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*Peak Oil: Alive and Well*MARKETS
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Although it's been a year and half since we've written an article devoted to the Peak Oil/Hubbert's Peak theory, rest assured we haven't forgotten about the subject. Quite the contrary, the topic is alive and well and currently playing at a theatre near you. When we first wrote about Peak Oil exactly four years ago ("Slipping and Sliding Down Hubbert's Peak", April 2004), there were those who thought we were off our rocker. After all, the price of oil back then was \$35 per barrel and, save for a handful of visionaries, the problem of imminently peaking global oil supply was on nobody's radar screen. How things have changed since then! We believe there is no more compelling vindication of the Peak Oil theory than the situation the world finds itself in currently. Namely, in the midst of a global financial meltdown resulting from the popping of the credit bubble, a recession in the world's most oil-intensive economy, and housing prices that are falling throughout the world, here we are with oil prices hitting record highs topping \$115 per barrel, up \$30 in the past three months and almost doubling over the past year. Who would have think it? The tie between economic cyclical and the price of oil seems to have been thrown to the wind.

We believe only Peak Oil can explain this phenomenon, and as such are writing this article as an update to what we've already written about in the past, taking into account recent developments. Although there are those who blame high oil prices on a combination of US dollar weakness, geopolitical risk, and speculation, we believe the real problem is one of peaking oil supply. Our main argument, and the argument of those who are expert on the subject, has always been that, at its core, Peak Oil is all about the decline rate of producing conventional oilfields. The reality of decline rates, which we estimate average somewhere around 8% per year for conventional production, impose a mathematically insurmountable hurdle to the prospects for continually rising oil supply. It's just not in the cards to overcome the loss of 6 million barrels per day of production **each and every year** when significant discoveries just aren't there to make up for the shortfall, let alone contribute to rising global production. Peak Oil is set in stone – the question is not if, but when.

We believe, and recent data continues to suggest, that Peak Oil is here and now.¹ For this reason, it comes as no surprise to us that optimistic projections made a few years ago on the future production of key players in the oil market have been way off the mark. Let's take Russia as the first case in point. Having recently overtaken Saudi Arabia as the world's largest oil producer, many forecasters have heralded Russia as the non-OPEC saviour of the oil market, with production expected to grow about 3% per year for the next several years. Last week, the International Energy Agency (IEA) reported that Russian oil production in the first quarter of the year fell 1% compared to the first quarter of last year – the first reported decline in 10 years. This represents a 400,000 barrel per day swing from what has been expected which, needless to say, is quite shocking for the oil market. As it turns out, even Russia isn't immune to the impact of decline rates. The decline in Russian production is largely being attributed to aging Western Siberian oilfields, which are likely to experience (if they aren't already doing so) the same type of depletion as has already been seen in Prudhoe Bay, the Gulf of Mexico, and the North Sea. According to a Lukoil executive, the Russian oil industry will need \$1 trillion of investment over the next 20 years

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¹ According to geophysicists, the only thing that has kept crude oil production rising (albeit ever so slightly) since 2005 has been the inclusion of natural gas liquids in total oil production.

just to maintain current production of 10 million barrels per day.² Conclusion: Those who are expecting Russia to save the world from Peak Oil are likely to be greatly disappointed.

From the OPEC side of the equation, it is Saudi Arabia that is supposed to be the saviour but we believe, on this front, there is also likely to be disappointment. According to the IEA, Saudi Arabian crude oil production was 8.5 million barrels per day last year, expected to increase to almost 15 million barrels per day over the next 20 years. Much hope is being placed on the start up of the Khurais project next year, which promises to have a production capacity of 1.2 million barrels per day. But due to the complexity of this project, which will involve massive water injection due to low reservoir pressure, much uncertainty still remains. It cost \$15 billion to develop this field, 2.5 times more than initial estimates of \$6 billion in 2005. Such seems to be the case with all new projects, such as Sakhalin in Eastern Russia and Kashagan in Kazakhstan, with costs soaring through the roof, often multiples of initial projections. But regardless of whether Khurais lives up to its billing, recent pronouncements by Ali Naimi, the Saudi oil minister, insinuate that there are no plans to increase oil production capacity beyond next year.³ In a similar vein, Saudi Arabia's King Abdullah, in a recent speech, suggested that he wants to preserve the nation's oil wealth for future generations, saying "Let them [oil reserves] remain in the ground for our children and grandchildren who need them."⁴ This, by our thinking, would be a smart move. After all, under a Peak Oil scenario, oil will be a much more valuable commodity in the future than it is now even at today's record prices. Furthermore, it should go without saying that if both Saudi Arabia and Russia (or even one for that matter) should disappoint the oil markets, then Peak Oil will happen much sooner than anyone expects, and the expectation of 100 million barrels per day of global production by 2015 will prove to be yet another overly optimistic projection.

In fact, if Peak Oil proves to be true, global oil production by then could be much less than it is today. If the US experience is any indication, after production in the lower-48 states peaked in 1970, within 20 years US production had fallen by over 40%. Rather than the 100 million barrels per day the world expects by 2015, we may only have 70 million barrels per day. Such a scenario is not what the markets currently expect, even at today's prices. Nobody is going there. It would be disastrous. But the example of Cantarell shows how precipitously production at aging oilfields can decline. Once the second largest oilfield in the world, producing 2.2 million barrels per day in 2004, Cantarell is now a shadow of its former self with the latest data showing that production has plummeted to 1.2 million barrels per day. Last year alone Cantarell production fell 18%. In the first quarter, Mexico as a whole reported a fall in production of 7.8% over the first quarter of last year and, more importantly, a fall in exports of 12.5%. Which shows another phenomenon that is detrimental to global oil supplies. Thanks to rising oil prices, the wealth effect on oil exporting countries, such as Russia and Saudi Arabia, is causing their own internal consumption of oil to increase, resulting in even less oil available for export to the oil-dependent developed world.

It's worth noting that 80% of the world's oil production comes from fields that were discovered before 1970, the vast majority of which are aging giants in decline. New discoveries, as promising as they may be, can hardly put a dent in this. Much ado has been made over the recent announcement of the Sugar Loaf discovery in Brazil. On claims by the Brazilian government of 30 billion barrels in place, it is being heralded as the largest discovery in 40 years. Analysts have since opined that the Brazilian government's claims are likely exaggerated. Furthermore, like all new production these days, this oil will be expensive to extract and will doubtless be subjected to delays and bottlenecks just like everything else. But even if there are 30 billion barrels here, it would equate to less than one year of world oil demand. It won't change the peak one iota. New discoveries and projects are well and good, but it's the state of the world's aging oilfields that will ultimately prove to be the harbinger of Peak Oil.

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² "Russian Oil Slump Stirs Supply Jitters", Wall Street Journal, April 15, 2008, page A1.

³ "Saudis Wary of New Oil Projects Pending Sales Forecast", Wall Street Journal, April 21, 2008, page C6.

⁴ "Oil Prices Surge to a New High", New York Times, April 15, 2008.

According to IEA data, conventional oil production has declined since 2005, which postmortem may show to be the start of the peak for conventional oil. Many believe that unconventional production will step in to not only make up the difference, but increase global production. However, as the Canadian oilsands experience shows, unconventional production opens up its own can of worms. The costs of oilsands projects are hyperinflating with each passing year, continually driving up the cost per barrel. As has already been documented, there are serious environmental concerns. Furthermore, oilsands use an enormous amount of energy in the form of natural gas, which may eventually be in shortage. Significant quantities of greenhouse-causing methane are being released into the regional environment and the atmosphere as a result of the process. There are concerns of excessive water use. Unconventional production, though necessary, just isn't as quick and easy as conventional production. There is a big difference between an unconventional barrel and a free-flowing/low-cost conventional barrel – a difference that often is not fully appreciated by those who believe that unconventional will save the day.

Although Peak Oil is a story of supply, the demand fundamentals of oil will only amplify the pending shortage. For the first time, crude oil consumption in the emerging markets of China, India, Russia and the Middle East will exceed consumption by the US this year. Economic growth and skyrocketing car ownership in these regions, which have a population eight times greater than that of the US, are accelerating global demand for oil. In China alone, automobile demand grew by 20% in the first quarter. The Chinese are not only buying more cars, they are buying bigger cars. Woe to a peaking oil market if the developing world should come anywhere near to approaching the oil-intensity of the developed world. Even without Peak Oil, oil shortages are already in the making.

In the interim the stock markets may continue to merrily rise, oblivious to the economic dislocation that an oil shortage will inflict, particularly in the US. For reasons we've written about many times in the past on the current financial meltdown, we believe the US is already effectively bankrupt, and would only be more so in a Peak Oil world. In our opinion, it's only a matter of time before the US stock markets are overcome by the reality that is Peak Oil.

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