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## Out of Favor, Into the Portfolio

### Investment Commentary, Q4 2006

The Dow Jones Industrial Average is hitting new all-time highs while crude oil is making new lows for the year. Moving in opposite directions is normal for these markets, but recent movements may come as somewhat of a surprise against a backdrop in which core inflation has risen to levels not seen in a decade and the yield curve is inverted.

China and India seem to be in a race to secure energy reserves in anticipation that within three years, Asia's oil consumption will surpass North America's. Global economic production is expanding by about 4%, about double the average rate of the last 50 years. Growth rates are highest in the countries with the largest populations, and consumption is being subsidized by growing global debt markets.

Stock valuations anticipate strong growth while commodity prices anticipate adequate supplies. This is an intellectual error.

*Stocks anticipate strong growth while commodities anticipate adequate supplies. This is an intellectual error.*

*Only fools and economists believe in infinitely compounding growth*

For major world markets to continue recent growth rates, many major supply-related hurdles would have to be overcome. Current capacity for energy supplies are insufficient to support more than a few years of continued growth at this rate; additional capacity will have to be created. However, whether or not one believes in the "peak oil" theory or not, it is indisputable that known oil reserves are shrinking while discoveries are taking longer and yielding less.

While the pendulum of stocks and commodities has swung toward stocks, the fundamentals seem set up to push the pendulum back the other way.

### Stocks and Commodities; Owning Both

Commodities often move in the opposite direction from stocks over periods of three months or longer. Over longer periods, this negative correlation becomes quite strong; as much as -42% for five-year periods. The result is that these two asset classes have provided strong diversification benefits when combined in a portfolio. Their risks offset each other to a high degree, resulting in more consistent wealth accumulation.

The fundamental basis for this behavior is easy to understand: stocks do well when the resources they need are cheap. Similarly, profits are diminished as the prices of natural resources go up. In addition, as commodity prices rise central banks tend to raise lending rates and slow down corporate growth rates. For this reason, commodity prices tend to be a better hedge against

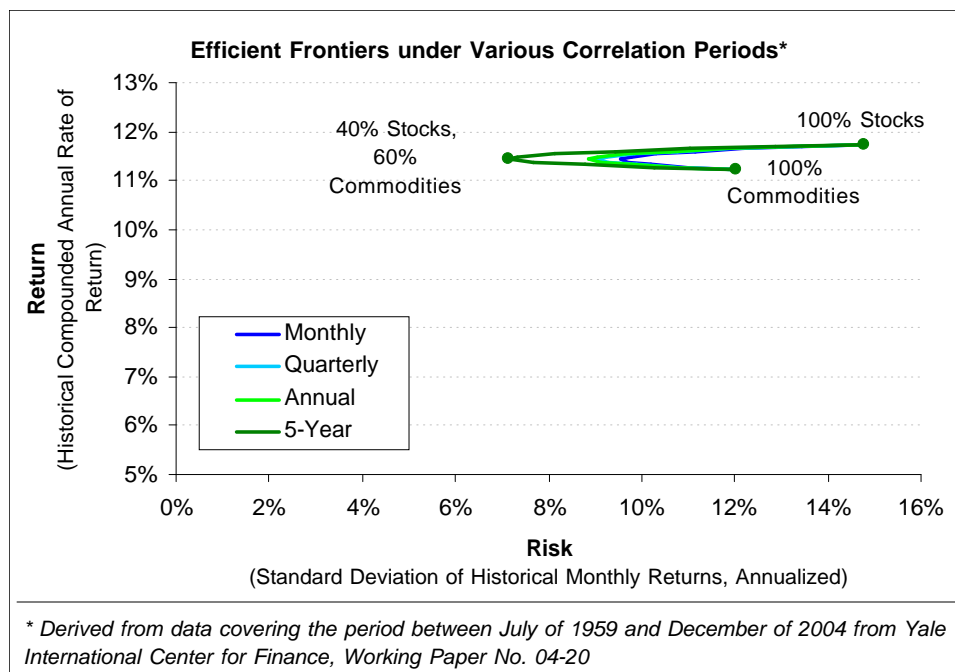
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unanticipated inflation than stocks, and much better than bonds.

Combinations of these two asset classes can be represented along an efficient frontier. This chart makes clear that risk was dramatically reduced by the introduction of commodity futures while having a very small impact on returns.

Risk-averse investors who are sensitive to maintaining their purchasing power should consider commodity futures as a component of their portfolios.



### Ignored Risks

The risk to the value of the U.S. dollar should not be overlooked. Many countries own substantial foreign reserves in U.S. dollar denominated debt. If these countries decided to diversify into a broader basket of currencies or assets, the outflow of capital would put pressure on the value of the U.S. dollar. Commodities provide a hedge against volatility in the value of the dollar by maintaining purchasing power.

### Global Growth implies Unprecedented Demand

World population is rising at a rate of about 1.3% per annum, or about 10,000 new people every hour. At the same time, productivity in the U.S. is rising at about 2.6% annually. The U.S. has very high productivity relative to other countries, and it is growing. At the same time, the vast majority of the world population lives in countries where productivity is much lower – but catching up.

The process of productivity convergence has been dramatically accelerated by the opening of trade, reforms toward capitalism, and the growth of the internet to share information. The long-term trajectory is for developing countries to grow toward U.S. productivity levels. This simple dynamic has some profound implications: we're not ready.

If Chinese productivity rises to even half of U.S. levels, that economy's GDP will expand from less than one fifth that of the U.S. to more than double that of the U.S.

Consider 2 scenarios:

#### 1) An unrealistically pessimistic scenario:

##### Assumptions:

- a. World population suddenly stops growing.
- b. The U.S. never innovates, and simply maintains existing productivity levels.
- c. Other countries catch up to U.S. productivity levels in 50 years.

##### Implications:

- a. China would average 6.6% growth for 50 years, raising its production by more than 24 times to more than four times the size of the U.S.

- b. India would average 8.5% growth for 50 years, raising its production by almost 60 times to more than three times the size of the U.S.
- c. Global production would rise by more than 5 times.

2) Constant population and productivity growth:

*Assumptions:*

- a. World population continues to grow at 1.3%.
- b. U.S. productivity continues to grow at 2.6%.
- c. Other countries catch up to U.S. productivity levels in 50 years.

*Implications:*

- d. China would average 10.8% growth for 50 years, raising its production by more than 169 times, to more than 30 times the current output of the U.S.
- e. India would average 12.8% growth for 50 years, raising its production by more than 410 times, to more than 25 times the current output of the U.S.
- f. Global production would rise by more than 41 times.

These long-standing and slow-moving global economic trends will almost certainly be interrupted by commodity shortages during this period. Even the most optimistic forecasts for natural resource capacity do not anticipate supporting even the conservative scenario for growth.

Something has got to give.

We expect that as population and productivity trends push demand higher, commodity prices will rise to keep demand lower. Equilibrium prices are likely to be driven increasingly by production capacity as shortages develop. Over time, this will likely slow global growth rates and provide advantages to companies and countries that are net suppliers.

## Freakonomics (A postscript inspired by the book of the same name)

### The U.S. Penny is worth 1.04¢!

After monitoring this calculation for a long time, I'm happy to announce this new and unusual arbitrage.

Pennies are composed of 97.6% zinc and 2.4% copper, with a total weight of 2.5 grams. After several years of rapid appreciation, copper prices have been stagnant for about 6 months, but zinc has been rising toward \$4,000 per metric ton (or about 4/10 of a cent per gram). That places the value of the zinc at 0.994¢, and the value of the copper at 0.045¢, bringing to total cost of the raw metals to 1.04¢.

So if you collect pennies, melt them down, separate and purify the metals, then sell the metal on the public exchange, you make 4%. This is a new phenomenon, and may not last. I would expect to hear an announcement that the penny will be modified, replacing zinc with aluminum. This would bring the value of the metals down to less than 7/10 of a cent, and gives the government another couple years before they are forced to drop the penny as a unit of currency.

The new aluminum pennies will still be clad in copper, but will feel much lighter. You heard it here first.

*Please let me know if you have an idea for a future "freakonomics". I look forward to hearing from you.  
Please forward.*