Topical Study #78: The Pros & Cons of Peak Oil

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In this Topical Study, I reprint my analysis of the Peak Oil Theory from our Morning Briefings since the start of this year.

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Are high oil prices causing high oil prices? This may explain the super-spike in the price of crude oil from $25 a barrel in April 2003 to $100 a barrel late last week. Instead of stimulating more supply and less demand, high oil prices seem to be depressing supply and boosting demand. On the supply side, Baker Hughes keeps a monthly tally of how many rigs are active around the world. The rig count peaked at 6,231 in December 1981. In December 2007 it was just 3,125. Time (5/31/07) reported that in January 1981, as gasoline prices set all-time highs in the wake of the Iran-Iraq war, Exxon announced that it would pour $11 billion into capital investment and exploration over the course of the year. That was a 35% increase over 1980 and a tripling of the budget from 1973, the year when the Arab oil embargo first sent prices skyrocketing. The $11 billion was almost three times the company's profit in 1979. "Today, though, prices at the pump in the US, adjusted for inflation, are approaching those record 1981 levels for the first time. The company now called ExxonMobil turned a profit of $39.5 billion last year (on sales of $365.4 billion), more than any other corporation ever. Yet it isn't making nearly the investment in finding new oil that it did in 1981. Last year ExxonMobil spent $19.9 billion looking for oil and improving its refinery, pipeline and pumping capacity. The company predicts that its capital and exploration spending will average more than $20 billion a year for the next five years. That's not spare change, but adjusted for inflation, it's only about 60% of what Exxon and Mobil together spent in 1981. Tellingly, it's also a lot less than what ExxonMobil handed over to its shareholders last year--$29.6 billion in stock buybacks and $7.6 billion in dividends."

The problem is that ExxonMobil can't find enough new projects because the company doesn't have access to the oil fields that need to be developed. Only 7% of the world's estimated oil and gas reserves are in countries that allow the major independent oil companies to develop their fields. Fully 65% are in the hands of state-owned companies and governments that have shut out the oil majors. As oil prices have soared, these governments have chosen to spend their windfalls to diversify their economies away from energy. Global oil revenues for all producing countries have quadrupled from roughly $500 billion during 2002 to nearly $2 trillion last year. The governments of some oil producing countries have chosen to subsidize the domestic price of gasoline. Saudis, Iranians, and Iraqis pay 30 to 50 cents a gallon for gasoline. Venezuelans pay 7 cents. For these countries, the combination of prosperity and cheap domestic oil prices is boosting domestic energy demand. Consumers are buying more cars and energy-intensive

industries are expanding rapidly. Internal oil consumption by the five biggest oil exporters--Saudi Arabia, Russia, Norway, Iran and the United Arab Emirates--grew 5.9% in 2006. Exports declined more than 3%.

This is an example of the "Export-Land Model," developed by Dallas geologist Jeffrey Brown. High oil prices bring in greater revenues, which causes economic prosperity, and increases domestic oil consumption. This is exactly what is happening in most oil exporting states. The result is that growth in domestic consumption reduces oil available for export. At some point, the country becomes an importer of oil, especially if oil production starts to fall. According to the NYT ("Oil-Rich Nations Use More Energy, Cutting Exports," 12/9/07), Indonesia already made this flip three years ago. By some projections, the same thing could happen within five years to Mexico, the No. 2 source of foreign oil for the United States, and soon after that to Iran, the world's fourth-largest exporter.

Combining the Peak Oil Theory with the Export-Land Model suggests that oil prices are likely to remain high, and might go higher. Then again, at the end of last year, Brazil's Petrobras stated that the discovery in the Tupi oil field could launch Brazil into the top 10 oil producers in the world. The oil field's potential yield would provide Brazil with the world's eighth-largest oil and gas reserves. The Tupi basin is believed to contain lots of light crude, an added bonus for Brazil. Then again, India's Tata Motors today unveiled its much anticipated $2,500 car, an ultra-cheap price tag that suddenly brings car ownership into the reach of tens of millions of people. Critics say the vehicle, called the Tata Nano, will lead to possibly millions more cars hitting already clogged Indian roads and add to mounting air pollution. It will also boost the demand for gasoline, though it reportedly gets 50 miles per gallon. The car will be sold first in India, with an initial production run of 250,000 a year, but is expected to be made available in other emerging markets in Latin America, Southeast Asia and Africa within four years. It will launch commercially in the second half of the year.

February 2, 2008

There is no recession in the price of crude oil. Maybe so, but several observers observe that the recent price spike may have been driven by speculators in the futures markets. Maybe so, but they don't usually bet against the underlying fundamentals. OPEC's experts are convinced that oil supplies are ample, and have been arguing for an output cut when the cartel meets on March 5. That seems less likely with the price reaching $100 a barrel. Could it be that the price of oil is going up because it is going up? In other words, so far the pricing mechanism hasn't worked in the traditional ways suggested by microeconomic textbooks. Supply hasn't been stimulated enough by high oil prices at the

same time that demand hasn't been depressed enough by high oil prices. In some ways, higher oil prices continue to frustrate the classic supply/demand pricing mechanism which should bring prices back down:

(1) The 2/20 WSJ reports that more than 70% of energy companies expect their future operations to be hit by shortages of skilled personnel. About half of the international-energy workforce will retire in the next 10 years! Internal training programs aren't likely to fill the senior level positions that will open up. The US alone is projected to lose 34 million skilled workers from 2005-2015. As the world's remaining oil reserves become harder to access, the need for highly skilled workers will increase significantly.

(2) The same issue of the WSJ notes that ExxonMobil barely replaced the amount of oil and gas it depleted with new reserves, its worst showing ever. Previously, I observed soaring oil prices actually trigger clauses in contracts with host governments, forcing the independent oil companies to hand over more of their reserves. The National Oil Companies have tended to do a much worse job of developing their reserves than the independent oil companies. Access to new reserves has become increasingly difficult. At its current rate of production Exxon has enough reserves to last just 14 years!

(3) The 1/5 issue of The Economist argues, "The world's oil supply would increase markedly if ExxonMobil and Royal Dutch Shell had freer access to Russia, Venezuela, and Iran. In short, the world is facing not peak oil, but a pinnacle in nationalism." Of course, peak oil prices are only inflaming that nationalism.

(4) All dressed up, but nowhere to go, the major oil companies are pouring more of their extra cash into share buybacks and dividends rather than into capital spending. The top five Western oil companies are expected to have spent $180 billion on such financial activities in 2007.

(5) The Peak Oil Theory remains controversial. However, I think it is safe to say that the supply of cheap, high quality oil has peaked. Oil prices are likely to remain high because the stuff that's available is expensive to extract and to refine. Canada's oil sands hold huge reserves, second only to Saudi Arabia. But the oil is extremely expensive to extract. Local backlashes have increased the regulatory pressures on the industry. Authorities have imposed restrictions on water use, tougher rules on land reclamation, and caps on emissions of toxic gases like sulfur dioxide (2/5 WSJ).

(6) The 2/15 WSJ reports, "Mexico's oil industry is in decay and production is falling. But it doesn't appear the country is going to do anything about it anytime soon." At the rate production is falling, Mexico won't be an exporter of oil within seven years! Nationalism is a big hurdle for foreign investments in the oil industry. Mexico was the first major oil producer to kick out foreign companies in 1938.

(7) After winning a new term as president, Hugo Chavez tore up contracts with the private oil companies in Venezuela , under which they were developing deposits of super heavy crude. Instead, he offered them minority interests in the projects. ExxonMobil

refused and invoked the arbitration clause in its contract and obtained an injunction against the country's oil company (PDVSA) freezing $12 billion of its assets. PDVSA has slashed investment spending with more of its funds financing Chavez's socialistic projects. The country is short of drilling rigs. It has an estimated 250 billion barrels of heavy crude in the Orinoco belt. However, it is increasingly relying on other challenged national oil companies to develop this project.

March 17, 2008

The credit crisis could turn out to be a walk in the park if the POT heads are right. So far, the proponents of Peak Oil Theory, have the super-spike in the price of crude oil to a record $111 a barrel on their side. Their detractors don't have much to say other than that speculators are to blame and that a US recession will cause the price to plummet. The US is in a recession. The price isn't plummeting. I think speculators are contributing to the super-spike, but that doesn't mean they are wrong about the underlying fundamentals, which may be bearish in the short-run, but wildly bullish in the long-run if the POT heads are on to something besides hallucinogens. Over the past couple of weeks, I've crossed over to the Dark Side on the near-term outlook for the economy. Over the past several months, I've crossed over to the Dark Side on the long-term outlook for global oil supplies. I'm not a card-carrying POT head yet, but the world crude oil supply series compiled by the US Department of Energy (DOE) certainly confirms "plateau oil." It has been flat around 84.5mbd for the past 2-1/2 years! The plateau started June 2005 and continued through December 2007. However, there is another source of data for world oil supply, namely, Oil Market Intelligence. It tells a different story, showing that world supply (on a 12-ma basis) has increased from 82.8mbd in May 2005 to a record 85.4mbd in February of this year.

In my opinion, the problem isn't that the world is running out of oil, but rather cheap oil. National oil companies now control more than 80% of the world's oil reserves and are mostly barring the majors from new exploration sites. One of the few areas that is free of the NOCs is the Gulf of Mexico, where findings were the lowest of the past decade in 2007. The costs of drilling in such deep waters is increasing rapidly. Exxon's CEO said that most of the discoveries in the Gulf have been around 100 million barrels, well below the billion or so needed to justify setting up a drilling facility (3/10 FT).

April 22, 2008

Are oil prices soaring because of (a) peak oil, (b) plateau oil, (c) political oil, or (d) all of the above? The correct answer may eventually be all of the above, but it sure seems to me that the immediate problem is that both the demand and supply sides of the oil market have become very politicized. In other words, governments are meddling in ways that are

stimulating demand and restricting supply, which is why oil prices are soaring. In a free market, high prices would dampen demand and boost supply. Let's review the incriminating evidence that implicates governments around the world in a conspiracy to drive oil prices as high as possible:

(1) Maybe all we need to know is that Saudi King Abdullah was reported by his official news agency this month to have said: "I keep no secret from you that when there were some new finds, I told them 'no, leave it in the ground with grace from God, our children need it.'" That's a very nice thing to do for his children. Then again, all the oil revenues that the Saudis are currently receiving have pushed inflation to 8.7% in February, its highest level in 27 years. Annual money supply growth in Saudi Arabia accelerated to 26.2% in February. Perhaps the Saudis don't want more oil revenues to overheat their economy.

(2) In a recent interview, Saudi Arabia's energy minister said Riyadh has "no plans" to expand capacity beyond 12.5mbd by 2009. The Kingdom is currently producing about 9mbd. He figures that's plenty of spare capacity: "As far as I know, all the latest projections, at least up to 2020, do not require anything higher than that." He must be joking. Could it be that the Saudis are just too embarrassed to admit that Matt Simmons is right and that they've peaked out? Perhaps. Or else, they figure why bother producing more when the revenues on producing 9mbd have increased from less than $100 billion to over $300 billion since 2003. Why bother incurring the huge costs of finding and producing more oil? They make more by not finding and producing more oil. See today's front page story in the WSJ titled, "Saudis Face Hurdle In New Oil Drilling."

(3) In Russia, the thugs who run the country are enriching themselves by expropriating the oil industry. The International Energy Agency reported recently that Russian output fell for the first time in a decade in the first three months of this year. The country's output has been stalled around 10mbd since the start of 2007. Investment in Russia's oil industry dropped off after Putin arrested the head of Yukos in 2003 and confiscated the company's assets. A similar fate was about to befall the head of Russneft. He fled to the UK. His company, which was the fastest growing Russian oil major until last year, is now in administrative limbo. A new law limits access to new fields to companies with more than 51% Russian participation.

(4) The 4/17 FT reported that Nigeria risks losing a third of its oil output by 2015 if the government continues to fail to pay its share of costs of joint ventures with oil companies such as Shell, ExxonMobil, and Chevron. It's becoming the biggest obstacle to raising the country's output.

(5) Mexico's oil production is in a steep decline. Many analysts predict it won't be an exporter within the next 5-7 years. Pemex, the country's oil monopoly, can't attract the international oil companies it needs to reverse this development. That's because the country's constitution prohibits the state monopoly from forming joint ventures with other oil companies. Mexico's President Felipe Calderón recently submitted a plan that would allow Pemex to enter into service contracts with other oil companies, though they wouldn't receive any stake in oil reserves they find. Leftist lawmakers have paralyzed both houses of Congress with a sit-in to stop the proposal. The protests have been orchestrated by the populist leader who narrowly lost to Mr. Calderón in 2006. He and his followers argue that the bill is a thinly disguised attempt to circumvent the constitution and let foreign companies profit from Mexican oil.

(6) Peak oil enthusiasts have noted that there have been no major discoveries since the 1970s. The 4/18 issue of BusinessWeek reports that Brazil's government oil regulator revealed "unofficial" figures from a new reservoir, known as Carioca, which may hold 33 billion barrels of oil and gas. If confirmed, it would be the world's largest discovery in at least 32 years. Carioca, which is located 170 miles from shore underneath 2,000 meters of water, would follow on the November mega-discovery by state oil company Petrobras (PBR) of the offshore Tupi field, with its already confirmed reserves of 5-8 billion barrels, and a later discovery known as Jupiter, a natural gas area that Petrobras says is as big as Tupi and perhaps even more important for gas-hungry Brazil. Unlike Mexico, private companies can operate in Brazil, though there is some concern that the government may raise its royalties and windfall tax. In any event, it will take some time to get production going at the new fields since much of it is deep down offshore and the necessary drilling platforms are scarce and extremely expensive. In my opinion, the discoveries reduce the credibility of peak oil, though plateau oil may still be a reasonable scenario given that output has peaked in other places.

(7) On the demand side of the oil equation, according to research by the IMF (http://www.imf.org/external/pubs/ft/survey/so/2008/POL032008A.htm), less than half of a sample of 42 developing and emerging market countries fully passed through sharply higher world oil prices to retail customers in 2007. This is much lower than in 2006, when three-quarters of them allowed these prices to rise. Pass-through was significantly less for net oil exporters than oil importers. Governments responded to soaring oil prices in 2007 by raising both explicit fuel subsidies (to 1½% of GDP) and implicit subsidies (to 4% of GDP). The IMF warns, "Countries that don't let the market operate by passing on to consumers the full cost of oil price hikes risk incurring large fiscal costs (through higher generalized subsidies and forgone petroleum revenues)."

(8) While much of the focus has been on rapidly rising oil demand in China, the fact is that OPEC countries collectively continue to use more oil than China. During the 12 months ending March, China used 7.7mbd, while OPEC consumed 8.7mbd. Both were at record highs. Over the past 48 months, China's demand is up 1.8mbd, while OPEC's is up 1.5mbd. In many of the oil-producing countries, the price of gasoline is under $1 a gallon.

(9) Despite pleas from the US and Europe, OPEC has actually cut output during February and March according to the IEA. OPEC oil ministers are claiming that they have to do so to avoid a glut because the US recession is reducing the demand for gasoline as Americans drive less. That's just dumb logic. Obviously, it is high oil and gasoline prices that are depressing US petroleum demand. Soaring crude prices and weakening gasoline demand have forced US refineries to slash their capacity to 81.4% during the week of April 11, the lowest since the hurricanes disrupted their production in 2005. This explains why gasoline prices are at a record high in the US while Americans are driving less.

(10) The conclusion is that $100 oil may be here to stay for a long time. At least that's the assessment of the futures market. The entire forward curve, which extends to 2016 is trading above $100.

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