Matt Mushalik: Links Between Peak Oil and Financial Crisis; also Updated Graphs

Posted by Gail the Actuary on February 1, 2009 - 9:39am
Topic: Supply/Production

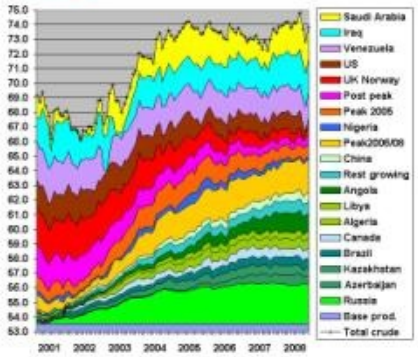
Matt Mushalik from Australia has in the past provided some graphs of crude oil production presented in an unusual way. The top of the graph is just what you would expect, but the layers within the graph show only recent changes in production for a given country. This post provides an update of two of Matt's graphs through October 2008, based on EIA data. It also shows a diagram Matt prepared summarizing connections between the peak oil and the financial crisis.

First, Matt's diagram showing his view of the connection between peak oil and the financial crisis. (Sorry, it is too big to fit in the header).

Connection Between Peak Oil and the Current Financial Crisis

Financial Crisis and Peak Oil
Simplified chain of **past**, **present** and **possible future** events

Crude peak 2005 – 2008
74 mb/d



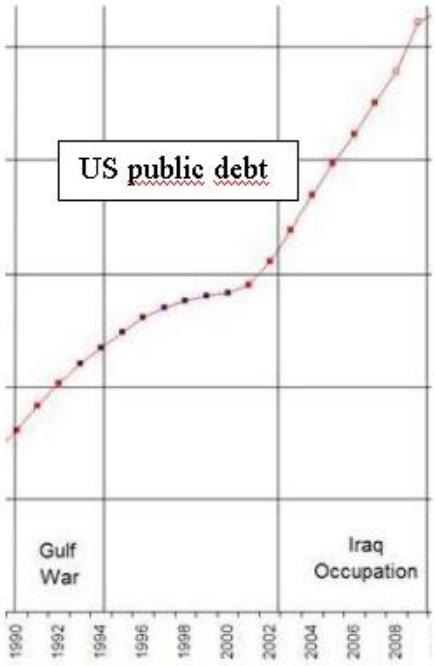
High gas prices in US suburbia and exurbia

Subprime mortgage crisis

Airlines and car industry in trouble

Falling house prices

Accumulated debt → Banking crisis → Credit crisis → Recession



Oil derivatives market failure

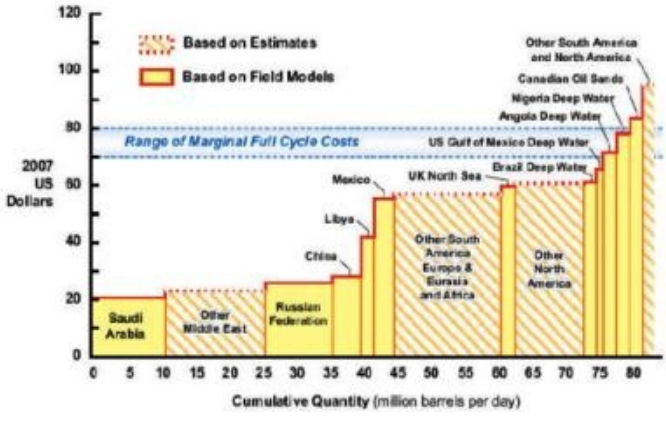
(OECD) **Oil demand destruction**

Lower oil prices and production cuts

Less investments in oil fields to offset natural decline

Oil production decline

Oil shortages and/or 2nd oil price shock



Other unforeseen events (e.g. oil price volatility destabilizes economy; expensive oil disappears from market; credit crisis damages oil sector itself oil import/export & regional imbalances)

↑Marginal barrels cost $70-80 by CERA quoted in http://www.horizonoil.com.au/

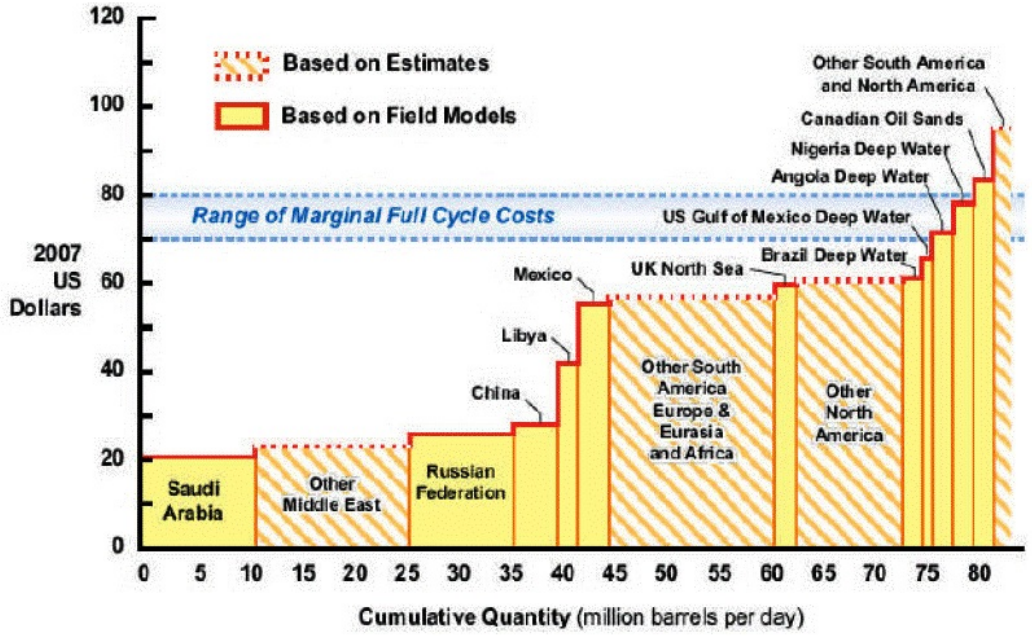
Matt's diagram summarizing the connections between peak oil and the financial crisis (shown above) is in three colors. Black indicates past events; green indicates current events; and blue is some possible future events.

Most of us have heard about many of the events on the chart already, and speculation as to what may happen in the future. While the media is not aware of the various connections, there is considerable evidence that these connections are there, and are what have caused the current financial crisis. Of course, with peak oil as a cause, the financial crisis is likely to be far worse than anyone could ever have imagined. While the economy may cycle in the future, its long term direction is likely to be down.

There are three graphs down the side. The first one is Matt's "Graph 1d" of worldwide crude oil production based on EIA data. This graph is described in more detail below. This graph shows that worldwide crude oil production has been flat at about 74 million barrels a day, since 2005. The "peak", to the extent there is one, is in July 2008,

The second is a graph of US public debt from Tom Millican's website. Debt of almost any kind has been escalating, so other types of debt, if graphed, would have also shown a pattern of rapid increases. Matt also notes the "Gulf War" and the "Iraq Occupation" on this graph, presumably also related to our oil related problems.

The third graph is one produced by Cambridge Energy Research Associates (CERA), as shown in this presentation by Horizon Energy.



The CERA graph above shows the full cycle cost of oil production in various locations around the world. At the time the graphic was produced, the price of oil was about $90 a barrel, so I would interpret the band between $70 and $80 to be the highest cost new oil production that could profitably be added when oil was at $90 a barrel. Now, with oil in the low $40s per barrel, there is virtually no new production outside of OPEC, Russia, and China that can be added on a profitable basis.

Of course, production where most of the exploration and drilling costs have already been done will be cheaper since only marginal production costs are involved. Most of this production is likely to

continue until it naturally declines; it is the new development that is likely to be cut off. Since there is a steep decline rate on post peak wells (6% or more per year, much more in offshore locations), without new wells, production from existing sources is likely to drop off rapidly, causing the problems Matt shows in the graphic above.

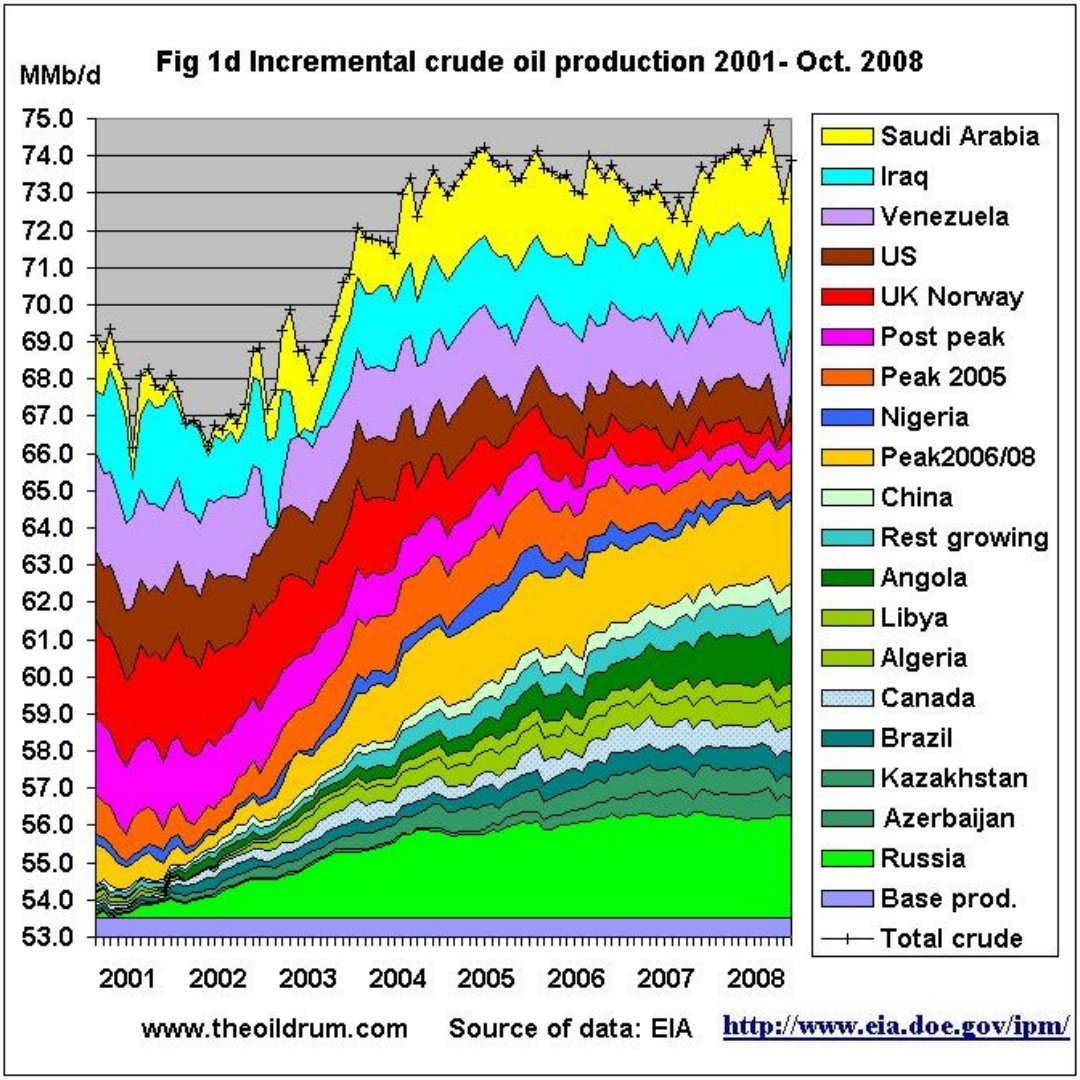
World Crude Oil Production

Below are Matt's crude oil production graphs, based on EIA data, updated through October 2008. These graphs show that at this point, the peak in crude oil production was July 2008. Many of us believe that that will ultimately be the final peak in crude oil production, because now with lower prices, there is no incentive to try to match the July 2008 amount, which was very difficult to achieve.

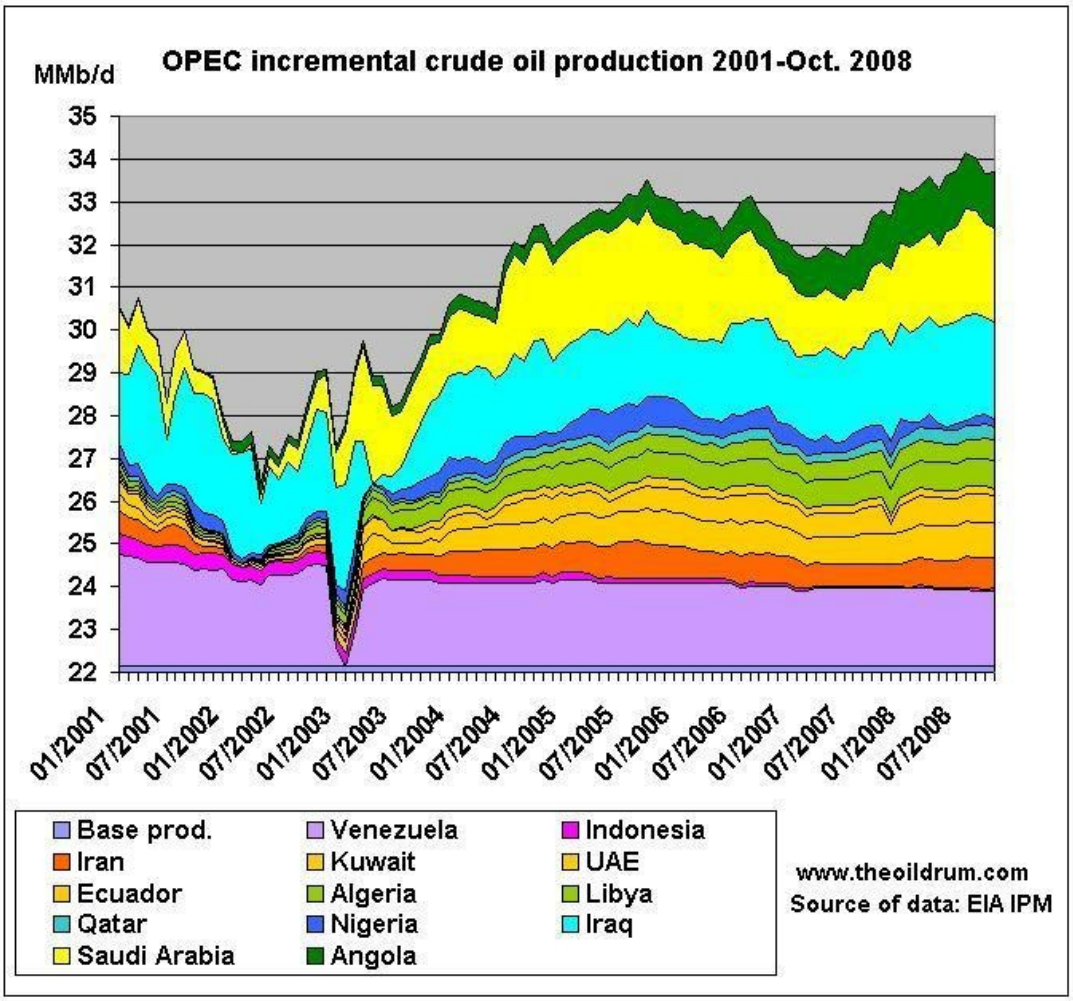
Note that these graphs relate to world crude oil, not "total liquids". Total liquids includes biofuels and natural gas liquids, and may have a slightly different peak.

In the first graph shown (labeled 1d), Matt shows the how production has recently changed, for countries and groupings of countries shown in the list. For example, the UK-Norway layer is thicker at the left side of the graph, and becomes thinner at the right side of the graph, indicating that its production recently has been falling. Russia's layer generally gets thicker as one moves across the graph, indicating that since 2001, its production has generally been rising (although not necessarily this past year).

In Figure 1d, countries with generally rising production are at the bottom of the graph. The middle group has declining production. At the top are Saudi Arabia, Venezuela, and Iraq (countries whose production has varied considerably from year to year).



From Figure 1d, one can see that production has generally been on a plateau since 2005, although there is a slight peak at July 2008. One can also see that without the top three countries (Saudi Arabia, Venezuela, and Iraq), even this slight peak in July 2008 disappears. One also can see that Russia's production has recently been quite flat (actually slightly declining), and that production for the countries at the bottom of the stack is barely growing enough to offset the decline of the group of declining countries in the next layer.



The above figure shows OPEC production on the same basis. From this figure, one can see that most of the growth in production since 2003 is from Saudi Arabia, Iraq, and Angola. One can also see the peak in production in July 2008.