The Oil Drum
DISCUSSIONS ABOUT ENERGY AND OUR FUTURE

The Specter of Recession

Posted by Dave Cohen on October 4, 2006 - 11:49am
Topic: Economics/Finance
Tags: federal reserve bank, housing bubble, james hamilton, oil price shocks, peak oil, recession, slowdown, yield curve [list all tags]

Recession fears are being reported as affecting the oil markets. Oil prices tumble over fears of US recession is typical.

> Oil prices have dropped to the lowest level in six months, as markets' concerns about geopolitical instability are replaced with worries about an impending US-led economic slowdown The plunge in oil prices has hit mutual funds for $4.5bn (£2.4bn), and there are fears that more investors could fall victim to unexpected falls in energy prices...
>
> Hedge funds and oil traders are selling their crude holdings because of fears that the US economy could slump next year, dragged down by the stalling housing market. Figures released yesterday showed US house prices falling last month for the first time in over a decade, while the inventory of unsold houses was at its highest level for 13 years. Traders are concerned that an American slowdown would drag many other major oil importers down, causing worldwide energy demand to plunge.
>
> "Worries about US growth are an important factor," said HSBC economist John Butler. "We are concerned about the possibility of recession in the US."

Before recently, all the fears were geopolitical in nature. Easing of those concerns—for no good reason at all—has been replaced by the specter of an American recession. Let's examine that possibility. As it turns out, the view here is that a recession—perhaps a severe one—may be more likely than not.

[editor's note, by Prof. Goose] Please folks, don't forget to go rate this story of Dave's at reddit and digg. This is one of his best, and he put a lot of effort into it. He deserves as many eyeballs as he can get!

I shall argue from three separate lines of evidence indicating the possibility of a recession. Any one of them, by itself, might not be considered by some as sufficient reason for alarm. However, all three factors are strong signals and, taken together, paint a worrisome picture. Here they are.

- The Negative Yield Curve
- The Housing Bubble
- The Oil Price Shocks Model

Each is discussed in order below. In the final section, I shall indicate why those of us concerned

about Peak Oil should care. Please read the conclusions. But first, here's a short note.

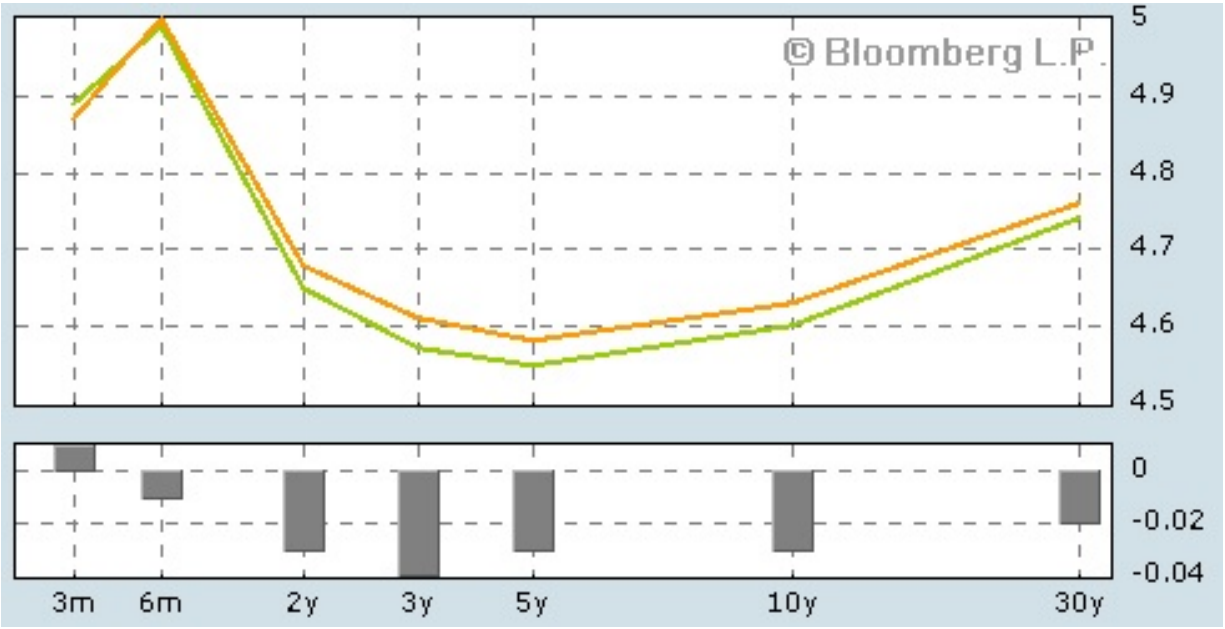
Paying Attention to What's Important

The work of Dr. James Hamilton figures prominently in this story. Stepping back a bit from the immediate subject—will there be a recession soon?—it is altogether clear that Hamilton's work takes the role of oil in fueling economic growth seriously, whereas other, more shortsighted analysts often try to explain it away on superficial grounds, e.g. the percentage of family gasoline expenditures in the total household budget and the like. These kinds of arguments miss the point by a wide margin. Every aspect of modern civilization owes its existence to some—usually large—extent on oil, its use as the primary feedstock for liquid transportation fuels or its many other uses for creating everyday products we take for granted—various plastics, for example, including parts of the computer on which I am typing out this story.

It is inconceivable to me that any serious historical analysis of the Industrial Age since 1870 and the economic growth that has attended it would not emphasize the availability of abundant, cheap oil—regardless of past oil shocks, worries about scarcity and price volatility. Dr. Hamilton seems to appreciate this, while others do not. Hence, he writes frequently about oil and that work includes his highly recommended How to talk to an economist about peak oil.

The Negative Yield Curve

The current negative (or, *inverted*) yield curve is shown in *Figure 1* and its significance is explained below the figure by Arturo Estrella of the Federal Reserve Bank of New York.



The curve is inverted because of the negative spread between the short-term rates (the 3 month) and the long-term rates (the 10 year)
Figure 1 -- Click to enlarge.

> The difference between long-term and short-term interest rates ("the slope of the yield curve" or "the term spread") has borne a consistent negative relationship with subsequent real economic activity in the United States, with a lead time of about four to

> six quarters. The measures of the yield curve most frequently employed are based on differences between interest rates on Treasury securities of contrasting maturities, for instance, ten years minus three months. The measures of real activity for which predictive power has been found include GNP and GDP growth, growth in consumption, investment and industrial production, and economic recessions as dated by the National Bureau of Economic Research (NBER). The specific accuracy of these predictions depends on the particular measures employed, as well as on the estimation and prediction periods. However, the results are generally statistically significant and compare favorably with other variables employed as leading indicators. For instance, models that predict real GDP growth or recessions tend to explain 30 percent or more of the variation in the measure of real activity. See Estrella and Hardouvelis (1991). The yield curve has predicted essentially every U.S. recession since 1950 with only one "false" signal, which preceded the credit crunch and slowdown in production in 1967.

So, a negative yield curve appears to be a robust indicator of recession. The reason for this is discussed in Historical Yield Curve from Fidelity.

> People talk about interest rates going up and going down as if all rates moved together. The truth is, the rates on bonds of different maturities behave quite independently of each other with short-term rates and long-term rates often moving in opposite directions simultaneously. What's important is the overall pattern of interest-rate movement -- and what it says about the future of the economy and Wall Street. Rates are like tea leaves, only much more reliable if you know how to read them.
>
> **Inverted Curve**
> At first glance an inverted yield curve seems like a paradox. Why would long-term investors settle for lower yields while short-term investors take so much less risk?
>
> The answer is that long-term investors will settle for lower yields now if they think rates -- and the economy -- are going even lower in the future. They're betting that this is their last chance to lock in rates before the bottom falls out.

My recommendation is that you read James Hamilton's Econbrowser posts on this subject in order to more fully understand the negative yield curve signal.

1. Reading the Yield Curve
2. When should we worry about the yield curve?
3. The yield curve and predicting recessions
4. Inverted yield curve edges closer

There are two important things to bear in mind at the present time. First, the last link #4 notes that the yield curve became inverted in the 4th quarter of 2005. As Arturo Estrella notes above, "[the curve] has borne a consistent negative relationship with subsequent real economic activity in the United States, with a lead time of about four to six quarters." We are now in the 4th quarter of 2006. Secondly, in link #3 above, Hamilton notes

> Jonathan Wright, a brilliant research economist at the Federal Reserve Board, recently completed a very interesting paper titled The Yield Curve and Predicting Recessions. Wright's research seems to have been influential in Fed Chair Ben Bernanke's recent

assessment that the current very flat yield curve does not signify a coming significant economic slowdown.

Indeed, you can run Wright's model at Reckoning the Odds of Recession. A model run for today, October 2nd—based on a 10 year rate of 4.61%, a 3 month rate of 4.77% and a Federal Funds Rate (September 29th) of 5.34%—indicates a 42.9% chance of a recession in the next 4 quarters. These are the same numbers the Fed is seeing.

The Housing Bubble

Here's what The Economist had to say about the housing bubble in June of 2005 with one of their accompanying graphs, labeled *Figure 2* here.

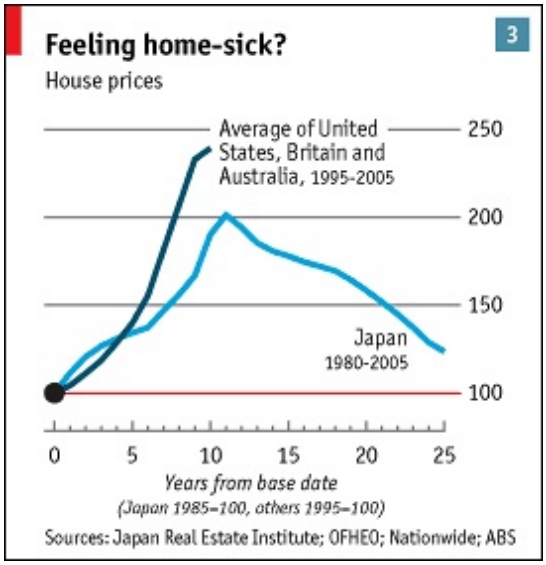


Figure 2

The worldwide rise in house prices is the biggest bubble in history. Prepare for the economic pain when it pops

Japan provides a nasty warning of what can happen when boom turns to bust. Japanese property prices have dropped for 14 years in a row, by 40% from their peak in 1991. Yet the rise in prices in Japan during the decade before 1991 was less than the increase over the past ten years in most of the countries that have experienced housing booms (see *Figure 2*). And it is surely no coincidence that Japan and Germany, the two countries where house prices have fallen for most of the past decade, have had the weakest growth in consumer spending of all developed economies over that period. Americans who believe that house prices can only go up and pose no risk to their economy would be well advised to look overseas.

Despite a small bit of good news reported by Hamilton, the data trend is not looking good lately. Here's some text and data from Watching Prices Swing in Health, Housing and Stocks (New York Times, September 30th).

- For the first time in 11 years, monthly figures showed the median price of a previously owned home falling as inventories of unsold homes rose to levels not seen in more than a

decade. The National Association of Realtors said that the median price in August fell to $225,000, down 1.7 percent from August 2005. That was the first time since April 1995 that the national median price was lower than the month a year before.
- Volume fell as well as prices. The number of existing homes sold, which make up about 85 percent of all home sales, declined 0.5 percent in August from July. They had slumped in that month by 4.1 percent from June.
- At the same time, the Commerce Department said that sales of new homes rose 4.1 percent in August from July. But economists warned against reading too much into those figures because the government adjusted the July figure downward before making the comparison.

Aside from prices, the Commerce Department reported that new construction is falling—from the Houston Chronicle:

> Meanwhile, the housing market has been leveling off. The Commerce Department's report Monday said spending on private home construction dropped 1.5 percent in August to a seasonally adjusted rate of $617 billion. The August decline followed an even bigger 2.1 percent July decrease and marked the fifth straight home building has fallen.

As with the Law of Gravity, what goes up in a speculative price bubble must come down, being divorced from the fundamentals. Aside from the symptoms of a deflating balloon, which are growing more robust, what would the consequences be? Let's turn to The Housing Bubble Fact Sheet, a July, 2005 analysis from the Centre for Economic Policy Research (CEPR).

> The generalized bubble in housing prices is comparable to the bubble in stock prices in the late 1990s. The eventual collapse of the housing bubble will have an even larger impact than the collapse of the stock bubble, since housing wealth is far more evenly distributed than stock wealth.

Section 5 of the report states that "the collapse of the housing bubble will throw the economy into a recession, and quite likely a severe recession." Their verbatim analysis—it seemed pointless to try to condense it—goes like this:

- Housing construction is equal to approximately 5 percent of GDP. Construction of new homes has been going on at a near-record pace over the last few years, in response to the run-up in housing prices. Home construction could easily fall back 40 percent (this was the drop off in the 1981-82 recession), which would imply a direct loss in demand equal to 2 percentage points of GDP.
- The large wealth effect associated with the housing bubble, which has spurred a consumption boom in the last few years, will go into reverse as housing prices plummet. Research from the Federal Reserve Board shows that a dollar in additional housing wealth leads to 4 to 6 cents of annual consumption. This implies that a loss of $5 trillion in housing wealth would lead to a decline in annual consumption of between $200 billion and $300 billion. This loss in consumption is equivalent to 1.6 to 2.5 percentage points of GDP.
- Combining the 2 percentage point drop in demand due to a falloff in housing construction with the 1.6 to 2.5 percentage point drop in demand due to the reversal of the housing bubble's wealth effect leads to a falloff in demand of between 3.6 and 4.5 percentage points of GDP. If employment fell in the same proportion, this would imply the loss of between 5.0 million and 6.3 million jobs. Since the federal government is already running a large deficit, and the country is running a very large trade deficit, the government's ability to use fiscal and monetary policy to boost the economy out of the recession will be severely restricted.

If you believe that the housing market is starting to collapse, and given that The Economist labeled it the "biggest bubble in history", then the pessimistic analysis of the CEPR does not seem so extreme. If the bubble is *not* collapsing now, then this would indicate to me that we are witnessing some volatility that presages the "real" collapse which will occur later— remember, it's like Gravity. Also remember the experience of Japan as shown in *Figure 2*. Once the bubble bursts, it's all downhill from there.

Since we are trying to gauge the likelihood of a recession, the situation does not look good in either case. The housing market is very shaky.

Oh, by the way, did I forget to mention—worth reading from Resource Investor—how the dollar has been faring?

Uhmmm... That doesn't look good -- Figure 3

But there is no space in this story to talk about the longer-term decline of the dollar or the large U.S. Current Accounts and Trade deficits. Or even the rising mortgage defaults in California (August, 2006).

> Lenders sent 20,752 default notices to homeowners across the Golden State, up 10.5% from 18,778 the previous quarter and up 67.2% from 12,408 in the second quarter of 2005....
>
> "This is an important trend to watch but doesn't strike us as ominous," said Marshall Prentice, DataQuick's president. "We would have to see defaults roughly double from today's level before they would begin to impact home values much."

<rant>
That's right, Marshall, nothing ominous about a year-on-year 67% rise in default notices in the world's 5th largest economy, though doubling of defaults doesn't take long at that rate, does it? Nothing ominous, Marshall, unless you are the one doing the defaulting because your kid got sick and you have no health insurance, you work at Wal-Mart, you made the mistake of using credit cards for stuff you thought you needed and now you use them for food & gas, you have a recent interest-only mortgage, your house is worth less than it was last year and you are no longer able to declare bankruptcy since the Republicans changed the law—but that wouldn't be you, *would it, Mr DataQuick*?
</rant&gt

[editor's note, by Dave Cohen] I am so sorry! I just lost my grip there. OK, I won't read or agree with Kurt Vonnegut anymore. *Mea Culpa*.

Old Socialists don't die, they just fade away — for Yankee

Let's, ahhh, resume the analysis. Here's our third factor.

Oil Price Shocks

In June of 2004, the Wall Street Journal published Oil Prices Start to Pinch, Stirring Concern Over Economic Impact (subscription required).

> High oil prices have preceded or coincided with nine of the 10 U.S. recessions since World War II -- a history lesson that has policy makers, executives and economists scouring for evidence that it could happen again.

This fear is based on Hamilton's theory of oil price shocks—you can read the original paper but this is only for the very brave. The view is described by the Federal Reserve Bank of San Francisco (FRBSF) in Why Hasn't the Jump in Oil Prices Led to a Recession? (November, 2005).

> Indeed, Figure 1 [see *Figure 4* below], which plots the real, inflation-adjusted price of imported petroleum, shows that high oil prices have frequently coincided with recessions. In a series of papers, Hamilton (1983, 1996, 2003) has argued forcefully that the oil shocks were responsible for these recessions. However, he argues that not all changes in the price of oil have the same effect on the economy. For instance, a fall in oil prices is unlikely to boost the economy in the same way that an increase can drag it down. In addition, he argues that oil price increases that simply reverse previous price decreases are unlikely to have a significant effect. One approach he recommends to isolate the kinds of price changes that can affect the economy is to record an oil shock only if the prevailing price of oil is higher than it has been over the past three years.

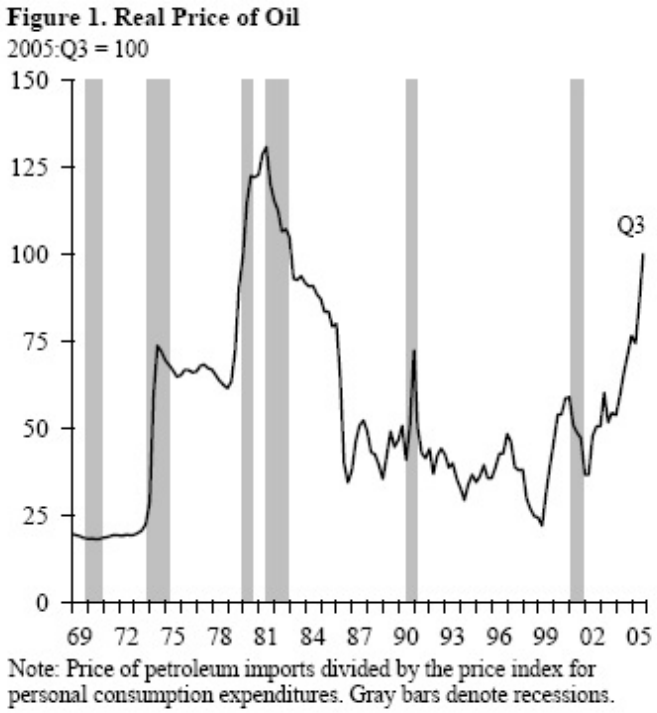


Figure 4

Performing Hamilton's transformation, the FRBSF comes up with *Figure 5*.

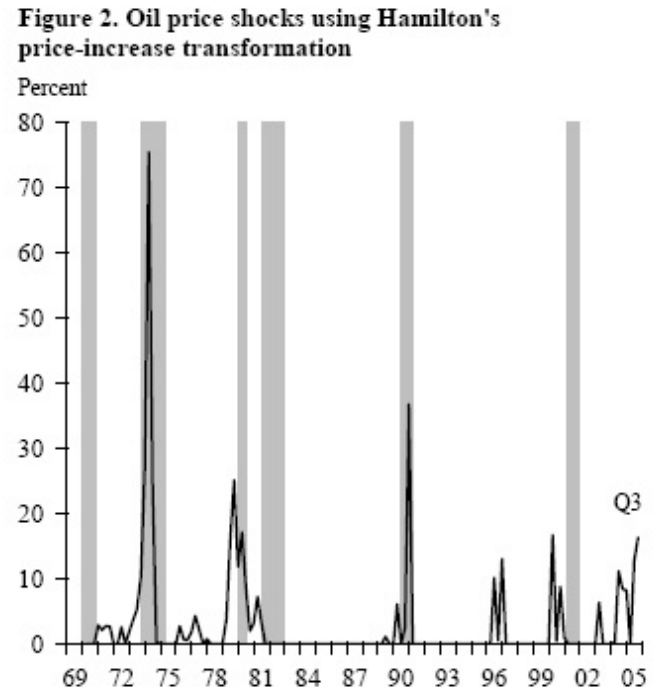


Figure 5

The authors critique Hamilton's model as shown in *Figure 5*, suggesting that the role of oil price shocks in previous [the 70's] recessions was exaggerated. They note that the magnitude of the oil price shock effect is much larger than direct income loss. See their paper for the details.

Plainly, the run up in oil prices since 2002 has not resulted in a recession. The Fed authors seek

to explain this. The fundamental premise is that oil prices affect the economy because the price of imported oil is a "tax" on U.S. domestic users. "For each $10/barrel increase in oil prices, the United States pays an effective "tax" of about $50 billion (5 billion barrels times $10), or 0.4% of GDP." The authors argue that the current episode (since 2002) is different, in part, because "the run-up in oil prices in the past few years seems to reflect the endogenous response of prices to the strength of global demand [mostly from China]." Therefore:

- Previous recessions involved exogenous (geopolitcal) shocks to supply.
- Demand increases originating in China coupled with inelastic global supply produces an increase in the oil price for the U.S. similar to a decrease in supply.
- However, a demand-driven price shock will not have the same effects on the U.S. economy as a decrease in supply would.

A related argument can be found in Barreling Down the Road to Recession? from the Federal Reserve Board of St. Louis (September, 2006).

> Finally, can we expect a recession to occur as a result of current oil prices? James Hamilton believes that oil shocks affect economic growth only when, as a result of the higher prices, consumers' spending behavior changes. As the accompanying chart [*Figure 6* below] shows, PCE [personal consumption expenditures] growth has remained positive since the real price of oil began to rise. The negative PCE growth that accompanied the previous oil shocks has not yet occurred during the current run-up in oil prices. Thus, as of now, economic growth appears to be more resilient to the negative effects of rising oil prices than in the 1970s and early 1980s.

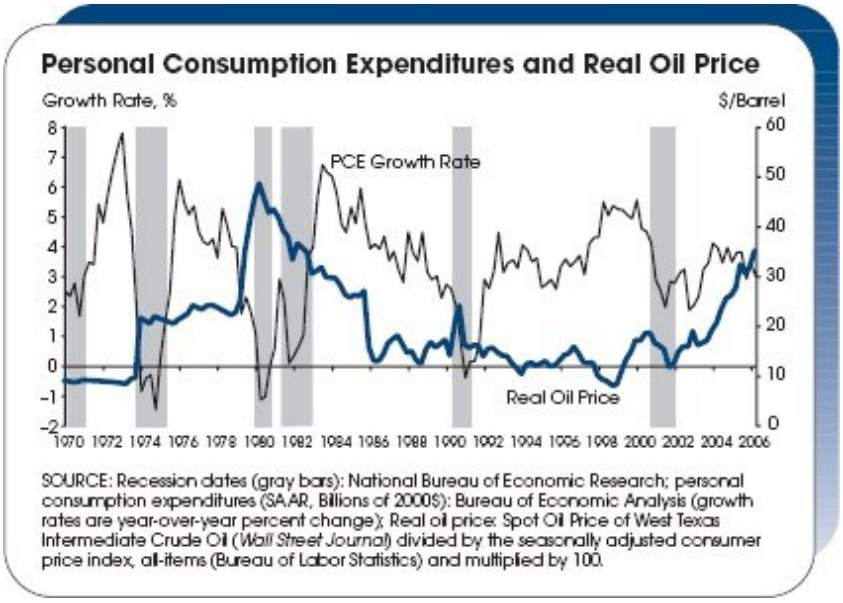


Figure 6

As you can see, the PCE index has remained positive despite the increasing oil prices since 2002.

So, why include the oil price shock effect in this story if it has not, in fact, resulted in a recession over the last 4 years? The two-part answer is this:

1. Despite the recent steep drop in oil prices, it is likely this is due to a number of temporary factors that have been extensively discussed at The Oil Drum. The most likely scenario is that the price will begin rising again, starting with the end-of-year seasonal adjustment. The

fact that $60/barrel remains the real floor price persuades me even more of the correctness of this assumption. See Khebab's How Periodic Are the Oil Price Fluctuations? The fundamentals have not changed and OPEC can still create downward pressure on supply if prices fall further.

2. Even if rising oil prices have not caused a recession, it is still the case that for each $10/barrel increase in oil prices, the United States pays an effective "tax" of about $50 billion, or 0.4% of GDP. Prices had quadrupled since the start of 2002 until very recently. As I said, I believe they will rise to high levels next year.

Therefore, rising oil prices will continue to have their detrimental effects on personal expenditures and also add to inflationary pressures.

Peak Oil, Recession and Oil Prices

Most analysts anticipate a slowdown in 2007. Taken together, the three factors discussed here do not point to a healthy economic outlook. Indeed, if all three effects are piled up one on top of the other, it is possible that there will be a severe recession next year. This may lead to the dreaded *deflationary* scenario for oil prices.

For those concerned about peak oil, low prices resulting from decreased demand in a recession has two detrimental effects.

1. Development of new oil & natural gas projects that now depend on high prices is curtailed.
2. Development of substitutes for oil & natural gas is curtailed.

Lower—maybe *much* lower—demand over a significant period of time (a few years) masks the global production peak but does not help solve it. When the global economy does finally emerge from a recession, the same old problems will still be with us but mitigation efforts will have been crippled. Furthermore, most people will be persuaded that the peak was a fiction due to the low prices they have just seen during the recession. In the meantime, however, the world will still have been consuming oil—large amounts of it—thus draining existing production but *without developing new supply* as the low prices put many projects on hold.

This is the worst case I can think of. I do not know that there will be a severe recession but it is a matter of degree. Even a large slowdown or mild recession putting downward pressure on price will have detrimental effects. In the best of all possible worlds, we would see a steady price rise over time reflecting the peaking of world oil production. Hamilton (in *How to talk to an economist about peak oil*) has argued in a friendly, contrarian kind of way that if the peaking of global oil production is coming in *n-years*, then

> what economists would therefore expect to see under the n-year scenario would be for the oil price to rise steadily over all these n years, gradually producing greater and greater incentives for the needed conservation and the needed development of alternatives between now and year n.

Why don't we see that? Well, actually, we *are* seeing that since 2002, despite great price volatility. However, there are other problems:

1. Denial about the peak oil phenomenon itself—this usually amounts to setting *n* as a large number measured in decades
2. Lack of precision in predicting the peak for small values of *n* measured in years but less than

a decade—this invalidates any *n-year* scenario because we can not predict *n*

3. Deflationary scenarios that lower prices over short periods of time—a few years in the case of a recession—or even shorter periods of time reflecting volatility—a few weeks or months

Oil itself is not yet scarce but its price should always reflect the real geological, technological & economic constraints on supply. See Nate's Natural Gas - A Tale of Two Markets for similar reasoning applying to natural gas prices. Unfortunately, the workings of the near-term market (#3 above) combined with the other factors (#1 and #2) will not solve an inevitable problem which is, ultimately, a *tragedy of the commons*. But that will be another post.

Sincerely,

Dave Cohen
Senior Contributor

[editor's note, by Prof. Goose] Please folks, don't forget to go rate this story of Dave's at reddit and digg. This is one of his best, and he put a lot of effort into it. He deserves as many eyeballs as he can get!