	10.0%	**-0.3%**
Global Bonds	2.1%	10.0%	**0.2%**
Domestic Commercial Property	16.3%	10.0%	**1.6%**
Foreign Commercial Property	22.1%	10.0%	**2.2%**
Commodities	-7.3%	10.0%	**-0.7%**
Timber	-3.7%	10.0%	**-0.4%**
Australian Equity	11.1%	10.0%	**1.1%**
Foreign Equity (USA)	6.3%	5.0%	**0.3%**
Foreign Equity (EAFE)	13.0%	5.0%	**0.6%**
Emerging Equity	8.8%	10.0%	**0.9%**
Equity Market Neutral	3.1%	0.0%	**0.0%**
Total		100.0%	**6.0%**

These portfolios seek to maximize the probability of achieving at least the target real return over twenty years, at the lowest possible risk.		*Unlike the other target return portfolios, these allow investment in uncorrelated alpha (equity market neutral) funds.*	
	YTD 29Sep06	Weight	Weighted Return
	In A$		In A$
7% Target Real Return	*YTD Returns are Nominal*		
Asset Classes			
Australian Real Return Bonds	4.3%	0.0%	**0.0%**
Australian Bonds	-2.8%	27.5%	**-0.8%**
Global Bonds	2.1%	0.0%	**0.0%**
DomesticCommercial Property	16.3%	10.0%	**1.6%**
Foreign Commercial Property	22.1%	0.0%	**0.0%**
Commodities	-7.3%	5.0%	**-0.4%**
Timber	-3.7%	10.0%	**-0.4%**
Australian Equity	11.1%	20.0%	**2.2%**
Foreign Equity (USA)	6.3%	9.0%	**0.6%**
Foreign Equity (EAFE)	13.0%	8.5%	**1.1%**
Emerging Equity	8.8%	7.5%	**0.7%**
Equity Market Neutral	3.1%	2.5%	**0.1%**
		100.0%	**4.7%**

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	YTD 29Sep06	Weight	Weighted Returr
	In A$		In A$
6% Target Real Return	*YTD Returns are Nominal*		
Asset Classes			
Australian Real Return Bonds	4.3%	5.0%	**0.2%**
Australian Bonds	-2.8%	22.5%	**-0.6%**
Global Bonds	2.1%	2.5%	**0.1%**
Domestic Commercial Property	16.3%	7.5%	**1.2%**
Foreign Commercial Property	22.1%	0.0%	**0.0%**
Commodities	-7.3%	12.5%	**-0.9%**
Timber	-3.7%	5.0%	**-0.2%**
Australian Equity	11.1%	22.5%	**2.5%**
Foreign Equity (USA)	6.3%	7.5%	**0.5%**
Foreign Equity (EAFE)	13.0%	7.5%	**1.0%**
Emerging Equity	8.8%	5.0%	**0.4%**
Equity Market Neutral	3.1%	2.5%	**0.1%**
		100.0%	**4.2%**

	YTD 29Sep06	Weight	Weighted Returr
	In A$		In A$
5% Target Real Return	*YTD Returns are Nominal*		
Asset Classes			
Australian Real Return Bonds	4.3%	10.0%	**0.4%**
Australian Bonds	-2.8%	22.5%	**-0.6%**
Global Bonds	2.1%	7.5%	**0.2%**
Domestic Commercial Property	16.3%	10.0%	**1.6%**
Foreign Commercial Property	22.1%	0.0%	**0.0%**
Commodities	-7.3%	12.5%	**-0.9%**
Timber	-3.7%	5.0%	**-0.2%**
Australian Equity	11.1%	12.5%	**1.4%**
Foreign Equity (USA)	6.3%	6.5%	**0.4%**
Foreign Equity (EAFE)	13.0%	6.0%	**0.8%**
Emerging Equity	8.8%	5.0%	**0.4%**
Equity Market Neutral	3.1%	2.5%	**0.1%**
		100.0%	**3.6%**

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	YTD 29Sep06	Weight	Weighted Returr
	In A$		In A$
4% Target Real Return	*YTD Returns are Nominal*		
Asset Classes			
Australian Real Return Bonds	4.3%	15.0%	**0.6%**
Australian Bonds	-2.8%	17.5%	**-0.5%**
Global Bonds	2.1%	5.0%	**0.1%**
Domestic Commercial Property	16.3%	7.5%	**1.2%**
Foreign Commercial Property	22.1%	0.0%	**0.0%**
Commodities	-7.3%	12.5%	**-0.9%**
Timber	-3.7%	2.5%	**-0.1%**
Australian Equity	11.1%	17.5%	**1.9%**
Foreign Equity (USA)	6.3%	4.0%	**0.3%**
Foreign Equity (EAFE)	13.0%	3.5%	**0.5%**
Emerging Equity	8.8%	5.0%	**0.4%**
Equity Market Neutral	3.1%	10.0%	**0.3%**
		100.0%	**3.9%**

	YTD 29Sep06	Weight	Weighted Returr
	In A$		In A$
3% Target Real Return	*YTD Returns are Nominal*		
Asset Classes			
Australian Real Return Bonds	4.3%	7.5%	**0.3%**
Australian Bonds	-2.8%	27.5%	**-0.8%**
Global Bonds	2.1%	12.5%	**0.3%**
Domestic Commercial Property	16.3%	10.0%	**1.6%**
Foreign Commercial Property	22.1%	0.0%	**0.0%**
Commodities	-7.3%	7.5%	**-0.6%**
Timber	-3.7%	10.0%	**-0.4%**
Australian Equity	11.1%	15.0%	**1.7%**
Foreign Equity (USA)	6.3%	2.5%	**0.2%**
Foreign Equity (EAFE)	13.0%	2.5%	**0.3%**
Emerging Equity	8.8%	0.0%	**0.0%**
Equity Market Neutral	3.1%	5.0%	**0.2%**
		100.0%	**2.8%**

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	YTD 29Sep06	Weight	Weighted Returr
	In A$		In A$
2% Target Real Return	*YTD Returns are Nominal*		
Asset Classes			
Australian Real Return Bonds	4.3%	35.0%	**1.5%**
Australian Bonds	-2.8%	15.0%	**-0.4%**
Global Bonds	2.1%	7.5%	**0.2%**
Domestic Commercial Property	16.3%	5.0%	**0.8%**
Foreign Commercial Property	22.1%	0.0%	**0.0%**
Commodities	-7.3%	10.0%	**-0.7%**
Timber	-3.7%	7.5%	**-0.3%**
Australian Equity	11.1%	7.5%	**0.8%**
Foreign Equity (USA)	6.3%	0.0%	**0.0%**
Foreign Equity (EAFE)	13.0%	0.0%	**0.0%**
Emerging Equity	8.8%	5.0%	**0.4%**
Equity Market Neutral	3.1%	7.5%	**0.2%**
		100.0%	**2.5%**

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