

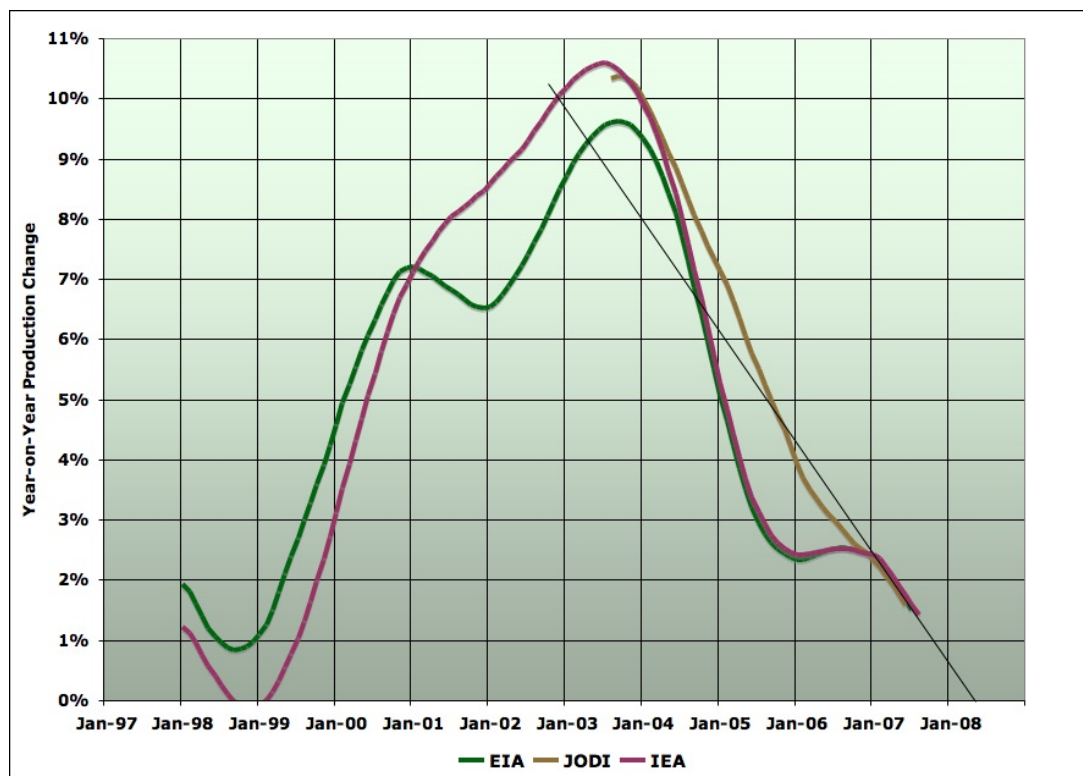


## When Will Russia (and the World) Decline?

Posted by [Stuart Staniford](#) on November 6, 2007 - 1:10am

Topic: [Supply/Production](#)

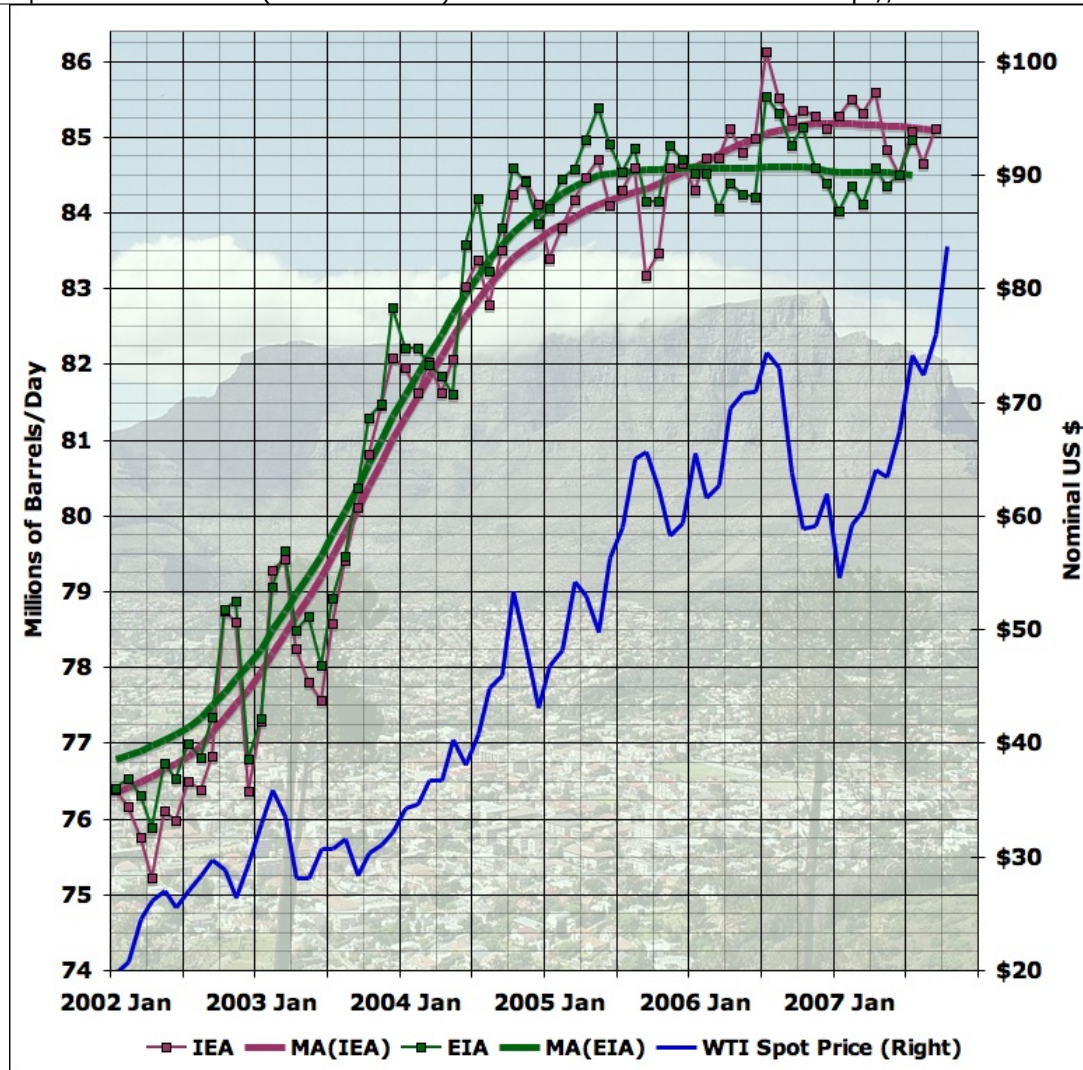
Tags: [original](#), [peak oil](#), [plateau](#), [russia](#) [[list all tags](#)]



*Year-on-year change in centered moving average of Russian oil production according to three data sources: [EIA Table 1.1c](#), [IEA Table 3](#), and [JODI](#). Black line is an extrapolation of the current trend and **is a scenario, not a forecast***

This piece concerns the near term prognosis for Russian oil production. For background on Russia at TOD, I would recommend the [excellent summary by Dave Cohen](#) last year, and also a recent [comment by Gail Tverberg](#) which summarized a variety of warnings on the potential for Russian production to go into decline (for the second time). Also excellent is the book [Russian Oil Supply](#) by John Grace.

Here I just want to update and extend a fairly simple analysis of the situation. But first let me set some context. We have been discussing the plateau in global oil production on this site for the last two years (pretty much since the plateau [first began](#)). The latest statistics show the plateau continuing, indeed there is even some hint of decline now in both the IEA and EIA series for total liquid fuel production:



Average daily total liquid production, by month, from EIA (green) and IEA (plum), together with 13 month centered moving averages of each line, recursed once (LHS). WTI spot price (blue - RHS). Click to enlarge. Graphs are not zero-scaled. Source: [IEA Oil Market Reports](#), and [EIA International Petroleum Monthly Table 1.4](#). The IEA line is taken from Table 3 of the tables section at the back of the OMR in the last issue for which the number for that month is given. WTI spot price is from the [EIA](#)

However this decline is not likely to be statistically significant, so we cannot set much store in it at present. Nonetheless, a key question is whether the plateau will

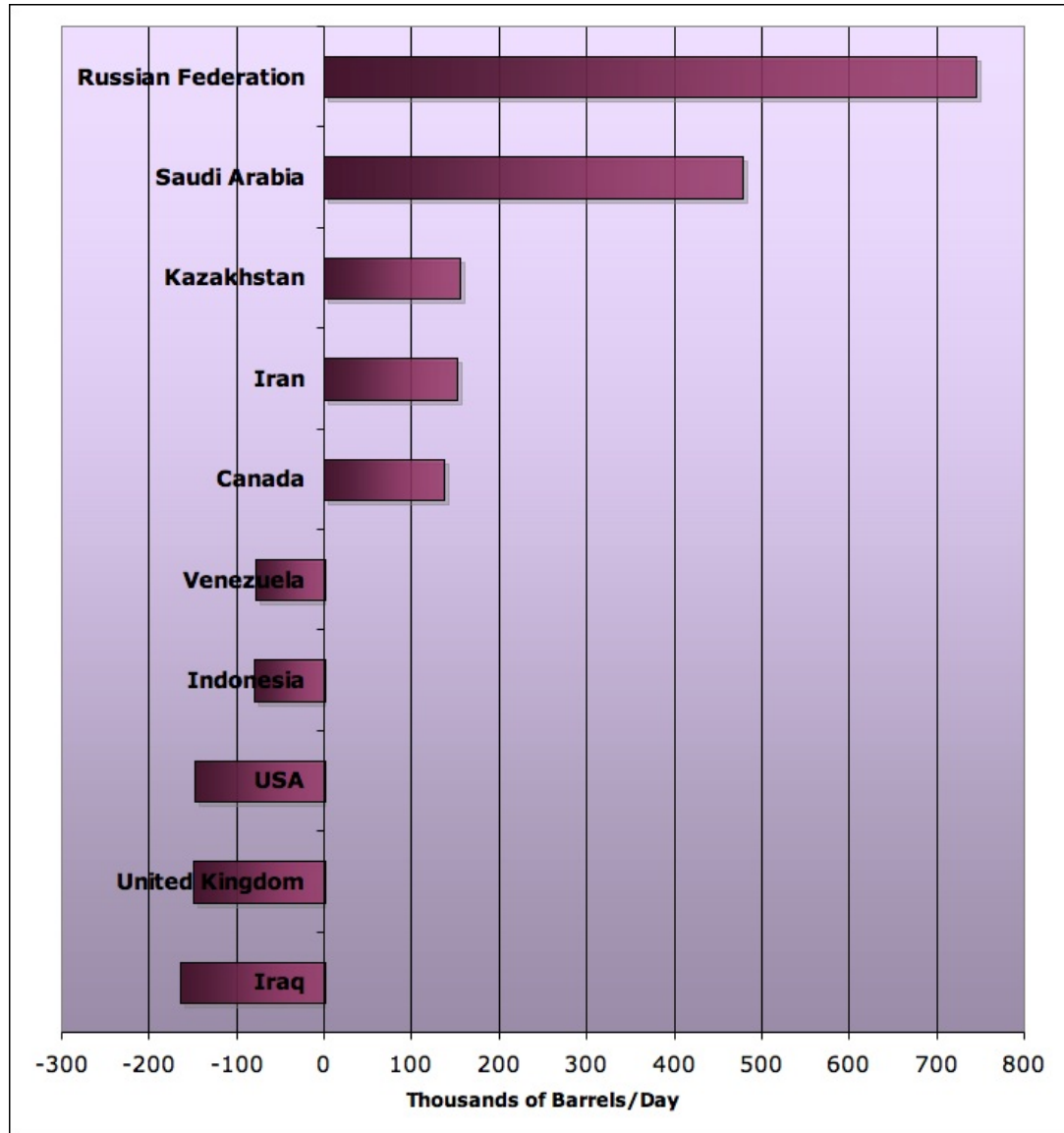
- continue,
- end in renewed production climbs, or
- begin declines

This is obviously of great interest. Rembrandt gave [his view](#) a couple of weeks back, arguing that the peak was likely at least a few years away and significantly higher than oil production at present.

I have been of the view for a year or two that peak oil is [happening as we speak](#). The fact that production is plateaued tells us that over the last two years or so, all new capacity brought on has been cancelled out by the forces of entropy and chaos: production declines in existing field production, geopolitical problems, the deprecations of hurricanes and other accidents, and any voluntary cuts made by OPEC (I am with [Jim Hamilton](#) in being deeply sceptical that any voluntary cutting is actually going on). Thus future lists of new projects must be balanced against

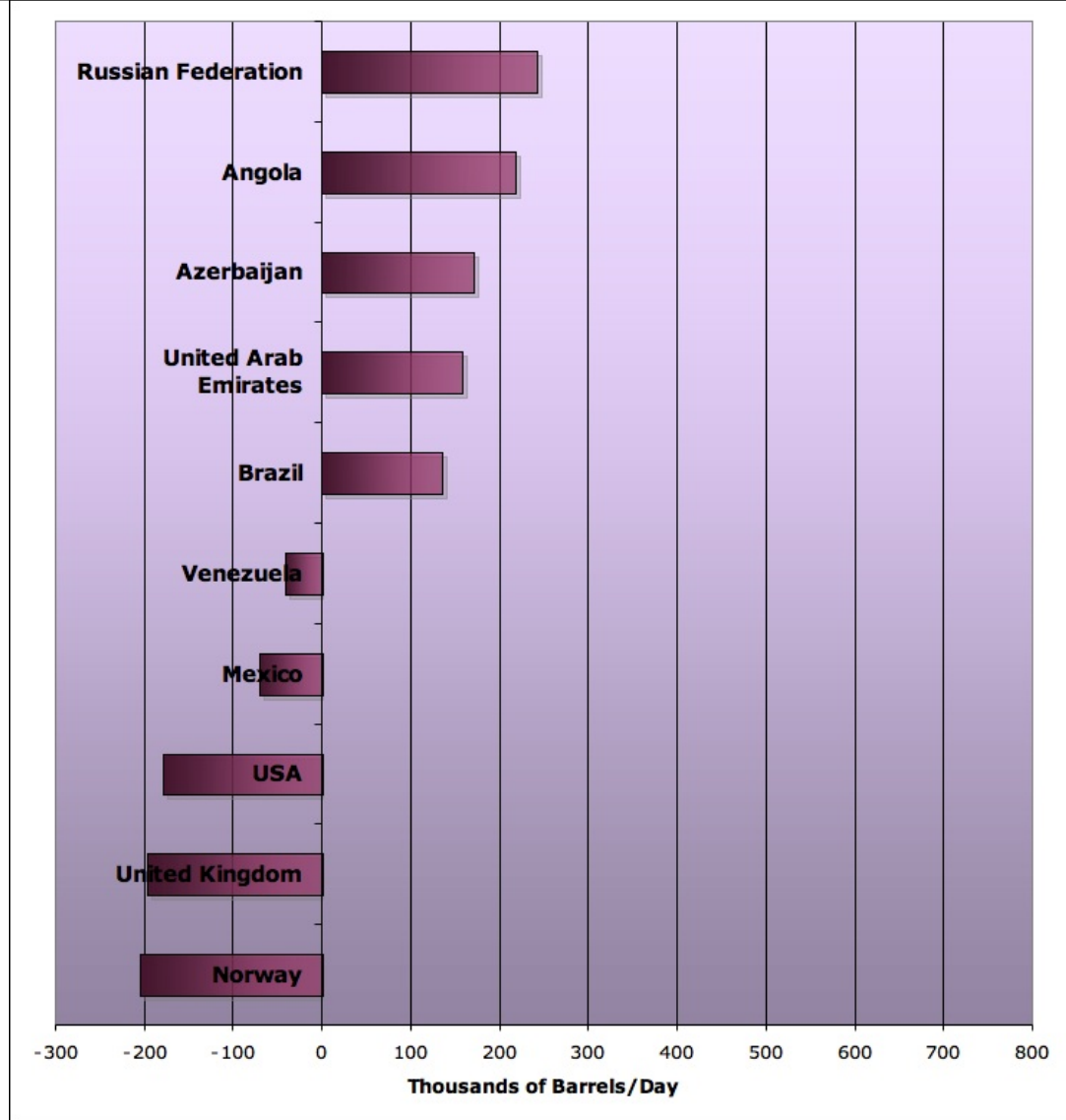
estimates of the future forces of chaos, and our ability to enumerate *those* with any precision is extremely poor.

I find it more instructive to look at trends in particular countries. If we look back before the plateau, during the period 2001-2004 when production was increasing robustly as the world economy came out of a slump following the Internet stock crash, we can examine the key declining countries and key increasing countries:



*Average annual increase/decrease in daily oil production for top five increasing and decreasing countries 2001-2004. Source: [BP](#) (includes NGLs).*

As you can see, the two most significant countries making for the production increase, by far, were Saudi Arabia and even more so Russia, with everyone else a long way behind. This is what things looked like when supply was able to increase in response to increased demand. If we then look at the period 2004-2006 (when supply was roughly plateaued), we see this:

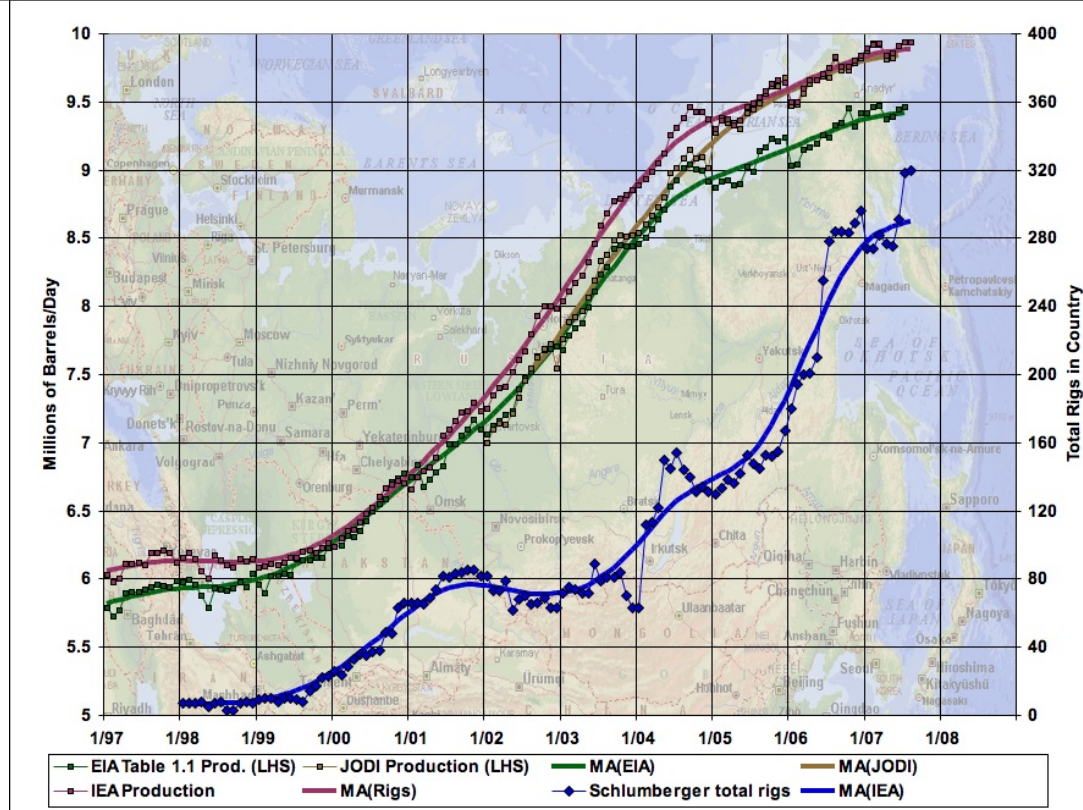


*Average annual increase/decrease in daily oil production for top five increasing and decreasing countries 2004-2006. Source: [BP](#) (includes NGLs).*

As you can see, Saudi Arabia stopped increasing (and [went on to decline somewhat](#)). Russia has continued to increase, but much more slowly. No other country has managed to fill the gap to any material degree, and thus supply has stopped increasing.

Let us now focus more closely on Russian statistics. The next graph shows the monthly production statistics from three different sources, together with counts of rigs operating in the country. This is from 1997-2007 so it encompasses the entire period of the Russian revival in which Russia's oil industry first got its infrastructure working again following the collapse of the Soviet Union, and then began applying the expertise of Western service countries to boost declining production (particularly in the fairly mature West Siberian fields that counted for more than half of Russian production during late Soviet times).



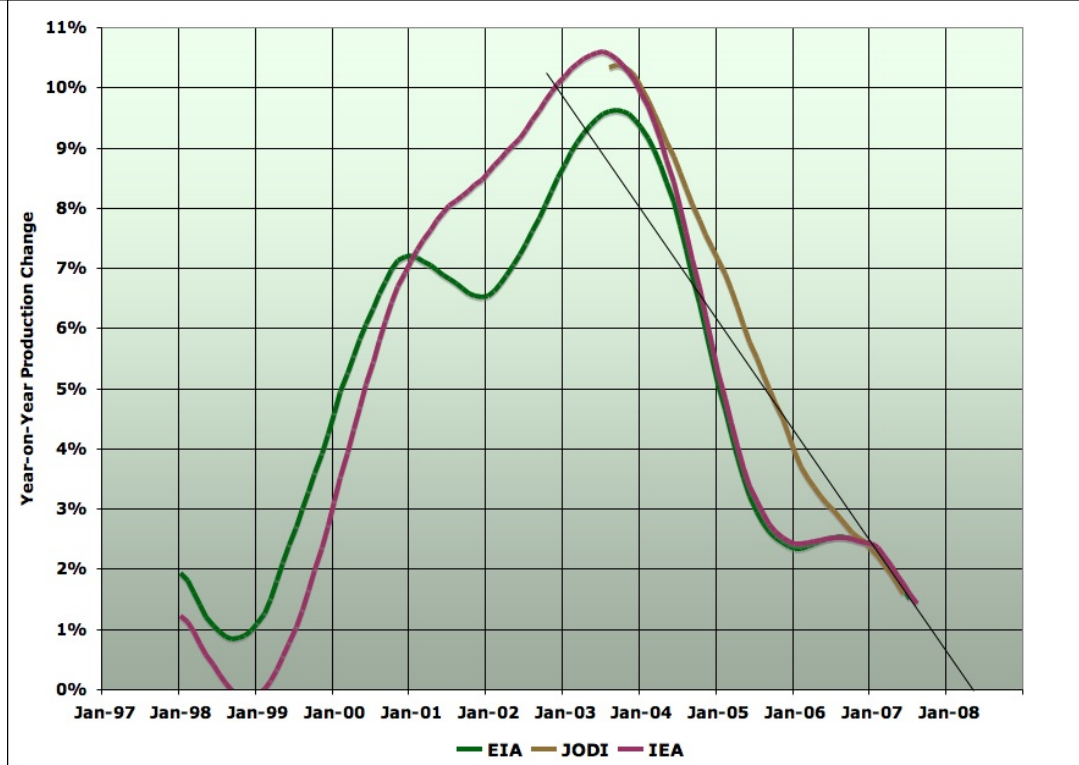


Monthly Russian oil production according to three data sources: [EIA Table 1.1c](#), [IEA Table 3](#), and [JODI](#). Solid smooth lines are 13 month centered moving averages, recursed once (note last 13 months rely on an incomplete window). Graph is not zero-scaled. Rig data are from [Schlumberger](#) data and include both oil and gas rigs.

As you can see, all data sources agree that production has been increasing throughout this period, though there is some disagreement over the exact pattern and level of that increase. Furthermore, rig counts have increased dramatically.

Before we go any further I want to stress an important caveat here. [Baker Hughes](#) does not produce figures for Russia, which means we only have the Schlumberger counts, which do not separate out oil and gas rigs. It's also unclear how accurate counts in Russia might have been especially during the chaotic years of the 1990s. For the purposes of this analysis we shall make the simplifying assumption that the number of oil rigs is roughly proportional to the total number of rigs, and that the counts are accurate enough to be useful. However, this caveat has to be borne in mind in considering the strength of evidence for the conclusions of this post.

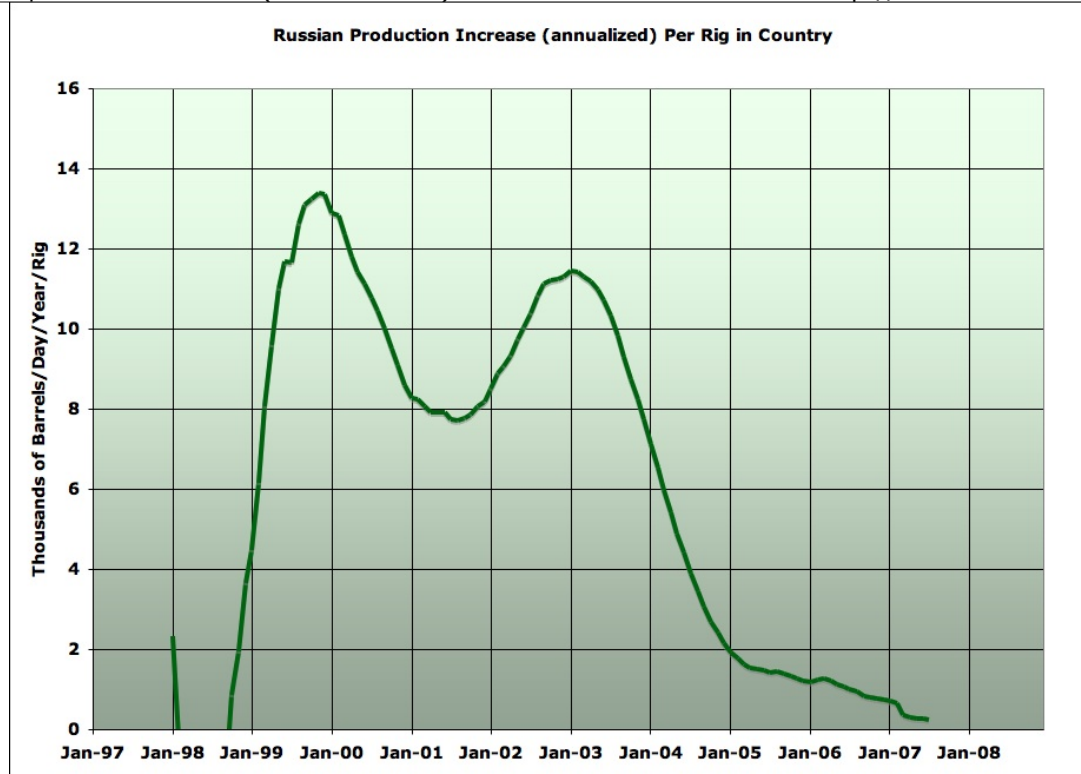
After noting that production has been increasing, the second observation is that the rate of increase is falling steadily. In particular, if we take the year on year change in the moving averages, we get the following picture:



*Year-on-year change in centered moving average of Russian oil production according to three data sources: [EIA Table 1.1c](#), [IEA Table 3](#), and [JODI](#). Black line is an extrapolation of the current trend and **is a scenario, not a forecast***

The rate of increase peaked at about 10% per year in the 2003 timeframe, and has been falling steadily since, being down to only around 1.5% per year now. The black line shows an extrapolation to zero in early 2008. Zero percent increase would be a peak in production. Furthermore, this would imply the total cumulative increase in production between now and the peak would only be around 1% (about 100k b/d). However, some caution should be applied since the curves had a sideways dogleg in 2006, and perhaps this could happen again, delaying the ultimate peak. Hence I emphasize that the early 2008 peak is a fairly plausible scenario, rather than a firm prediction.

If we take into account the rig count picture, things look more serious. This next graph shows how much increase in production occurred for each rig in the country (expressed in thousands of barrels per day increase, per year, per rig).



*Rate of increase in Russian oil production per rig in country. Production is 13 month centered moving average, recursed once, of [IEA Table 3](#) production estimates. Rig data are from [Schlumberger](#) data and include both oil and gas rigs.*

The absolute level of this graph shouldn't be taken too seriously since it's dividing an oil production increase by a rig count for oil and gas rigs. However, the general trend is probably meaningful, and what it shows is a complete collapse in this metric from around 10,000 barrels/day/year/rig at the height of the revival to only around 200 barrels/day/rig today. A much larger number of rigs is producing much smaller production increases.

This suggests either that the opportunities for new drilling projects are much poorer than during the height of the revival, or that the base production is declining faster so that it's harder for new projects to increase overall top line production. Probably some of both. Either way, it tends to the view that Russia cannot increase production much further, even if the rig count goes up a lot more.

And if Russia *were* to begin declining next year, it's likely we would see the world as a whole move out of plateau, and into unmistakable decline.



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