

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 is about equity linked compensation plans, and their implications for asset allocation. We examine the logic behind companies' use of these plans, and the sometimes different perceptions that managers have about the value of the benefits they provide. We conclude that when it comes to the decision about whether to hold or sell company shares received under these plans, there is a significant risk that a manager will fall victim to overconfidence. In most cases, we believe the prudent course of action is to sell the shares that are received and invest the proceeds in a well diversified portfolio of index funds.

Our second article examines the possible causes and consequences of the rising levels of economic inequality observed in many Western countries today. We review the multiple forces that are producing these changes, including technological change, digitization and globalization, changing tax laws, demographics and more fundamental differences in the preferences and behaviors of different groups of people. We conclude that given the complexity of the causes of growing inequality, it will be a difficult process to reverse. Given

that, we turn our attention to the possible consequences of this trend, and discuss two possible outcomes: Peronist style populism or a new Teddy Roosevelt style progressivism. While we clearly prefer the latter, we aren't yet convinced it is the most likely outcome.

This month's product and strategy notes review new estimates for the U.S. equity market risk premium (3.4%), new studies that confirm the difficulty of achieving consistent active management success, and a fascinating piece of research that shows how social factors make accurately predicting outcomes in some markets almost impossible.

This Month's Letters to the Editor

What is the "carry trade?"

The carry trade refers to a group of strategies that essentially amount to borrowing in currencies where loans carry low interest rates to invest in higher yielding assets denominated in other currencies. An example of this would be borrowing in yen to invest in U.S. dollar assets. In theory, if interest rate parity always held, this would be a losing trade, since the low yielding currency (e.g., the yen) would be expected to appreciate by an amount that offsets most of the difference between the borrowing and investing returns (some would remain if, for example, if there was a maturity mismatch involved – that is, if the yen borrowing was short term, while the proceeds were invested in ten year U.S. dollar bonds). In practice, however, this relationship often doesn't hold (e.g., to promote exports, the Japanese government may intervene in the currency markets to keep the yen from appreciating versus the dollar), which makes the carry trade so attractive to active managers. On the other hand, since leverage is involved (i.e., \$100 of U.S. assets would be bought by a hedge fund manager with a combination of \$20 of his own funds plus \$80 borrowed in yen), if the yen began to appreciate, the losses could quickly mount for our intrepid hedge fund manager, who would then find him or herself facing the proverbial "crowded trade" with lots of managers trying to reverse their strategies, buying and selling into markets with fast disappearing liquidity. That's why the carry trade is best left to the pros.

Where do you find all the research you cite in your articles?

Basically, we use three approaches. First, we regularly look at working paper sites like www.ssrn.com. Second, we always check the references cited in the papers we read, which often lead to lots of other interesting nuggets. Finally, when we're working on our articles, we'll often do a search on jux2.com (a metasearch engine) that combines our subject with "working paper" and "pdf." Also, you can usually find the full version of any paper we cite by typing in the title (in quotes) and authors' last name into Google or another search engine. Finally, we also have a high tolerance for Greek notation and occasionally dry writing...

I've heard there is a new ETF in the works that will be based on a credit derivative index. Would this qualify as a separate asset class?

A friend of ours runs the fixed income division of a large [and necessarily unnamed] investment bank. A long time ago in a galaxy far far away, we spent a year going through the Chase Manhattan Credit Training Program (back then, their margins were high enough that they could afford to give people what was effectively a masters degree in credit). Back then, we used to analyze companies by hand ("spreadsheet" meant something very different back then), and we learned about the "Five C's of Credit", which included a borrower's capital, cash flow, and character, and the loan's conditions and collateral. We also learned that a borrower's credit quality would usually decline as the economy and equity markets turned down, just as common sense would tell you. Today my friend marvels at a younger generation whose analyses are automatically done by computers, and who see "credit" as an asset you trade in liquid markets. Like everyone older than, oh, say 45, who is still in the business, he (and we) believe that it is only a matter of time before this generation discovers the truths that liquidity has a nasty tendency to disappear when you most need it, and the Five C's weren't the opening act for the Four Tops. So, to make a long story short, we don't expect we'll be viewing an ETF based on a credit derivatives index as a separate asset class.

Why has the correlation of returns between many asset classes been higher recently than in the past?

In our view, this is a reflection of two factors. The first is the enormous amount of liquidity that is still sloshing around the world's financial markets, and generating overvaluations in many asset classes. The second is the growth in the amount of assets managed by hedge funds, who are often highly leveraged and chasing the same trades. Under these circumstances, nervousness about valuations in any given market can quickly trigger concerns about liquidity and lead to reduced positions in other asset classes. More abstractly, there are two ways of looking at this. On a fundamental level, the real return generating processes in different asset classes haven't become more similar. However, asset class returns are a function not only of changing fundamental valuations, but also traders' perceptions of how other traders are likely to behave in the future. Our view is that the two factors noted above, which are relatively recent developments, have caused this latter return driver to become relatively more important. What remains unclear is how long these conditions – high liquidity and lots of leveraged hedge funds pursuing similar trades – will last. If you believe it to be a permanent change, then correlations should also be permanently higher. On the other hand, if you believe, as we do, that these conditions aren't permanent, then you should also expect correlations to revert back toward their long-term means at some point.

In your October/November 2006 issue, you suggested that, because they had done a better job of addressing their pension and health care issues, Australian and Canadian real return government bonds may be the lowest risk assets in the world today. Yet a recent column in the International Herald Tribune noted that like the United States, Australia has high external and household debt levels. Why don't these matter in your analysis?

First, Australia's government has been running surpluses for most of the past ten years. This only reinforces the relatively low risk of its real return government bonds (in addition to its having effectively limited its future public sector liabilities for pensions and health care). Australia's current account deficit has been caused by an excess of domestic private investment over savings. To be sure, a significant portion of that investment went into

housing, which accounted for much of the rise in household debt levels that you mention. But the economy has also been growing at very impressive rates (due, in significant measure, to the boom in commodity exports), which has made that household debt load easier for the private sector to shoulder. To get to a point where it would affect our perception of the relative risk of Australian government debt, you would have to posit some type of broad housing collapse with the government stepping in to bail everyone out. And even then, the Australian government has a lot more fiscal capacity to do this than, say, the U.S. government does. With respect to the external debt buildup that is the counterpart to Australia's current account deficits, you also have to remember that Australians have accumulated an equally impressive amount of foreign assets, so that the net debt to GDP ratio is much less worrisome as a potential source of a major exchange rate crisis. In sum, we stand by our estimate of the relative riskiness of real return Australian government bonds.

Global Asset Class Returns

YTD 31Jan07	In USD	In AUD	In CAD	In EUR	In JPY	In GBP	In CHF	In INR
Asset Held								
US Bonds	-0.08%	1.56%	0.83%	1.19%	1.30%	-0.41%	1.92%	-0.17%
US Prop.	8.52%	10.16%	9.43%	9.79%	9.90%	8.19%	10.52%	8.43%
US Equity	1.88%	3.52%	2.79%	3.15%	3.26%	1.55%	3.88%	1.79%
AUS Bonds	-1.45%	0.19%	-0.53%	-0.18%	-0.07%	-1.78%	0.55%	-1.54%
AUS Prop.	0.02%	1.65%	0.93%	1.28%	1.40%	-0.32%	2.02%	-0.07%
AUS Equity	24.93%	26.57%	25.85%	26.20%	26.31%	24.60%	26.93%	24.85%
CAN Bonds	-1.87%	-0.23%	-0.96%	-0.60%	-0.49%	-2.20%	0.13%	-1.96%
CAN Prop.	4.17%	5.81%	5.08%	5.44%	5.55%	3.84%	6.17%	4.08%
CAN Equity	13.38%	15.01%	14.29%	14.65%	14.76%	13.05%	15.38%	13.29%
Euro Bonds	-2.70%	-1.06%	-1.79%	-1.43%	-1.32%	-3.03%	-0.70%	-2.79%
Euro Prop.	2.00%	3.64%	2.92%	3.27%	3.38%	1.67%	4.00%	1.91%
Euro Equity	33.10%	34.73%	34.01%	34.36%	34.48%	32.77%	35.10%	33.01%
Japan Bonds	-1.77%	-0.14%	-0.86%	-0.51%	-0.39%	-2.11%	0.23%	-1.86%
Japan Prop.	7.79%	9.43%	8.70%	9.06%	9.17%	7.46%	9.79%	7.70%
Japan Equity	5.10%	6.74%	6.02%	6.37%	6.48%	4.77%	7.10%	5.02%
UK Bonds	-1.46%	0.17%	-0.55%	-0.20%	-0.08%	-1.80%	0.54%	-1.55%
UK Prop.	-6.64%	-5.00%	-5.73%	-5.37%	-5.26%	-6.97%	-4.64%	-6.73%
UK Equity	26.00%	27.63%	26.91%	27.26%	27.38%	25.66%	28.00%	25.91%
World Bonds	-1.07%	0.57%	-0.16%	0.20%	0.31%	-1.40%	0.93%	-1.16%
World Prop.	4.97%	6.61%	5.88%	6.24%	6.35%	4.64%	6.97%	4.88%
World Equity	1.42%	3.06%	2.33%	2.69%	2.80%	1.09%	3.42%	1.33%
Commodities	0.02%	1.66%	0.93%	1.29%	1.40%	-0.31%	2.02%	-0.07%
Timber	2.27%	3.91%	3.19%	3.54%	3.65%	1.94%	4.27%	2.19%
EqMktNeutral	0.42%	2.06%	1.33%	1.69%	1.80%	0.09%	2.42%	0.33%
Volatility	-9.86%	-8.23%	-8.95%	-8.59%	-8.48%	-10.19%	-7.86%	-9.95%
Currency								
AUD	-1.64%	0.00%	-0.72%	-0.37%	-0.26%	-1.97%	0.36%	-1.72%
CAD	-0.91%	0.72%	0.00%	0.35%	0.47%	-1.25%	1.09%	-1.00%
EUR	-1.27%	0.37%	-0.35%	0.00%	0.11%	-1.60%	0.73%	-1.36%
JPY	-1.38%	0.26%	-0.47%	-0.11%	0.00%	-1.71%	0.62%	-1.47%
GBP	0.33%	1.97%	1.25%	1.60%	1.71%	0.00%	2.33%	0.24%
USD	0.00%	1.64%	0.91%	1.27%	1.38%	-0.33%	2.00%	-0.09%
CHF	-2.00%	-0.36%	-1.09%	-0.73%	-0.62%	-2.33%	0.00%	-2.09%
INR	0.09%	1.72%	1.00%	1.36%	1.47%	-0.24%	2.09%	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 31Jan07

<i>Australia</i>	Low Demanded Return	High Demanded Return
High Supplied Return	79%	115%
Low Supplied Return	119%	161%

<i>Canada</i>	Low Demanded Return	High Demanded Return
High Supplied Return	101%	166%
Low Supplied Return	188%	273%

<i>Eurozone</i>	Low Demanded Return	High Demanded Return
High Supplied Return	79%	126%
Low Supplied Return	133%	190%

<i>Japan</i>	Low Demanded Return	High Demanded Return
High Supplied Return	113%	212%
Low Supplied Return	273%	424%

<i>United Kingdom</i>	Low Demanded Return	High Demanded Return
High Supplied Return	56%	98%
Low Supplied Return	99%	148%

<i>United States</i>	Low Demanded Return	High Demanded Return
High Supplied Return	128%	194%
Low Supplied Return	224%	310%

<i>Switzerland</i>	Low Demanded Return	High Demanded Return
High Supplied Return	96%	167%
Low Supplied Return	191%	260%

<i>India</i>	Low Demanded Return	High Demanded Return
High Supplied Return	158%	251%
Low Supplied Return	327%	466%

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 31Jan07

	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	2.79%	2.96%	5.75%	5.93%	0.18%	-1.66%
Canada	1.80%	2.40%	4.20%	4.19%	-0.01%	0.12%
Eurozone	2.00%	2.37%	4.37%	4.10%	-0.27%	2.64%
Japan	1.20%	0.77%	1.97%	1.71%	-0.26%	2.58%
UK	1.53%	3.17%	4.70%	4.98%	0.28%	-2.65%
USA	2.42%	2.93%	5.35%	4.83%	-0.52%	5.08%
Switz.	1.54%	2.03%	3.57%	2.64%	-0.93%	9.44%
India	3.04%	7.57%	10.61%	8.04%	-2.57%	26.50%

*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: (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 31Jan07

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%	1.50%	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%	1.78%	1.10%	1.48%	2.35%
Real Rate	2.79%	1.80%	2.00%	1.20%	1.53%	2.42%

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 31 January 2007, the AAA minus 10 year Treasury spread was .65%. 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 .92%. This was below the long-term average compensation for bearing credit risk. The stability of this spread over the past year in the face of other developments (e.g., rising concern over the future strength of the global economy) lead us to conclude that it is more likely that corporate bonds today are overvalued than undervalued. This impression is reinforced by data on the prevailing spreads over Treasury yields for credit default swaps (CDS). These are derivative instruments that function as insurance contracts providing protection against credit risk. The premium paid for this insurance is expressed as a spread over the current yield on a Treasury security. For example, between September 2006 and the end of December 2006, CDS spreads for credit insurance on a portfolio of U.S. B rated bonds fell from just over 3% to about 2.5%. Similarly, the cost of insurance on a portfolio of emerging market bond fell from 1.50% to about 1.10%. In our view, these falling spreads reflect two forces: the first is the high level of liquidity in the global economy that has pushed up prices (and forced down yields and expected returns) across a wide range of asset classes. The second is the rising level of underlying risk caused by growing imbalances (e.g., the U.S. current account, investment versus consumption in China, U.S. budget deficits, savings and spending on housing, etc.). On balance, the impact of liquidity seems to be outweighing the second effect; as a result, the return for bearing credit risk has been falling, rather than rising.

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 31Jan07

	To AUD	To CAD	To EUR	To JPY	To GBP	To USD	To CHF	To INR
From								
AUD	0.00%	-1.74%	-1.83%	-4.22%	-0.95%	-1.10%	-3.29%	2.11%
CAD	1.74%	0.00%	-0.09%	-2.48%	0.79%	0.64%	-1.55%	3.85%
EUR	1.83%	0.09%	0.00%	-2.39%	0.88%	0.73%	-1.46%	3.94%
JPY	4.22%	2.48%	2.39%	0.00%	3.27%	3.12%	0.93%	6.33%
GBP	0.95%	-0.79%	-0.88%	-3.27%	0.00%	-0.15%	-2.34%	3.06%
USD	1.10%	-0.64%	-0.73%	-3.12%	0.15%	0.00%	-2.19%	3.21%
CHF	3.29%	1.55%	1.46%	-0.93%	2.34%	2.19%	0.00%	5.40%
INR	-2.11%	-3.85%	-3.94%	-6.33%	-3.06%	-3.21%	-5.40%	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 31Jan07

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	2.79%	2.50%	5.4%	-0.1%
Canada	1.80%	2.50%	3.9%	0.4%
Eurozone	2.00%	2.50%	2.1%	2.4%
Japan	1.20%	2.50%	1.3%	2.4%
Switzerland	1.54%	2.50%	3.6%	0.4%
United Kingdom	1.53%	2.50%	1.7%	2.3%
United States	2.42%	2.50%	3.7%	1.2%

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 January 31, 2007 closing value of 165.11 was slightly less than 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 31 January 2007, the VIX closed at 10.42. This is 1.4 standard deviations below the VIX's long term average value. This level strikes us as too low 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 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

<i>Rolling 3 Month Returns Through</i>	31-Jan-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) 5.58%	Small Value (DSV) 5.80%	Large Value (ELV) 4.94%	Large Growth (ELG) 5.06%
<i>Sector Rotation</i>	Cyclicals (IYC) 6.14%	Basic Materials (IYM) 8.52%	Energy (IYE) 4.49%	Utilities (IDU) 2.66%
	Technology (IYW) 4.10%	Industrials (IYJ) 5.41%	Staples (IYK) 4.51%	Financials (IYF) 5.07%
<i>Bond Market Rotation</i>	Higher Risk (LQD) 0.65%	Short Maturity (SHY) 0.71%	Low Risk (TIP) -1.02%	Long Maturity (TLT) -1.41%

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.

<i>Economy</i>	Bottoming	Strengthening	Peaking	Weakening
<i>Interest Rates</i>	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

Economy	Bottoming	Strengthening	Peaking	Weakening
Interest Rates	Falling	Bottom	Rising	Peak
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 January 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	
Possibly Undervalued	
Likely Undervalued	Equity Volatility
Probably Undervalued	Non-U.S. Dollar Bonds

Equity Based Compensation Plans and Asset Allocation

A significant number of our readers receive part of their compensation in the form of equity, via either equity options or restricted shares. This raises an obvious question: how should an investor view these programs in the context of his or her overall asset allocation strategy?

We'll start by reviewing the logic behind these programs, and then move on to their asset allocation implications. All businesses face the issue of how to structure incentives that will attract, motivate and retain the talent they need to create superior value for their customers and shareholders. The challenge is how best to do this. Broadly speaking, there are three sets of issues involved.

The first set of issues is the metrics that a company should use to measure performance. Broadly speaking, six economic factors drive shareholder value creation. The first two are out of a company's control: the risk free interest rate (e.g., on government bonds)

and the premium that investors require to commit funds to a broadly defined equity index fund (i.e., the level of the equity market risk premium). In contrast, properly designed incentives can affect the next three value drivers: a company's free cash flow, the perceived value of its growth options, and the company's riskiness relative to the market. The challenge here is ensuring that incentives are properly aligned with the most important drivers of a company's value. For example, if a small company focused most of its incentives on the generation of current cash flow, it would likely underinvest in development of growth options that should logically account for the majority of its market value. At the other end of the spectrum, if a very large company in a mature industry focused its incentives on growth options rather than current cash flow, it might also prove suboptimal from a shareholder value creation perspective. The final value driver is what John Maynard Keynes referred to as "animal spirits", or investors' perceptions of the likely behavior of other investors. While companies cannot control this driver, they can influence it via the quality of their accounting policies and communications to the market.

The second set of issues revolves around what is known as the "principal/agent" problem. This arises when a principal hires an agent to perform a function (e.g., running a company), but the two do not have access to the same information (e.g., about the investment options and risks facing the company), and/or the two do not have equal tolerance for risk. On the one hand greater use of incentive based compensation is called for when two conditions hold: (1) incremental activities on the part of the agent will tend to increase the principal's profit and (2) these profit increasing activities can be identified and measured. On the other hand, since performance based pay imposes more risk on the agent, as an agent's risk aversion increases so too will his or her resistance to performance-based pay, and/or attempts to offset this risk (e.g., by promoting acquisitions that diversify a company's risk, perhaps to a level below that desired by its shareholders, whose portfolios are already diversified). From a slightly different perspective, as an agent's risk aversion increases, the size of the potential incentive needed to produce a given amount of incremental effort will also increase. Similarly, an agent's response to different types of incentives will also vary with his or her time preferences. Agents with a very short-term orientation (technically, with a high time discount rate) will have only a weak response to an incentive which only pays out

far in the future; in contrast, agents with a longer-term orientation should respond more strongly to this type of incentive.

The third set of issues is related to the tax, accounting and cash flow implications of different types of incentives. For example, cash bonuses generally create an expense for a company in the year they are awarded; in contrast, the expense associated with an option award is often lower, and the cash outflow is delayed until the options are exercised.

Let us now move on to recent research findings that shed more light on these issues. In recent years, most of this research has focused on whether companies (and their shareholder principals) are better advised to use restricted stock (which manager agents cannot sell until it vests) or equity options when designing their incentive plans.

In their 2001 paper, “Stock Options for Undiversified Executives”, Hall and Murphy began with the observation that there is a theoretical divergence between the cost to a company of issuing options and the value placed on those options by managers who receive them. In theory, the cost of an options grant to the company should reflect the cash it would receive if the options were sold in the market to well diversified investors who could choose how to hedge the resulting risk exposure. The most common tool for quantifying this is the Black-Scholes option valuation model, in which the following five factors affect the value of an option:

Valuation Driver	Option Value Increases When:
<i>Strike Price of the Option</i>	Strike price (cost to purchase shares) goes down
<i>Market Value of the Stock</i>	Market price of shares goes up
<i>Volatility of the Stock</i>	Volatility goes up (greater chance of big upside move)
<i>Time Until the Option Expires</i>	Time to expiration is extended (more time for a big upside move)
<i>Risk Free Rate of Interest</i>	Risk free rate increases (investor will earn more value on cash held until option is exercised; this effect is usually the smallest of the five)

In contrast, Hall and Murphy noted that the value an executive places on the options he or she receives should theoretically be lower than their Black Scholes value. Because the executive’s

labor income is already linked to the performance of the company, he or she should theoretically seek to avoid exposure to the company's performance in his or her investment portfolio. Stock options (or, for that matter, restricted shares) force an executive to be less diversified than he or she would prefer. As a result, an executive will be more risk averse than the well-diversified investor whose existence is assumed by the Black Scholes valuation. Hall and Murphy concluded that this increased risk aversion should cause the "Executive Value" of an option to be less than its "Black Scholes" value. Consequently, the less diversified and risk averse an executive is, the more options that will be required to produce a given level of incentive, and the greater will be the economic cost to the company of issuing those options.

Hall and Murphy's paper led to a series of responses from other researchers. One of the most common was the observation that the Black Scholes option valuation model contained its own shortcomings, especially with regard to the source of its volatility assumption. In essence, anybody using a Black Scholes model (and that includes many players in the trillion dollar plus derivative markets that have developed over the past twenty years) must obtain his or her volatility assumption from one of three sources:

1. Historical volatility – but this assumes future volatility will mimic the past.
2. The outputs of a volatility forecasting model – but that assumes the model is accurate.
3. The volatility assumption implied by the current market price of the same or similar options – but that assumes that other investors' volatility assumptions are independently arrived at (which isn't the case if some investors are using historical volatility) and accurate.

A related point was made by Bettis, Bizjak and Lemmon in their paper, "The Cost of Employee Stock Options." They found that the effective cost to firms of the managerial options they issue is substantially reduced due to employees' tendency to exercise them early, particularly at firms with highly volatile returns. Hence the gap between the cost of options to the issuing firms and their incentive value to employees may not be as large as asserted by Hall and Murphy.

A second strain of criticism focused on Hall and Murphy's failure to properly take into account the incentive effect of options on managerial behavior. An excellent example of this

is a 2004 paper by Lambert and Larcker of the Wharton School. In “Stock Options, Restricted Stock and Incentives”, the authors use agency theory to model the optimal mix of options and restricted stock in a manager’s compensation contract. Lambert and Larcker’s starting point is the observation that managerial action can affect not only the expected return on a company’s stock, but also its volatility (risk). The authors show that when managerial action can only affect expected return, there are strong arguments for the use of restricted stock instead of options. However, when an agent’s actions can affect both return and risk, restricted stock is no longer optimal in many cases, and equity options are a more effective way to incentivize managers. More specifically, Lambert and Lacker conclude that the optimal mix of restricted stock and equity options in a compensation plan depends on (1) managers’ level of risk aversion; (2) the extent to which extra managerial effort can improve outcomes that are of value to shareholders; and (3) the extent to which the riskiness in the firm’s shares (i.e., the range of possible outcomes that valued by investors) is outside the control of managers.

For example, where managerial risk aversion is high, and managers have relatively low control over factors driving variance in the range of possible firm outcomes, restricted stock will be preferred to options, because the former provides managers with more protection under downside scenarios. On the other hand, when managers have lower risk aversion, and can control more of the factors driving firm risk, the ideal compensation plan will use more equity options relative to restricted stock.

Two other papers take a more empirical approach to the equity compensation issue. In their 2006 paper, “How Do Managers Value Stock Options and Restricted Stock?”, Hodge, Rajagopal and Shevlin find that “managers on average systematically overestimate the value of their stock options relative to their theoretical Black Scholes valuation.” This is “contrary to conventional economic thinking” which assumes that “risk averse agents...discount the Black Scholes value” of the options they receive. The authors also find that in valuing their options, “managers value quick vesting and extended expiration...[Moreover], they also tend to act like momentum investors, and extrapolate recently rising stock price trends to arrive at their subjective valuations of both options and restricted stock.” Yet another paper, “Taking Stock: Does Equity-Based Compensation Increase Managers’ Ownership?” (by Ofek and Yermack) finds that executives exercising their options tend to sell rather than hold the shares

they receive in their own company. This is exactly the behavior one would expect to see when managers seek to rationally diversify their personal portfolios (which also calls into question the wisdom of the traditional rule to sell shares in a company when insiders are selling).

Finally, in their 2006 paper (“Optimal Incentive Contracts for Loss-Averse Managers”), Dodonova and Khoroshilov begin with the observation that average investors are averse not only to risk, but also to losses (psychological research having shown that these are two distinct concepts). This means that, “besides requiring more compensation to accept higher risk, loss-averse managers also require additional compensation for their possible losses when the firm’s performance is poor.” They conclude that firms with more growth opportunities and more volatile cash flows should use more options in their incentive compensation plans, and use cash compensation (base plus bonus) to reduce downside risk, while firms with fewer growth options and less volatile cash flows should prefer the use of restricted stock. This point is echoed in another paper by Markus Arnold (“Stock Options, Diversification, and Optimal Contracts”), who argues that use of restricted stock encourages managers to diversify their company’s operations more than an already well-diversified investor might prefer, which reduces shareholder value when a firm faces a large number of growth options and a high level of volatility.

From an asset allocation perspective, equity based compensation plans, whether they use options or restricted stock, pose two critical issues. The first applies only to some investors, while the second applies to all. Some equity based compensation programs are structured so that there is a delay between the time an investor exercises his or her options and the time he or she can sell the shares received. This creates the risk that the stock will experience a substantial decline between the time the option is exercised (which triggers a tax liability) and the time cash is received. For example, when the internet bubble collapsed, there was more than one employee who ended up facing a very large mismatch between the amount of taxes owed and the cash available to pay them. Employees exercising options that result in shares that cannot be sold should be conscious of the risks they are running, and consult a professional adviser about how these risks might be hedged.

The second issue is whether, after any holding period restrictions have expired, an employee should sell the shares received after options are exercised. We believe that the right answer is almost always to sell the shares and invest the cash in a well-diversified portfolio.

The reason for this is that choosing to hold the shares is a decision to engage in active management. Clearly, there is great temptation to believe that this type of active management is less risky than “stock picking”, because the investor has access to private information about his or her company’s future plans. But how valuable is this information? Consider the six economic factors that drive the value of a company’s shares: the risk free rate of interest; the overall equity market risk premium; a company’s current free cash flow; its future growth opportunities as perceived by investors; its relative riskiness as perceived by investors; and investors’ beliefs about how other investors will behave in the future. Private information about one’s company provides no insight at all into the future risk free rates, equity market risk premiums, or investors’ expectations about other investors’ behavior. And how much insight does it really provide about the future level of a company’s free cash flow or its growth options? In most if not all cases, these are heavily dependent not only on a company’s own actions, but also on future actions by competitors, changing customer needs, changing technology, and the overall state of the economy. Finally, how much of an employee’s private insight is already known to professional investors and analysts who research the company’s stock (and therefore already incorporated into its current price)? The key point is that most investors’ private information about their companies’ future plans probably provides much less of an active management advantage than they believe. In other words, the risk/return trade-off from holding onto company shares is probably less attractive than many employees realize.

To us, the conclusion of this analysis is clear. While reasonable people can and do disagree about the right way to structure an equity based compensation plan, the majority of employees receiving company shares under such plans will probably be better off in the long-term if they sell them and invest the proceeds in a well-diversified portfolio, rather than further increasing their economic exposure to the company that already pays their salary, bonus and benefits.

Economic Inequality in Western Countries: Causes and Consequences

Whether measured in terms of wages, income or wealth, inequality has been growing in many countries. It is important for investors to understand why this is happening, and where it may lead.

There is ample evidence of rising inequality. For example, in a recent speech (“The Level and Distribution of Economic Well Being”), Ben Bernanke, Chairman of the U.S. Federal Reserve, noted that “although average economic well-being has increased considerably over time, the degree of inequality in economic outcomes has increased as well. Importantly, rising inequality is not a recent development but has been evident for at least three decades, if not longer. The data on the real weekly earnings of full-time wage and salary workers illustrate this pattern. In real terms, the earnings at the 50th percentile of the distribution (the median wage) rose about 11-1/2 percent between 1979 and 2006. Over the same period, the wage at the 10th percentile, near the bottom of the wage distribution, rose just 4 percent, while the wage at the 90th percentile, close to the top of the distribution, rose 34 percent. In 1979, a full-time worker at the 90th percentile of the wage distribution earned about 3.7 times as much as a full-time worker at the 10th percentile. Reflecting the relatively faster growth of wages of higher-paid workers, that ratio is 4.7 today. The gap between the 90th and 10th percentiles of the wage distribution rose particularly rapidly through most of the 1980s; since then, it has continued to trend up, albeit at a slower pace and with occasional reversals.” In another widely read paper (“Where Did the Productivity Growth Go?”), Dew-Becker and Gordon found that between 1966 and 2001, “only the top ten percent of the income distribution enjoyed a growth rate of real wage and salary income equal to or above the average rate of economy-wide productivity growth.” Finally, in another excellent recent paper, (“Wealth and Economic Inequality: Who’s At the Top of the Economic Ladder?”), Wolff and Zacharias show that the distribution of wealth in the United States is even worse than the distribution of wages or household incomes. They provide this example: “Consider the division of an aggregate economic “pie” worth \$100 among a hypothetical group of ten families...When it comes to income, one family gets \$57 while the remaining families receive \$4.78 each. This matches the distribution of household income in the United States in 2005...Now consider the distribution of another pie, in which one family gets \$91 and the other nine families only \$1 each. This is the way net wealth is distributed in the United States.”

Broadly speaking, four broad theories have been offered to explain the observed increase in inequality. The first involves the interplay of technological change, education, digitization and the globalization of many industries. This theory begins with the observation that improvements in information and communication technologies have had a greater impact on the productivity of more highly educated and skilled workers than on their less educated and skilled peers. As a result, you would expect to see the wages of the former group growing faster than those of the latter, giving rise to greater inequality.

Digitization has not only eliminated many “middle management” jobs by automating many routine information collection and analysis tasks, but it has also enabled companies to coordinate supply chains that are much more globally dispersed than ever before. This has led to the phenomenon of outsourcing, which has forced more workers in developed countries to compete with similar workers in developing countries to perform the same work. This has put downward pressure on the wages of many workers located in developed country markets (see, for example, “Product Market Integration and Labour Markets: Aggregate Gains at the Cost of More Inequality?” by Andersen and Sorensen, and the IMF Working Paper “Does Trade and Technology Transmission Facilitate Inequality Convergence?” by Gouranga Gopal Das).

At the same time, digitization has also enabled skilled individuals to sell their services in much larger markets. Cornell economist Robert Frank described this phenomenon well in a 1995 article in *The New Republic* (“It’s a Winner Take All Market”): “For a parable in modern economics, consider the local opera house. At the turn of the century, Iowa alone has more than 1,500 of them. Thousands of sopranos earned adequate, if modest, livings through their live performances. But now, thanks to modern recording [and distribution] technology, the world’s best soprano can literally be everywhere at once. Thus [the leading sopranos] earn millions of dollars per year, while most other sopranos, many of who are almost as talented, struggle to get by.” A 2006 paper by Gabaix and Landier (“Why Has CEO Pay Increased by So Much?”) makes a similar point. As improvements in information technology enabled companies to grow larger, the authors found that “the six-fold increase of CEO pay [in the United States] between 1980 and 2003 can be fully attributed to the six-fold increase in market capitalization of large U.S. companies during the period.” The authors also assume that “CEOs have different levels of managerial talent and are matched to firms competitively”, and “the marginal impact of CEO talent increases with the value of the firm

under his [or her] control.” Gabaix and Landier go on to note their surprise that “the dispersion of CEO talent appeared to be extremely small at the top...However, these very small talent differences translate into considerable compensation differences as they are magnified by [differences in] firm size.” They also conclude that their theory predicts that “countries experiencing a lower rise in average firm value than the United States should also have experienced lower executive compensation growth, which is consistent with the European evidence.” In sum, there is ample evidence that the combination of so-called “skill biased technological change”, automation, outsourcing and global “winner take all markets” has made a significant contribution to the observed rise in economic inequality.

A second strand of theory focused on political/institutional causes of rising inequality. One oft-heard assertion is that rising CEO pay is responsible for the increase in inequality. However, as Kaplan and Rauh note in their recent paper (“Wall Street and Main Street: What Contributes to the Rise in the Highest Incomes?”), “non-financial public company CEOs [in the United States] do not represent any more than 8% of the top income brackets [i.e., the top 0.1%, 0.01%, etc.]” Rather, people from so-called “Wall Street” professions [investment bankers, asset managers, and lawyers] “comprise at least as high a percentage of the top income brackets as CEOs” and have been increasing their share at a faster rate. The authors conclude, “overall, the increase in top non-financial executives’ pay appears to explain only a modest fraction of the increase in the top end [of the income distribution].”

Another oft-heard assertion is that reduced taxes on the highest earners have worsened inequality. This assertion appears to have some merit. In their paper, “How Progressive is the U.S. Federal Tax System?”, Piketty and Saez take all taxes into account (e.g., corporate and estate taxes, not just income taxes) and find a sharp drop in the U.S. (and to a lesser extent the U.K.) between 1970 and 2005 (but an increase in progressivity in France). Clearly, a system that enables people at the top to earn higher incomes and at the same time lowers their marginal tax burden encourages an increase in inequality. That being said, what is missing from most tax-oriented analyses is recognition that substantial tax related changes have also been underway at the other end of the income distribution, including the expansion of tax free benefits (e.g., the earned income tax credit, and eligibility for programs such as Medicaid and state-subsidized housing and childcare), and the increase in the minimum level of income subject to tax. For example, “during 2006, Tax Foundation economists estimate

that roughly 43.4 million tax returns, representing 91 million individuals, will face a zero or negative tax liability. That's out of a total of 136 million federal tax returns that will be filed. Adding to this figure the 15 million households and individuals who file no tax return at all, roughly 121 million Americans—or 41 percent of the U.S. population—will be completely outside the federal income tax system in 2006. This total includes those who pay no tax, and those who pay some tax upfront and are later refunded the full amount of the tax paid or more.” Including these changes at the bottom end of the income distribution would seem to worsen the assertion that rising economic inequality is due to changes in the tax system and government benefits.

Another very visible strand of the political/institutional approach is the large number of articles and editorials that cite falling union membership as a cause of rising inequality. Unfortunately, too many of these papers fail to explore why workers would logically vote not to join a union, despite the alleged financial benefits from doing so (i.e., higher wages). In “Outsourcing, Unions and Wages”, Francis Kramarz provides one answer. He finds that in a world where companies are caught between investors demanding higher returns (e.g., to fund future defined benefit pension liabilities), increasingly demanding customers, globalized competition, and mobile capital, unionization is often a Pyrrhic victory – raising wages in the short run, depressing profits, and increasing the incentive to outsource. On the other hand, assertions that the failure to increase minimum wage regulations in line with inflation has contributed to increased inequality seem more on target. In the United States, the real value of the federal minimum wage peaked in 1968, at slightly more than nine 2006 dollars per hour. Since many of today’s minimum wage jobs are hard to outsource, maintaining the real value of the minimum wage would seem to be an effective means to reduce economic inequality, assuming people are willing to work.

A third group of theories focuses on changing demographic factors as important drivers of the observed increase in economic inequality. One example of this is the impact of immigration (both legal and illegal) on wages. In “Native Internal Migration and the Labor Market Impact of Immigration”, George Borjas found that a ten percent increase in immigrants share of the population reduces low-skilled workers wages by 3 to 5 percent.

Another excellent paper exploring the demographic roots of increased inequality is “Increasing Residual Wage Inequality: Composition Effects, Noisy Data, or Rising Demand

for Skill?” by Thomas Lemieux of the University of British Columbia. He finds that a substantial part of the observed increase in U.S. wage inequality between 1973 and 2003 is due to the secular increase in the average level of experience and education in the workforce. He notes that “wage dispersion increases as a function of experience because of differential investments in on-the-job training.” He also finds that wage dispersion increases with education, and concludes that “unobserved skills are becoming more unequally distributed as the levels of education and experience increase over time.”

The question of just what these “unobserved” by unequally distributed skills include brings us to the fourth, and, from our perspective, most interesting set of the theories that have been offered to explain the rise in economic inequality. To generalize, this approach is grounded in the existence of people with widely varying capabilities and preferences, and social mechanisms that encourage and discourage certain behaviors. Three recent papers, from the U.S., U.K., and Germany, all find that non-cognitive skills are as important as cognitive skills in explaining educational attainment and also have a strong impact on labor market success (see “The Effects of Cognitive and Non-Cognitive Abilities on Labor Market Outcomes and Social Behaviors” by Heckman, Stixrud and Urzua; “Accounting for Intergenerational Income Persistence: Noncognitive Skills, Ability and Education” by Blanden, Gregg, and Macmillan; and “Going Beyond the Return to Education: The Role of Noncognitive Skills on Wages in Germany” by Flossmann, Piatek and Wichert). Another paper, “Intergenerational Mobility and Interracial Equality: The Return to Family Values” by Patrick Mason sums up the argument as follows: “Parental family behaviors (“values”) affect the future well-being of children by influencing children’s acquisition of marketable skills. In addition to skill acquisition, parents also transfer to their children behaviors that may directly affect offspring’s labor market performance as young adults. Similarly, parental class status (“socioeconomic status”) affects their offsprings’ acquisition of skill prior to full-time market participation. After the onset of market participation, parental class status offers differential capacity for parents to transfer to their young adult offspring a variety of competitive advantages in the labor market. Accordingly, young adults raised in advantageous family environments will have superior labor market outcomes relative to otherwise identical young adults raised in modest family environments.”

Given this, the rising trend toward so-called “assortative mating” -- i.e., marrying someone whose class status is similar to your own – cannot help but affect the extent of economic inequality we observe. This point is highlighted in two papers, “Intergenerational Economic Mobility and Assortative Mating” by Ermisch, Francesconi and Sidler, and “Marriage and Assortative Mating: How Have the Patterns Changed?” by Elaina Rose. The latter paper also explicitly addresses the potential impact of rising divorce rates, and a greater percentage of children being raised in single parent, and often economically stressed families. In the U.K., the recent “Breakdown Britain” report (www.povertydebate.com) contains an excellent analysis of this issue, and highlights the growing gap between not just different groups’ economic wealth but also their respective behavioral norms. Clearly, this is an issue that concerns people in other countries as well. For example, in the U.S., a recent paper from the Federal Reserve Bank of Boston (“Measuring Trends in Leisure: The Allocation of Time Over Five Decades” by Aguiar and Hurst) found that less educated adults experienced the largest increase in non-work hours between 1965 and 2003. They show how higher income households not only have higher real wages but also spend much more time working.

Another paper, “Wealth Inequality: Data and Models” by Cagetti and DiNardi provides further examples of the type of behavioral differences that can cause substantial economic inequalities to develop over time. These include differences in time preferences (e.g., patience) and risk aversion that drive differences in saving behavior, portfolio choice, and entrepreneurship. The authors also focus on the crucial role of bequest related behavior, which they define broadly to include the transmission of both financial and human capital (i.e., values) from parents to children. Two other papers look at this issue from a different perspective, and examine the social mechanisms that can reinforce the behavioral differences that help cause economic inequality. In “Social Segregation and the Dynamics of Group Inequality”, Bowles and Sethi show how if the level of social segregation between groups is sufficiently high, “group differences in economic success can persist across generations in the absence of either discrimination or group differences in ability.” And in “The Social Contract with Endogenous Sentiments”, Cerellati, Esteban and Kranich describe how less variation in behavioral norms between groups can lead to what they call a “cohesive equilibrium” in which the population supports redistributive policies to reduce inequality. They also describe how wider variation in group behavioral norms can lead to what they call a “clustered

equilibrium” in which substantial inequalities persist over time. The authors find that their theory reasonably fits the data on inequality and values and attitudes across the OECD nations.

As you can see, many factors seem to contribute to the increasing economic inequality we observe in many countries today. The logical question is where could these trends lead in the markets we cover? In the speech noted above, Fed Chairman Bernanke noted that “three principles seem to be broadly accepted in our society: that economic *opportunity* should be as widely distributed and as equal as possible; that economic *outcomes* need not be equal but should be linked to the contributions each person makes to the economy; and that people should receive some *insurance* against the most adverse economic outcomes, especially those arising from events largely outside the person's control.” He also stressed that “the ability of our labor and capital markets to accommodate and adapt to economic change has helped make possible the strong productivity performance of the U.S. economy over the post-World War II era, including the past decade. But this very dynamism sometimes creates painful dislocations, as when a shift in consumer demand, the advent of new technology, or new competition leads to the closing of a factory or causes a worker's skills to become obsolete. If we did not place some limits on the downside risks to individuals affected by economic change, the public at large might become less willing to accept the dynamism that is so essential to economic progress.” Yet this seems to be exactly what is happening in many countries, as growing numbers of middle class voters question the status quo as they confront falling housing markets and an end to the borrowing that has, in recent years, helped them to maintain their standard of living despite increased labor market insecurity and the uncomfortable knowledge that the gap between their lives and those at the top has been become much wider.

At the same time, there is growing academic support for the heretofore heretical view that the extent of inequality should be as great a concern as the rate of growth. An early example of this work was “The Macroeconomic Implications of Rising Wage Inequality in the United States” by Heathcote, Storesletten and Violante. More recently, the IMF published “Lucas versus Lucas: On Inequality and Growth” by Cordoba and Verdier, which found that “the welfare costs of inequality outweigh the benefits of growth in most cases.” Given these trends, it seems inevitable that inequality will become an increasingly politicized issue in the

future, with unpredictable consequences. Indeed, we can already see it happening in the United States, where the rising rate of mortgage defaults has prompted Congressional proposals to protect citizens (read middle class voters) from the consequences of “predatory lending” (the newly popular term for what was previously called “excessive borrowing”). Senator Chris Dodd, an announced Democratic candidate for President in the 2008 election, is at the forefront of this growing movement. Clearly, this helps to explain a great deal of the angst being experienced by many credit market participants, and particularly by holders of mortgage backed debt and derivatives.

It also seems inevitable that this trend will lead to calls in the United States for higher taxation on the wealthy, whether this comes in the form of higher marginal income tax rates, and/or a renewed push to raise, rather than eliminate the estate tax (or “death tax” depending on one’s perspective). We expect that calls for higher taxes will be accompanied by predictable calls for reform of educational systems (see “Tough Choices or Tough Times” the recently published report of the new Commission of the Skills of the American Workforce for a sobering analysis of how hard it will be to make this approach work), and, in Europe, faster movement toward the Danish “flexurity” model that combines labor market flexibility with a strong safety net. However, as other papers have shown (e.g., “Welfare Migration in Europe” by De Georgi and Pellizzari) these policies can be self-defeating if they are not harmonized across countries.

In our minds, the gravest risk presented by rising inequality would be the rise of populist politics (call it the new Peronism) that leads to increased protectionism. As shown by a recent Federal Reserve Bank of New York working paper (“Would Protectionism Defuse Global Imbalances and Spur Economic Activity?” by Faruquee, Laxton, Muir and Penenti), this would most likely lead to lower global growth and stagnation, quite possibly accompanied by increasing credit problems, a sharp fall in the U.S. dollar and perhaps a period of deflation before governments made a concerted attempt to inflate their way out of the growing crisis. On the other hand, a new Peronism is not inevitable; it may be that a new progressivism (though we’re not quite sure who will play the role of Theodore Roosevelt) could arise instead. Yet even if this occurs, it is not clear whether tax, welfare, mortgage and other reforms will be sufficient to slow the increase in inequality enough to limit the build up of populist resentment and keep Western nations from plunging into the abyss. As has

happened so often throughout history, the future seems destined to be driven by a combination of circumstances and the leaders they produce.

Product and Strategy Notes

The Equity Risk Premium in January, 2007

Every quarter since June 2000, John Graham and Campbell Harvey of the Fuqua School of Business at Duke University have surveyed U.S. CFOs about their expected equity market risk premium relative to the yield on ten year U.S. government bonds. Based on the data they have accumulated, Graham and Harvey have concluded that “there is a positive correlation between the ex-ante [equity] risk premium and real interest rates...[and] that the level of the risk premium also appears to track [equity] market volatility as reflected in the VIX index.” In the most recent survey, the median value for the U.S. equity risk premium was 3.4%, which was exactly equal to its long term median value. The long term average was 3.47%.

More Bad News for Hedge Fund Managers

Before you invest in a fund-of-funds hedge fund vehicle, make sure you read “An Analysis of Fees in Funds of Funds” by Ayaso, Henderson, Henwood, Schwartz and Zusman of M.I.T. This is a recently published paper that covers the same ground as Brown, Goetzmann and Liang did in their 2004 paper, “Fees on Fees in Funds of Funds.” The conclusion reached by the M.I.T. group are equally sobering. “While the FOF structure may provide the sought after diversification effect...this comes at a cost of multi-layered incentive fees and asset based expenses.” The authors find that “the expected value of total hedge fund level and fund-of-funds level fees on a typical FOF equal roughly 7% of assets and that the incentive fees on the underlying individual hedge funds alone sum to nearly 2.5% of assets.” This level of gross fees represents a very significant drag on the net returns received by the investor in the FOF – and that’s before taxes. Caveat emptor.

Two New Studies on Mutual Fund Performance

Cuthbertson, Nitzsche, and O’Sullivan have recently published two working papers that provide further evidence that active management is a very difficult game to play consistently well. In “The Market Timing Ability of U.K. Equity Mutual Funds”, they find that “only around 1.5% of funds demonstrate [statistically significant] market timing ability’ in the good sense of that term, while “ten to twenty percent of funds exhibit negative timing ability” [in the sense of a statistically significant ability to consistently get it wrong]. The authors also find that a slightly higher percentage (5%) “successfully time [changes in] market volatility.” In “Mutual Fund Performance” the authors evaluate research published over the last twenty years on U.S. and U.K. mutual fund performance. The authors conclude that “the evidence suggests that there are around 2% to 5% of top performing U.S. and U.K. equity mutual funds which genuinely outperform their benchmarks, and 20% to 40% of funds that are genuinely poor...Sensible advice for most investors would be to hold low cost index funds and avoid holding past actively managed loser funds. Only very sophisticated investors should pursue an active investment strategy of trying to pick winners – and then with much caution.”

Yet Another Example of Why Active Management is So Hard

Broadly speaking, six economic drivers determine the market value of a company’s equity. The first two are out of the company’s control: the level of the risk free rate of interest (e.g., the yield on ten year government bonds) and the average risk premium that investors require to commit funds to a broadly defined equity index product. Increases in either or both of these tend to depress equity valuations. The company has much more influence on the next three value drivers. The first is the free cash flow it generates. The second value driver is the value of the growth options it creates, but has not yet fully converted into free cash flow. The third value driver is the company’s riskiness relative to the riskiness of the overall equity market. The last value driver is also relatively out of a company’s control – it is investors’ perceptions of how other investors will behave in the future. John Maynard Keynes called this the market’s “animal spirits”; others call it emotion or the market’s “mood” about a stock.

A recent paper shed more light on this last driver. In “Experimental Study of Inequality and Unpredictability in an Artificial Cultural Market”, Salganik, Dodds and Watts set up a very creative experiment which divided students into three groups. The first could choose which songs to download based on listening to them and individually judging their quality, while the next two would also get indications of the number of previous downloads for each song (the groups differed in how visibly this information was displayed). Furthermore, students in these second two groups were further divided into eight separate worlds in which the number of downloads for each songs were separately calculated. The results were fascinating. First, the number of downloads was most equally distributed between songs in the groups where the number of song downloads by others was not displayed. The inclusion of social influence (i.e., information about the number of downloads) made the download distribution more unequal. Moreover, this inequality increased as the number of downloads data was made more visible (i.e., as the strength of the social influence increased). Finally, and perhaps most intriguingly, the number of downloads per song was most unpredictable in the highest social influence groups (i.e., it varied the most across the eight separate worlds). The authors observed, “although on average, quality is positively related to success, songs of any given quality can experience a wide range of downloads. In general, the best songs (as measured by the number of downloads by the group not exposed to social influence) never do very badly, and the worst songs never do extremely well. But almost every other result is possible [in the socially influenced worlds].” Based on their results, the authors conjecture that “experts fail to predict success not because they are incompetent judges or misinformed about the preferences of others, but because when individual decisions are subject to social influence, markets do not simply aggregate pre-existing individual preferences. In such a world, there are inherent limits on the predictability of outcomes, irrespective of how much skill or information one has.”

Something tells us that these authors won't be asked to present this paper at many (active) investment conferences.

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 Euro cash benchmark is 3.90% (in nominal terms). The second benchmark we use is a portfolio equally allocated between the ten asset classes we use (it does not include equity market neutral). This portfolio assumes that an investor believes it is not possible to forecast the risk or return of any asset class. While we disagree with that assumption, it is an intellectually honest benchmark for our model portfolios’ results.

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

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