

The Index Investor

Invest Wisely...Get an Impartial Second Opinion.

Contents

<i>This Month's Issue: Key Points</i>	<i>1</i>
<i>This Month's Letters to the Editor.....</i>	<i>2</i>
<i>Global Asset Class Returns</i>	<i>5</i>
<i>Asset Class Valuation Update</i>	<i>6</i>
<i>Economic Update</i>	<i>17</i>
<i>Becoming a Better Alpha Investor.....</i>	<i>23</i>
<i>Product and Strategy Notes.....</i>	<i>27</i>
<i>2006-2007 Model Portfolios Update.....</i>	<i>31</i>

This Month's Issue: Key Points

Our first feature article this month is our quarterly Economic Update. Our base case scenario for the world economy has not changed. The United States currently accounts for 19.7% of global economic output. Private consumption expenditure represents 70% of that amount. A further 6.2% of GDP is devoted to gross fixed capital investment in housing. That means that the U.S. consumer currently accounts for about 15% of global economic output. Unfortunately, much of this consumption binge has been financed with loans that were based on rising housing values. With housing prices falling at a quickening pace, this game is coming to an end.

The main counterpart to U.S. consumption and housing investment has been an unprecedented investment boom in China, where investment spending amounting to 45% of total demand. A substantial portion of this investment has been made in export industries whose sales are made to U.S. consumers. With China accounting for 15.1% of global GDP, Chinese investment amounts to a further 6.8% of global GDP. As U.S. housing prices head

south, this second motor of global economic growth is also at risk, as China cannot increase its private consumption quick enough to offset the coming downturn in the United States. We're not sure how this process will evolve (e.g., will it be deflationary or inflationary? Will it be characterized by international cooperation to limit its harmful effects, or by intensifying political conflicts that will make things worse? We're not sure about the answers to these questions. But we do believe that the next few years will be very challenging ones. If we had to pick asset classes that seem undervalued in the face of this outlook, we would point to timber, real return bonds, equity volatility and non-U.S. dollar government bonds.

Our second feature article reviews a number of recent research papers whose findings can make us better active investors. While we continue to believe that consistently successful active management is extraordinarily difficult, we also believe that, at some point in their investing lives, many people will believe themselves to be in possession of an insight that could make them a lot of money. This article should help you to test those insights, and decide whether and how you should act on them.

This month's product and strategy notes updates asset class weights in the global capitalization weighted market portfolio (which, like the equally weighted portfolio, can serve as a good benchmark), reviews recent research on the advantages and disadvantages of complicated asset pricing models, and asks we should all be jumping aboard the private equity express.

This Month's Letters to the Editor

With UK inflation now low, and the FTSE All Stock Gilt [UK domestic bond] ETF now yielding 4.75% after dealing costs and expenses, is there any point in a private investor holding this asset class rather than cash? I can get 5.7% in my building society account, with no risk to capital and immediate availability with no dealing charge.

As we note in this month's economic update, we are quite pessimistic about what lies ahead for the world economy. That being said, we are still uncertain about the exact nature of the bad times that we believe are heading our way. Under one scenario, a global recession caused by a sharp drop in U.S. private consumption (and the follow on hit to Chinese investment spending) could cause widespread liquidity problems in highly leveraged financial markets, leading to a sharp increase in defaults and deflation. Call this a classic 19th century financial

panic. In this case, falling nominal interest rates would lead to increasing prices and total returns for fixed rate bonds, while cash returns would fall (assuming they are frequently reset). On the other hand, knowing how long it has taken Japan to emerge from its period of deflation, OECD policymakers and central banks might choose to intervene much earlier with a burst of money creation designed to drive inflation higher, on the theory that a recession with inflation is preferable to one with deflation (a view that voters with fixed rate mortgages will certainly support). Under this scenario, rising interest rates would cause a fall in bond prices, and negative total returns. In contrast, the frequently reset yields on your building society account would help maintain the real purchasing power of your cash. On balance, we believe that political logic favors the inflation scenario and holding cash. On the other hand, more than a few central bankers may believe that, despite the high economic price to be paid, the time has come for an overleveraged and overvalued global financial system to take some bitter medicine to eliminate the excesses that have build up over the past 25 years (we date their start to the beginning of the LDC debt crisis in August, 1982). In short, it is a tough call.

Why do the Index Investor and Retired Investor model portfolios with the same target return sometimes have different asset allocations?

An excellent question. Let's start with the meaning of "target return." Technically, it is the internal rate of return that maximizes the probability of achieving a given target. In the case of the Index Investor portfolios, this target is expressed at the probability of accumulating a certain amount of money (expressed in constant dollar – that is, "real" – terms) over a given time horizon, assuming a certain level of savings are contributed to the portfolio each year. In the case of Retired Investor, not one, but two targets are pursued simultaneously. The first is a 95% probability that sufficient funds will be available to cover a specified level of annual income withdrawal over a given time horizon. The second is to maximize the probability of achieving a target bequest. Where it is impossible to achieve the 95% probability of achieving the income target, the model dispenses with the bequest goal, and instead seeks an asset allocation that maximizes the probability of achieving the income target over the specified time horizon. As you can see, the challenge facing retired investors is much greater than the one facing people still in the accumulation stage of life. As we like to say, annual inflows of savings make up for a multitude of sins, while annual withdrawals make the

portfolio management game progressively harder to win, particularly if it is played for a long period of time (hence our fondness for gradually hedging this risk by annuitizing portions of a retiree's portfolio as he or she gradually observes trends in both his or her health and his or her investment returns). Given the substantially different nature of the underlying challenges they are trying to address, it should come as no surprise that the asset allocations for Index Investor and Retired Investor portfolios with the same target internal rate of return will often differ. Specifically, it is often the case that the Retired Investor portfolio will have the more aggressive asset allocation of the two. While this is counterintuitive on the surface (retirees are supposed to be conservative, right?), it makes sense when you consider the different challenges presented by the underlying investment problems. Unfortunately, this is not a message well understood by retirees, or by too many of their advisers. Instead, we repeatedly see people who, as they approach retirement, are encouraged to shift their portfolios to a more conservative asset allocation, and are surprised to find that in so doing they have not only paid unnecessary capital gains taxes, but also backed themselves into a lower level of safe income withdrawal than they had expected. We suspect that this is why McKinsey recently found that many people switch financial advisers shortly after they retire.

Global Asset Class Returns

YTD 30Mar07	<u>In USD</u>	<u>In AUD</u>	<u>In CAD</u>	<u>In EURO</u>	<u>In JPY</u>	<u>In GBP</u>	<u>In CHF</u>	<u>In INR</u>
Asset Held								
US Bonds	1.42%	-1.07%	0.43%	0.23%	0.63%	0.92%	1.58%	-0.07%
US Prop	3.39%	0.90%	2.40%	2.20%	2.60%	2.89%	3.55%	1.90%
US Equity	1.35%	-1.14%	0.36%	0.16%	0.56%	0.85%	1.51%	-0.14%
AUS Bonds	3.06%	0.57%	2.07%	1.87%	2.28%	2.56%	3.22%	1.57%
AUS Prop	-0.64%	-3.13%	-1.62%	-1.82%	-1.42%	-1.14%	-0.48%	-2.12%
AUS Equity	10.43%	7.93%	9.44%	9.24%	9.64%	9.92%	10.59%	8.94%
CAN Bonds	0.80%	-1.70%	-0.19%	-0.39%	0.01%	0.29%	0.96%	-0.69%
CAN Prop	6.30%	3.81%	5.32%	5.12%	5.52%	5.80%	6.46%	4.82%
CAN Equity	5.32%	2.82%	4.33%	4.13%	4.53%	4.82%	5.48%	3.83%
Euro Bonds	0.13%	-2.36%	-0.85%	-1.05%	-0.65%	-0.37%	0.29%	-1.35%
Euro Prop.	10.15%	7.66%	9.16%	8.96%	9.36%	9.65%	10.31%	8.66%
Euro Equity	4.71%	2.22%	3.72%	3.53%	3.93%	4.21%	4.87%	3.23%
Japan Bnds	0.88%	-1.61%	-0.10%	-0.30%	0.10%	0.38%	1.04%	-0.60%
Japan Prop	22.36%	19.87%	21.37%	21.17%	21.57%	21.86%	22.52%	20.87%
Japan Eqty	2.53%	0.04%	1.55%	1.35%	1.75%	2.03%	2.69%	1.05%
UK Bonds	-0.92%	-3.41%	-1.91%	-2.11%	-1.70%	-1.42%	-0.76%	-2.41%
UK Prop.	-3.78%	-6.27%	-4.77%	-4.97%	-4.57%	-4.28%	-3.62%	-5.27%
UK Equity	2.82%	0.33%	1.83%	1.63%	2.03%	2.32%	2.98%	1.33%
World Bnds	1.33%	-1.16%	0.34%	0.14%	0.54%	0.83%	1.49%	-0.16%
World Prop.	6.56%	4.07%	5.57%	5.37%	5.77%	6.06%	6.72%	5.07%
World Eqty	2.60%	0.11%	1.61%	1.41%	1.81%	2.10%	2.76%	1.11%
Commod	3.84%	1.35%	2.85%	2.65%	3.06%	3.34%	4.00%	2.35%
Timber	1.75%	-0.74%	0.76%	0.56%	0.97%	1.25%	1.91%	0.26%
EqMktNtrl	1.83%	-0.66%	0.85%	0.65%	1.05%	1.33%	1.99%	0.35%
Volatility	26.64%	24.15%	25.66%	25.46%	25.86%	26.14%	26.80%	25.16%
Currency								
AUD	2.49%	0.00%	1.51%	1.31%	1.71%	1.99%	2.65%	1.01%
CAD	0.99%	-1.51%	0.00%	-0.20%	0.20%	0.49%	1.15%	-0.50%
EUR	1.19%	-1.31%	0.20%	0.00%	0.40%	0.69%	1.35%	-0.30%
JPY	0.79%	-1.71%	-0.20%	-0.40%	0.00%	0.28%	0.95%	-0.70%
GBP	0.50%	-1.99%	-0.49%	-0.69%	-0.28%	0.00%	0.66%	-0.99%
USD	0.00%	-2.49%	-0.99%	-1.19%	-0.79%	-0.50%	0.16%	-1.49%
CHF	-0.16%	-2.65%	-1.15%	-1.35%	-0.95%	-0.66%	0.00%	-1.65%
INR	1.49%	-1.01%	0.50%	0.30%	0.70%	0.99%	1.65%	0.00%

Asset Class Valuation Update

Our market valuation analyses are based on the assumption that markets are not perfectly efficient and always in equilibrium. This means that it is possible for the supply of future returns a market is expected to provide to be higher or lower than the returns investors logically demand. In the case of an equity market, we define the future supply of returns to be equal to the current dividend yield plus the rate at which dividends are expected to grow in the future. We define the return investors demand as the current yield on real return government bonds plus an equity market risk premium. As described in our May, 2005 issue, people can and do disagree about the “right” values for these variables. Recognizing this, we present four valuation scenarios for an equity market, based on different values for three key variables. First, we use both the current dividend yield and the dividend yield adjusted upward by .50% to reflect share repurchases. Second, we define future dividend growth to be equal to the long-term rate of total (multifactor) productivity growth, 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 $(\text{Current Dividend Yield} \times 100) \times (1 + \text{Forecast Productivity Growth})$ divided by $(\text{Current Yield on Real Return Bonds} + \text{Equity Risk Premium} - \text{Forecast Productivity Growth})$. Our valuation estimates are shown in the following tables, where a value greater than 100% implies overvaluation, and less than 100% implies undervaluation.

Equity Market Valuation Analysis at 30Mar07

<i>Australia</i>	Low Demanded Return	High Demanded Return
High Supplied Return	76%	112%
Low Supplied Return	116%	157%

<i>Canada</i>	Low Demanded Return	High Demanded Return
High Supplied Return	95%	158%
Low Supplied Return	175%	256%

<i>Eurozone</i>	Low Demanded Return	High Demanded Return
High Supplied Return	80%	128%
Low Supplied Return	135%	192%

<i>Japan</i>	Low Demanded Return	High Demanded Return
High Supplied Return	103%	197%
Low Supplied Return	247%	387%

<i>United Kingdom</i>	Low Demanded Return	High Demanded Return
High Supplied Return	54%	96%
Low Supplied Return	96%	145%

<i>United States</i>	Low Demanded Return	High Demanded Return
High Supplied Return	116%	180%
Low Supplied Return	204%	286%

<i>Switzerland</i>	Low Demanded Return	High Demanded Return
High Supplied Return	92%	158%
Low Supplied Return	177%	251%

<i>India</i>	Low Demanded Return	High Demanded Return
High Supplied Return	147%	228%
Low Supplied Return	281%	394%

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

Bond Market Analysis as of 30Mar07

	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	2.65%	2.96%	5.61%	5.89%	0.29%	-2.66%
Canada	1.78%	2.40%	4.18%	4.11%	-0.07%	0.65%
Eurozone	2.03%	2.37%	4.40%	4.06%	-0.34%	3.31%
Japan	1.14%	0.77%	1.91%	1.66%	-0.25%	2.49%
UK	1.47%	3.17%	4.64%	4.94%	0.30%	-2.83%
USA	2.24%	2.93%	5.17%	4.65%	-0.52%	5.03%
Switz.	1.58%	2.03%	3.61%	2.68%	-0.93%	9.44%
India	3.23%	7.57%	10.80%	8.23%	-2.57%	26.45%

*Derived from ten year yield and forecast inflation

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

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

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

Real Interest Rate Analysis at 30Mar07

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	2.25%	1.50%	1.75%	1.00%	1.25%	2.00%
MFP Growth	1.60%	1.20%	1.40%	0.60%	1.40%	1.40%
Theoretical Real Rate	2.65%	1.74%	2.03%	1.10%	1.48%	2.35%
Real Rate	2.65%	1.78%	2.03%	1.14%	1.47%	2.24%

Our bond market analysis also uses historical inflation as an estimate of expected future inflation. This may not produce an accurate valuation estimate, if the historical average level of inflation is not a good predictor of average future inflation levels. For example, if expected future inflation is lower than historical inflation, required returns will be lower. 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.

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

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

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

At 30 March 2007, the AAA minus 10 year Treasury spread was .76%. This was up .12% over the previous month (a substantial jump) but is still 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 .97%. This was also up over the previous month, but still below the long-term average compensation for bearing credit risk. Given other developments underway in the world economy, and the recent bout of volatility in financial markets, we believe that it is more likely that corporate bonds are overvalued today than undervalued.

For an investor contemplating the purchase of foreign bonds or equities, the expected future annual percentage change in the exchange rate is also important. Study after study has shown that there is no reliable way to forecast this. 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 on 30Mar07

	To AUD	To CAD	To EUR	To JPY	To GBP	To USD	To CHF	To INR
From								
AUD	0.00%	-1.78%	-1.83%	-4.23%	-0.95%	-1.24%	-3.21%	2.34%
CAD	1.78%	0.00%	-0.05%	-2.45%	0.83%	0.54%	-1.43%	4.12%
EUR	1.83%	0.05%	0.00%	-2.40%	0.88%	0.59%	-1.38%	4.17%
JPY	4.23%	2.45%	2.40%	0.00%	3.28%	2.99%	1.02%	6.57%
GBP	0.95%	-0.83%	-0.88%	-3.28%	0.00%	-0.29%	-2.26%	3.29%
USD	1.24%	-0.54%	-0.59%	-2.99%	0.29%	0.00%	-1.97%	3.58%
CHF	3.21%	1.43%	1.38%	-1.02%	2.26%	1.97%	0.00%	5.55%
INR	-2.34%	-4.12%	-4.17%	-6.57%	-3.29%	-3.58%	-5.55%	0.00%

Our approach to valuing commercial property securities as an asset class is hindered by a lack of historical data about rates of dividend growth. To overcome this limitation, we have assumed that markets are fairly valued today (i.e., the expected supply of returns equals the expected returns demanded by investors), and “backed out” the implied 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:

Commercial Property Securities Analysis as of 30Mar07

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	2.65%	2.50%	5.3%	-0.1%
Canada	1.78%	2.50%	3.4%	0.9%
Eurozone	2.03%	2.50%	2.1%	2.4%
Japan	1.14%	2.50%	1.1%	2.5%
Switzerland	1.58%	2.50%	3.1%	1.0%
United Kingdom	1.47%	2.50%	1.9%	2.1%
United States	2.24%	2.50%	3.6%	1.1%

A very rough way to test the reasonableness of these implied expected growth assumptions is to compare them to the expected real annual change in commercial rents over the next five years. If you think the real growth estimates are too high relative to your expectation for changes in rents, 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 (Australia excepted), and therefore to believe that the balance of business cycle and valuation evidence suggests that commercial property in many markets is probably overvalued today.

To estimate the likely direction of short term commodity futures price changes, we compare the current price to the historical distribution of futures index prices. Between 1991 and 2005 period, the Dow Jones AIG Commodities Index (DJAIG) had an average value of 107.6, with a standard deviation of 21.9. The 30 March 2007 closing value of 171.96 was about 3.0 standard deviations above the average (assuming the value of the index is normally distributed around its historical average, a value greater than three standard deviations away

from that average should occur less than 1% of the time). Given this, the probability of a near term decline in the spot price of the DJAIG still seems much higher than the probability of an increase. At any given point in time, the current price of a commodity futures contract should equal the expected future spot price less some premium (i.e., expected return) the buyer of the future expects to receive for bearing the risk that this forecasted future spot price will be inaccurate. However, the *actual* return realized by the buyer of the futures contract can turn out to be quite different from the expected return. When it occurs, this difference will be due to unexpected changes in the spot price of the contract that occur after the date on which the futures contract was purchased but before it is closed out. If the unexpected change in the spot price is positive, the buyer of the futures contract (i.e., the investor) will receive a higher than expected return; if the unexpected price change is negative, the buyer's return will be lower than expected. In a perfectly efficient market, these unexpected price changes should be unpredictable, and over time net out to zero. On the other hand, if the futures market is less than perfectly efficient – if, for example, investors' emotions cause prices to sometimes diverge from their rational equilibrium values – then it is possible for futures contracts to be over or undervalued.

Our approach to assessing the current value of equity market volatility (as measured by the VIX index, which tracks the level of S&P 500 Index volatility implied by the current pricing of put and call options on this index) is similar to our approach to commodities. Between January 2, 1990 and December 30, 2005, the average value of the VIX Index was 19.45, with a standard deviation of 6.40. The one standard deviation (67% confidence interval) range was 13.05 to 28.85, and the two standard deviations (95% confidence) range was from 6.65 to 32.25. On 30 March 2007, the VIX closed at 14.64. This is .8 standard deviations below the VIX's long term average value. This level strikes us as low in light of rising uncertainty in the economy and financial markets. Hence, we conclude that equity volatility is likely undervalued today.

Sector and Style Rotation Watch

The following table shows a number of classic style and sector rotation strategies that attempt to generate above index returns by correctly forecasting turning points in the economy. This table assumes that active investors are trying to earn high returns by investing today in the styles and sectors that will perform best in the next stage of the economic cycle.

The logic behind this is as follows: Theoretically, the fair price of an asset (also known as its fundamental value) is equal to the present value of the future cash flows it is expected to produce, discounted at a rate that reflects their relative riskiness.

Current economic conditions affect the current cash flow an asset produces. Future economic conditions affect future cash flows and discount rates. Because they are more numerous, expected future cash flows have a much bigger impact on the fundamental value of an asset than do current cash flows. Hence, if an investor is attempting to earn a positive return by purchasing today an asset whose value (and price) will increase in the future, he or she needs to accurately forecast the future value of that asset. To do this, he or she needs to forecast future economic conditions, and their impact on future cash flows and the future discount rate. Moreover, an investor also needs to do this before the majority of other investors reach the same conclusion about the asset's fair value, and through their buying and selling cause its price to adjust to that level (and eliminate the potential excess return).

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

Three Month Rolling Nominal Returns on Classic Rotation Strategies in the U.S. Markets*Rolling 3 Month
Returns Through***30-Mar-07**

<i>Economy</i>	Bottoming	Strengthening	Peaking	Weakening
<i>Interest Rates</i>	Falling	Bottom	Rising	Peak
<i>Style and Size Rotation</i>	Small Growth (DSG) 4.28%	Small Value (DSV) 3.21%	Large Value (ELV) 0.19%	Large Growth (ELG) 1.23%
<i>Sector Rotation</i>	Cyclicals (IYC) 1.33% Technology (IYW) -0.86%	Basic Materials (IYM) 9.06% Industrials (IYJ) 2.77%	Energy (IYE) 2.80% Staples (IYK) 1.47%	Utilities (IDU) 8.70% Financials (IYF) -2.53%
<i>Bond Market Rotation</i>	Higher Risk (LQD) 1.80%	Short Maturity (SHY) 1.65%	Low Risk (TIP) 2.55%	Long Maturity (TLT) 1.04%

The next tables describe the typical cycles in the markets for commercial property and commodities. These reflect trends for the asset classes as a whole; in the future, as new products are introduced, we will add sector rotation information where it is appropriate. We believe these tables should be read in conjunction with current situation in the bond market. However, readers should also remember that, rather than being leading indicators of future economic conditions (as bond and stock returns often are), 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
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 March 2007. 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	U.S. Government Bonds
Possibly Undervalued	Timber, Real Return Bonds
Likely Undervalued	Equity Volatility
Probably Undervalued	Non-U.S. Dollar Bonds

Economic Update

Our base case scenario for the world economy has not changed. It can be summarized as follows. The United States currently accounts for 19.7% of global economic output. Private consumption expenditure represents 70% of that amount. A further 6.2% of GDP is devoted to gross fixed capital investment in housing. That means that the U.S. consumer currently accounts for about 15% of global economic output. Unfortunately, the U.S. consumer is currently loaded up with debt. Moreover, in recent years, the share of GDP going to labor has been falling – except for people at the top of the income distribution, wages have been stagnant. While incomes have been sustained by a relatively high level of female participation in the workforce, this support pillar is now under threat from globalization, and competition from workers located in other countries. In recent years, the steady rise in housing values has provided a second pillar of support for continued high levels of U.S. consumer spending. Unfortunately, this pillar is now giving way, with housing prices falling in many markets, and serious problems beginning to emerge in the subprime mortgage market.

The main counterpart to U.S. consumption and housing investment has been an unprecedented investment boom in China, which accounts for 15.1% of global GDP. With investment spending amounting to 45% of total demand, Chinese investment (which heretofore has largely been directed at export industries) amounts to a further 6.8% of global GDP.

The unavoidable truth is that while the current set of arrangements has kept the global economy growing, it has also led the buildup of unprecedented current account deficits on the part of the United States, and the accumulation of enormous foreign exchange reserves in the

foreign central banks have supported their exports to the U.S. with the world's largest-ever buyer financing program.

To quantify the present situation a bit more, as a percentage of GDP, the U.S. current account deficit is now about 6.5% -- the highest level ever. The current account deficit is necessarily equal to the sum of the public sector deficit (currently 2.6% of U.S. GDP) and the difference between private sector savings and investment (currently 3.9% of U.S. GDP). If we assume that, beyond some point, the rest of the world does not want to continue accumulating U.S. dollar debt (and there are growing indications that a number of central banks have reached that point), then there are two ways to reduce the size of the U.S. current account deficit: the price channel and the income channel. The former would imply a sharp fall in the trade weighted exchange rate of the dollar to boost U.S. exports. Since this has already happened in the case of the Eurozone, in practice further reduction of the U.S. current account deficit means the dollar would have to depreciate versus the Chinese Yuan. In contrast, reducing the U.S. current account deficit via the income channel would require a sharp slowdown in U.S. imports and domestic demand growth – say, due to a sharp reduction in U.S. spending on private consumption and housing investment.

Before considering which of these is most likely to occur, and when, we also have to recognize one further complication. As noted above, by definition the current account balance must equal the domestic public sector and private sector balances. So if the current account deficit falls as a percentage of GDP, so too must either the public sector deficit and/or the private sector deficit (due to either a sharp rise in savings or a sharp fall in investment, or both).

And now we get to the nub of the problem. For the price channel to be used to reduce the U.S. current account deficit, China would have to agree to a sharp revaluation of the Yuan. In the absence of a sharp increase in domestic consumption spending (which is now precluded by wide income inequality and the absence of an effective social safety net, which forces high levels of private saving), this would lead to (a) a sharp reduction in Chinese exports; (b) a sharp fall in Chinese investment spending; (c) a sharp increase in domestic problem loans; (d) possibly leading to a credit contraction; and almost certainly (e) a sharp slowdown in growth and (f) an equally sharp rise in political unrest that could easily (given historical precedent in China) mushroom in unpredictable and uncontrollable ways. Given

this, the odds that China will, in the short term, accept a sharp rise in the value of the Yuan versus the dollar seem to be somewhere between slim and none.

So if the U.S. has to reduce its current account deficit, and if further exchange rate depreciation and the price channel are out, that leaves the income channel – which means reducing imports by slowing domestic demand growth through reductions in U.S. private consumption, investment spending and/or the government deficit. Given that a substantial part of U.S. public sector spending is driven by entitlements and defense commitments, it seems most likely that most of the reduction will come via changes in the private sector balance.

Of course, in the short term, the choice between price and income channel adjustment can be avoided, provided foreign central banks to keep financing the U.S. current account deficit (and, indirectly, its combined private and public sector deficits). Or can it? If, as we believe, the U.S. consumer is tapped out and increasingly frightened by the fast building problems in the housing market (which will feed forward into reduced spending, higher unemployment, layoffs, and increased worries about having enough income to service all that accumulated debt, which will lead to even more spending reductions), then continued foreign central bank support won't be sufficient to keep the game going – it doesn't matter that they are willing to lend if U.S. consumers no longer want to borrow. That leaves everybody's favorite "Plan B", or what used to be known way back when as the "rosy scenario." If the world wants to simultaneously reduce the size of the U.S. current account deficit, while also avoiding either a deep fall in U.S. growth and/or a sharp drop in the value of the dollar, there is but one choice left: much faster domestic demand growth in Europe, Japan, China and elsewhere in Asia that will sharply increase U.S. exports.

Unfortunately, that scenario seems even less likely than China accepting a sharp rise in the Yuan. There is still strong political opposition in Europe to the kinds of reform that could lead to faster domestic growth. Moreover, even if these reforms were implemented, it is unclear that European consumers – among the fastest aging groups on the planet, and facing increasing uncertainty about the fiscal viability of their nations' social safety nets – would reduce their saving and increase their spending. Much the same situation exists in Japan, with additional concerns about Japan's already high government debt burden per capita as a further restraint on faster consumer spending growth. Across the rest of Asia, where strong social

safety nets are lacking, there remains a strong incentive for high savings, coupled with political concerns (e.g., about domestic stability and/or the future role of China in the region) that will also restrain spending and domestic demand growth. To be sure, China appears to be making a significant effort to (belatedly) reorient its economy away from investment and exports and toward private consumption growth. At the recently completed National People's Congress, Premier Wen Jiabao noted that it was "not the time for complacency with respect to the economy", which he characterized as "unstable, unbalanced, uncoordinated and unsustainable." Yet, as has been true of previous efforts to change China's course, Wen Jiabao's latest efforts face considerable headwinds in the form of an increasingly decentralized and hard to control government bureaucracy and state banking system, widespread corruption problems (e.g., see "China's Leadership Challenge" by John Thornton in the November/December 2006 issue of *Foreign Affairs*), and still growing (and ever more politically explosive) income disparities between a relatively rich few in urban areas and a far larger number of poor who live in rural areas.

In sum, we continue to believe that the most likely scenario is one in which the U.S. experiences a sharp slowdown in growth, which may trigger a sharp slowdown in external financial flows, leading to a fall in the dollar, and a rise in U.S. inflation and nominal interest rates (which in turn will put further pressure on the housing market and consumers). To be sure, like everyone else we have been impressed by the resiliency of the world economy over the past few years, even as these underlying pressures grew. If nothing else, it is testimony to the ability of complex adaptive systems to create new adaptive mechanisms that keep them from tipping over into a region of chaotic change. That being said, we don't believe we can delay our arrival at this point for much longer.

As we have said in the past, once we have passed the tipping point, the key issue becomes whether the world political, economic and financial system will gravitate more towards cooperative solutions that will lead out of the chaotic region, or rising conflicts that may well deepen and prolong the period of instability. For insight into that issue, we continue to focus on developments in three political centers of gravity in this system: the behavior of Chinese peasants, Iranian youth, and middle class Americans. In the case of the former, there is no evidence that, Wen Jiabao's words aside, tensions in China between the rural poor and urban rich are easing. In fact, just the opposite seems to be occurring, though China will

certainly try to keep them under wraps until the 2008 Olympics are over. The case of Iran is harder to read. While sanctions seem to be beginning to bite (remember that Iran imports 40% of its gasoline, and its population is predominantly young and pro-Western), President Amadinejad has counterbalanced this with moves designed to fan the flames of Iranian nationalism (such as the nuclear program and temporary hostage taking of British military personnel). Finally, in the United States, middle class anger is growing, driven by a combination of widening income disparities, falling house prices and increased employment insecurity (often linked to rising globalization). In addition, the U.S. Congress is beginning to respond in potentially destabilizing ways, with building support for trade sanctions against China and government action to bail out voters struggling with mortgage problems.

The following table updates our economic early warning indicators through the end of March 2007:

Indicator	Dangerous Trend	Recent Observations
<i>Real Return Bond Yields</i>	Declining (lack of investment relative to savings)	Unusually low (due to high savings and low levels of investment spending outside of China) and declining.
<i>Yield on Nominal Return Ten Year U.S. Treasury Bond</i>	Rising (increases probability of rising mortgage rates, weakening housing markets, consumer credit problems and economic recession)	Despite a slight fall in ten year yields over the past quarter, housing prices are down, and serious problems are beginning to appear in the mortgage market. This is a very worrisome trend.
<i>Oil Prices</i>	Rising and/or at high levels. (Since oil price functions as a tax on consumers, higher prices raise probability of economic slowdown)	Still quite high, which imposes a further drag on demand growth around the world.
<i>U.S. /Euro Exchange Rate</i>	Weakening (should lead to higher U.S. interest rates, and economic slowdown)	Euro is at very strong levels versus the dollar. Also, there is growing evidence of gradual shift of reserves away from dollar and into Euro.
<i>Domestic Private Demand (consumption and investment) Growth in Japan and Eurozone</i>	Weakening (world growth remains overdependent on U.S. consumer spending)	Has been strengthening in both regions, though not by enough to offset likely reduction in U.S. private

Indicator	Dangerous Trend	Recent Observations
		consumption.
<i>Private Consumption Spending in China</i>	No Increase (world remains overdependent on U.S. consumers; danger of overinvestment and deflationary pressure in many industries)	While acknowledged as a priority by Chinese leaders, no progress yet.
<i>Political Instability and Increased Repression in China</i>	Increase signifies higher probability of sharp economic slowdown in China and/or higher global tensions	Evidence that it is growing.
<i>Iranian Rhetoric and Actions on Nuclear Issue</i>	Aggressive rhetoric and actions raise probability of dangerously destabilizing military clash between Iran and West.	Growing evidence of domestic economic problems in Iran may push Ahmadinejad toward more aggressive international stance.
<i>Policy Solutions Gaining Popularity with American Middle Class</i>	Protectionist trade measures and punitive taxes increase likelihood of a longer and deeper economic slowdown	Growing bipartisan support for trade protection legislation aimed at China. Attacking your banker is never a good idea.
<i>Human-to-Human Transmission of H5N1 Virus, and Associated Mortality Rate</i>	Easier human-to-human transmission without a significant decline in the current mortality rate	Evidence in Indonesia and Egypt of increased transmission rates and Tamiflu resistance, with high mortality rate especially among young people. Transmission rates have not yet risen to pandemic levels.

As we said at the end of December, our outlook for financial markets in 2007 remains pessimistic. We continue to put our faith in the timeless observation that things that can't continue eventually don't continue. We are already seeing negative changes in political and economic conditions. As more investors realize what may be heading our way, we expect to see widening credit spreads, a further weakening of the dollar versus the UK Pound, the Euro, the Canadian Dollar and the Swiss Franc, widening 10 year government bond yield spreads between the U.S. and those countries, more frequent reports of funding liquidity issues, and

rising volatility levels. In terms of asset class valuations, our current views are summed up in the following table:

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

Becoming a Better Alpha Investor

Over the past ten years, we have written many times that the challenge facing professional active managers is immense and daunting. To produce statistically significant alpha, not only do they have to consistently make forecasts that are more accurate than simple chance, but they also have to act on them quickly, in sufficient size and not allow high transaction costs to offset the potential returns from their insights. For that reason, we believe that the best long-term advice for most investors is to diversify one's portfolio across a range of broadly defined, low cost asset class index products.

That being said, we also believe that almost every investor, at some point in his or her life, will believe that he or she is in the possession of an insight that could make them a lot of money. This is not inconsistent with our belief about the difficulty of succeeding as a professional active manager; rather, it is the difference between believing you can consistently generate superior forecasts and believing that you may be able to do this at least once. If you don't believe this, just ask your friends about the best investment they spotted by didn't make. Almost every investor has these stories, however much it hurts to tell them. This raises an important question: how can you tell the difference between potentially very profitable insights and ones that stand a good chance of costing you a lot of money (that you'll end up wishing you put in index funds)? While there are no hard and fast rules, there is quite a bit of research available that can tilt the odds in your favor. We thought it would be useful to our readers to provide a brief summary of it.

One of the most fundamental disagreements among venture capitalists and angel investors is whether at the margin it is better to invest in good businesses (e.g., ones where a company has a clear competitive advantage in a large and/or fast growing market) or in a good management team. More colloquially, should you bet on the horse or the jockey? In a recent paper (“What are Firms? Evolution from Early Business Plans to Public Companies”), Kaplan, Sensoy and Stromberg provide a fact-based answer to this question. The authors find that “the companies in our sample experienced dramatic growth in revenue, assets and market capitalization...[yet] their core business ideas appear remarkably stable...Rather than changing businesses, firms typically maintained or broadened their offerings within their initial market segments...This suggests that firms’ business idea is fixed at a relatively early stage in a firm’s life.” Regarding management teams, the authors find that “while the points of differentiation...customers and competitors remain relatively constant, the human capital of the sample firms changes more substantially...only 42% of the CEOs at the time of the first annual report [after the IPO] were the CEO named in the business plan [presented to the venture capitalists].”

Of course, this paper’s findings raise another logical question as to what constitutes a superior business. A number of other recent papers shed light on this issue. In “Evidence on Competitive Advantage and Superior Stock Market Performance”, Gjerde, Knisvsfla, and Saettem report on their innovative (in terms of its methodology) approach to decomposing returns into industry based, profitability based and risk based competitive advantage. They find that these account for 21%, 48% and 31%, respectively, of that portion of superior performance delivered by firms on the Oslo stock exchange between 1986 and 2005 that could be explained by the authors three factors. To put it differently, superior performance has more to do with firm specific factors than it does with competing in an attractive industry. Moreover, being less risky than competitors is almost as important as being more profitable.

But what is the source of these profitability and risk advantages? Malone, Weill, and a number of other authors from the Sloan School of Management at the Massachusetts Institute of Technology take an interesting approach to this question in their paper “Do Some Business Models Perform Better than Others?” They classify the business models of 10,970 publicly traded firms in the U.S. into different categories based on the asset rights that are sold (e.g., the right to ownership or temporary use of an asset, or the right to be matched with buyers and

sellers of an asset), the type of asset involved (e.g., physical, financial, intangible, or human), and the extent to which the company transforms these assets before selling, renting, or brokering them. With respect to the asset rights that are sold, “Creators” (sell ownership of asset after significantly transforming it) accounted for 50% of U.S. business revenue in 2002, followed by “Landlords” (which rent assets) at 34%, “Distributors” (which sell ownership of assets that have not been significantly transformed) at 15% and “Brokers” at 1%. In terms of the assets themselves, 74% of business revenue was primarily based on physical assets, 14% on financial assets, 10% on human assets, and 2% on intangible assets (taken together, these generate a 16 cell, 4x4 matrix that describes the universe of possible business models). The authors then measure the financial performance of these different business models using a variety of metrics, such as free cash flow, return on invested capital, and alpha. No one business model emerged as superior on all metrics; for example, financial traders seem to be quite strong alpha generators (at least over the 1998 to 2002 period studied), while manufacturers were stronger at cash flow generation. In our opinion, the true value of this paper is that it is the first one we’ve seen that gives clear meaning to the much used term “business model” and begins the task of comparing their performance.

Another effort along similar lines is “Interdependency, Competition and Industry Dynamics” by Lenox, Rockart and Lewin. These authors focus on the evolution of industries over time, and the underlying causes of the familiar pattern in which “prices fall, output rises, and the number of firms rises and then falls.” These authors show how heterogeneity develops over time in an industry, as firms make choices (some of which can only be reversed at great expense) about the way they will compete (i.e., the specifics of their respective business models). They find that the extent to which these “design choices” are interdependent has a strong impact on industry dynamics. The larger the number of possible design choices and the higher the degree of dependency between them, the harder it is not only to imitate competitors, but also to change a business model once it is established. Hence, this type of industry tends to see a high degree of new entrants over time, and a continuous waves of shakeouts. In contrast, industries with fewer critical design choices and/or fewer dependencies between them tend to settle down relatively quickly and be dominated for long periods by just a few firms.

Last but certainly not least, Richard Zeckhauser of Harvard recently published one of the most interesting papers we have read in quite a while. Titled “Investing in the Unknown and Unknowable”, it touches on many of the themes we have written about in the past, and provides simple yet powerful insights about them. Zeckhauser also divides investment opportunities into three groups, based on whether their full range of potential outcomes is known, and whether the probabilities associated with each outcome are known. He uses slightly different terminology than we do, as shown in the following table:

Possible Future Outcomes	Outcomes’ Probabilities	Our Term for this Situation	Zeckhauser’s Term
<i>Known</i>	<i>Known</i>	<i>Risk</i>	<i>Risk (or traditional financial markets)</i>
<i>Known</i>	<i>Unknown</i>	<i>Ambiguity</i>	<i>Uncertainty</i>
<i>Unknown</i>	<i>Unknown</i>	<i>Uncertainty</i>	<i>Ignorance or “UU”</i>

Zeckhauser’s paper – in a most engaging and entertaining manner – then goes on to present a series of maxims for investing in “Unknown Unknowns.” He begins by noting that “given the influx of educated professionals into finance, those who make their living speculating and trading in traditional markets are increasingly up against others who are tremendously bright and well informed.” However, he also observes that “the more difficult a field is to investigate, the greater will be the unknowns and unknowables associated with it and the greater the expected profits to those who deal sensibly with them.” He also notes that UU situations are ones that tend to drive away many financial market speculators. But what does it mean to act sensibly when confronted with “UU” opportunities?

Zeckhauser offers a few common sense rules that can help us all. He notes that people with skills that are complementary to a UU situation can enjoy great returns, as can people who invest with them. On the other hand, he cautions against the dangers of overconfidence in UU situations. Investors should be on guard against situations in which information asymmetries exist, and they are on the short end of them. Zeckhauser reminds us of the old poker saying, that if you don’t know who the sucker is in a game, it is likely to be you. On the other hand, using a number of Warrant Buffet’s decisions as examples, Zeckhauser also shows how in situations where nobody has an information edge, simply having superior background knowledge can be sufficient to generate very high returns.

As we have always said, active management is a game that is exceedingly hard to consistently play well. But that does not mean that very successful active management is impossible, particularly in situations where uncertainty is high, competition is low, and an investor has an edge. The trick is to be able to identify situations that have these characteristics, and avoid overconfidence when dealing with them. Taken together, these papers provide a collection of insights that can help increase the odds in your favor.

Product and Strategy Notes

Global Capital Markets Portfolio

The Bank for International Settlements and International Monetary Fund have recently published new data that enables us to update our estimates of the market capitalization weights in the global capital markets portfolio, as seen from different functional currency perspectives. It goes without saying that the estimation of the value of this portfolio (roughly 136 trillion US dollars) and its asset class weights is at best approximate. For example, the true size of the global commercial property and timber markets are hard to pin down, while reasonable people can and do disagree over the right way to value commodities (we have taken the value of over-the-counter commodities contracts and increased it by about half to capture the value of exchange traded contracts). We view these portfolios as alternative benchmarks to our equally weighted portfolios. As we have discussed in the past, there are three reasons an investor might deviate from the market capitalization weighted global market portfolio. First, he or she may have different economic exposures (e.g., a person may be heavily dependent for his or her labor income on one or more commodities, and therefore not want to hold any in his or her portfolio). Second, he or she may have preferences (e.g., risk aversion) that differ from the preferences of the “average” investor who holds the market portfolio. Finally, an investor will not hold the market portfolio when his or her forecast for future asset class returns differs from the return forecast implicit in the market portfolio. Still, with all those caveats, we always find the global market capitalization weighted portfolio to be an interesting benchmark.

The following table shows the global capital market portfolio, seen from the perspective of different functional currencies:

Currency	AUD	CAD	EUR	JPY	CHF	GBP	USD
Real Bonds	0.0%	0.1%	0.2%	0.0%	0.0%	0.2%	0.3%
Domestic Bonds	0.4%	0.9%	13.3%	6.6%	0.3%	1.7%	20.5%
Foreign Bonds	44.9%	44.3%	31.8%	38.7%	45.0%	43.4%	24.5%
Emerging Bonds	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
Domestic Comml Property	0.3%	0.4%	4.0%	1.5%	0.1%	0.9%	4.0%
Foreign Comml Property	12.3%	12.1%	8.5%	11.0%	12.5%	11.6%	8.5%
Commodities	7.4%	7.4%	7.4%	7.4%	7.4%	7.4%	7.4%
Timber	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
Domestic Equity	0.8%	0.8%	4.9%	2.9%	0.9%	3.0%	13.6%
Foreign Equity	27.3%	27.3%	23.2%	25.3%	27.3%	25.1%	14.6%
Emerging Equity	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

New Research on Asset Pricing Models

Asset pricing models are equations that describe how the price and returns from holding an asset (e.g., domestic equity as an asset class) evolve over time. For example, when you use the historical mean (average) return and standard deviation (volatility) for domestic equity to describe the process you believe will generate its future returns, you have constructed an asset pricing model. Asset pricing models can be simple or complex. The example just given is simple. A more complex example would use the future values for one or more “predictor variables” (e.g. like the Treasury Bill yield or GDP growth) to forecast future domestic equity returns, and then specify more equations to forecast the future evolution of the predictor variables themselves. The obvious question is whether the extra effort involved in constructing such elaborate models is worth it. If you assume, as we do, that the economy and financial markets function as a complex adaptive system, the answer is likely to be “no.” A distinguishing characteristic of such systems is that the behavior of aggregate variables (like the return on the overall equity market) cannot be forecast using a limited number of “top down” variables, like the Treasury Bill yield. Rather, it is said to “emerge” in “bottom up” fashion from the interactions between the actors (or, as they are more often called, “agents”) with different strategies (e.g., fundamental valuation versus momentum trading) that comprise

the system. Indeed, researchers in this area have built agent models that have been able to replicate many of the features (e.g., fat-tailed return distributions, clustered volatility, bubbles and crashes) that characterize historical data from different equity markets (see, for example, “Agent-Based Computational Finance” by Blake LeBaron). However, to our knowledge, a complex agent simulation model that involves a realistic number of asset classes has yet to be built.

Despite this, many researchers continue to seek better ways to specify asset pricing models. A number of recent papers provide an update on these efforts. In “Failure of Asset Pricing Models: Transaction Cost, Irrationality, or Missing Factors”, Chae and Yang ask why asset pricing models (e.g., like the Capital Asset Pricing Model) routinely fail to accurately forecast the future evolution of returns. They test three explanations. Models may fail because they omit a critical risk factor (for which returns rationally provide compensation); because they fail to take transaction costs and liquidity into account; or because investors are irrational, and do not always behave in the logical manner that models assume. The authors conclude that a missing risk factor is the least likely of these explanations.

In their paper “Investor Sentiment in the Stock Market”, Baker and Wurgler acknowledge the importance of investor irrationality, and provide an excellent discussion of the attempts that have been made to measure it and quantify its effect. These include both bottom up approaches based on different types of investor bias, and top down approaches based on aggregate measures of market sentiment and its impact on different types of assets. The authors are clearly in the latter camp, and conclude that “stocks of low capitalization, younger, unprofitable, high volatility, non-dividend paying, growth companies and firms in financial distress are likely to be disproportionately sensitive to waves of investor sentiment.”

Finally, in “Return Predictability, Economic Profits, and Model Mis-Specification”, Yufeng Han of Tulane University finds that better statistical specification of an asset pricing model does not automatically lead to higher economic profits from its use. Specifically, he compares the performance of complicated asset pricing models based on predictor variables with simpler approaches (like the ones we use in our modeling) that assume a very low level of return predictability. Like other researchers, he finds that the complicated models only performs well over the period that contains the data that was used to specify their equations (i.e., their backtested results are impressive). However, he then confirms other researchers’

finding that when these same models are tested “out of sample”, they do not outperform (in terms of the portfolio profits they generate) the simpler approach, despite that latter’s widely recognized limitations (e.g., its failure to include the actions of irrational investors). Ironically, this finding is consistent with the complex adaptive systems view of financial markets, which suggests that, because of their emergent properties, the best we can hope to achieve is a “coarse grained understanding”, rather than an accurate prediction, of their likely future behavior. Until someone builds the mother of all agent based models (and ever faster computers on which to run them), this situation – and the limitations it places on the accuracy of all asset allocation models -- is unlikely to change.

All Aboard the Private Equity Express!

While we have yet to read that headline in the FT or WSJ, it wouldn’t be out of place these days. Recent months have seen announcements of the launch of two new private equity focused products (a Barclays ETF in the U.S. and a SocGen principal protected note in the UK) to join Powershares listed US ETF product (ticker PSP). These new products are well timed to capitalize on the increasing publicity being given to private equity funds as they take on every bigger targets, and, in the case of Blackstone (and probably others), start offering their own shares to the public. As we have noted many times in the past, we are not fans of any of these products. First, the available evidence suggests that diversification across PE funds is unhelpful if it includes companies that focus on different financing stages (see “The Performance of Private Equity Funds: Does Diversification Matter?” by Ulrich Lossen). Second, while we respect the argument that in some cases, private equity firms’ approach to governance can increase the value of portfolio companies (a point repeatedly emphasized by Harvard professor Michael Jensen), we also recognize that the biggest driver of value creation in many transactions seems to be capital structure arbitrage, accomplished by extracting large loans from banks whose credit standards have slackened because of their newfound belief that buying credit derivatives will reduce their risk (which, of course, assumes that the people ultimately holding the risk have adequately capitalized funds...). Finally, if you assume, like we do, that the people running Blackstone are very smart, you can only conclude that their decision to offer the public a slice of their action was based on the conclusion that the price

they would receive is at its peak. In sum, the private equity express is a train we wouldn't recommend taking.

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 2007, our Pounds Sterling cash benchmark is 5.30% (in nominal terms). The second benchmark we use is a portfolio equally allocated between the ten asset classes we use (it does not include equity market neutral). This portfolio assumes that an investor believes it is not possible to forecast the risk or return of any asset class. While we disagree with that assumption, it is an intellectually honest benchmark for our model portfolios' results.

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

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