

Commodities

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Uncommon Oil Market Ahead

A battlefield among politics, markets, great expectations...

■ Commodities

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- **Global crude oil prices averaged over \$100 per barrel 1H 2011**, with benchmark Brent leading other crude streams at \$111.01. The OPEC basket traded at a modest discount at \$106.71, while landlocked WTI averaged \$98.38.
- **A steep jump above year-end prices accompanied the Arab Spring and Libyan supply disruption in late February and Early March.** Brent closed 2010 at \$94.75; WTI at \$91.38 and the OPEC basket stood at \$88.99. Average prices that year were: Brent-\$80.34; OPEC basket-\$77.39; and WTI-\$79.61. That's about a 17% average increase over 2009 for the three crude streams.
- **But the ride was rocky and included new post-2008 highs in April** (Brent exceeded \$126, then fell below \$110 in early May and closed at \$112 in June, a decline from April of nearly 14%; WTI almost touched \$115 and then sold off to below \$100 in May before nearly falling below \$90 in June, a decline of almost 22%). The sell-off in May was accompanied by an extraordinary liquidation of commodity AUM, with a combination of financial de-leveraging and price drops second only to what occurred in October 2008.
- **With the July recovery in oil prices, the market bulls have resumed where they left off in April**—oil prices will keep rising, they say—and there are few signs of Saudi supply increase (even if there was a Saudi increase, it only means a radical reduction in spare capacity, which spells higher prices in 2012 and 2013); the IEA inventory release appears to be a blip on the horizon and demand growth should remain strong.
- **Reverend Thomas Malthus is seeing renewed popularity, with many gurus arguing that everywhere in commodity-land, demand is outstripping supply. Our own look-back on the past half-year is far more nuanced, and highlights one-off political and economic factors that point to a significantly lower probability of significantly higher prices ahead.** To be sure, last winter saw higher than normal distillate demand. But winter tightness was ebbing when the Arab spring and Libyan disruption occurred. During 1H'11, political events dominated the supply side of the market with unknowable consequences for 2H'11 and 2012 as lower economic growth and Japan's Tsunami also impacted the demand side.
- **It's our judgment that seasonal factors will likely bring higher crude oil prices through mid summer, perhaps topping the April peaks.** But other seasonal factors should make for a fall shoulder season as weak as what happened in Q2. And a normal winter should bring in higher Q4 prices, but not likely as high as what the market wrought in April. Add to this slowing Chinese and US demand growth and it's harder to sustain the bull argument.
- **We project Brent prices to average \$110 in Q3, down from \$117 in Q2**, to retreat to \$105 in Q4 and to average \$109 for the year, an increase of \$29 over 2010.

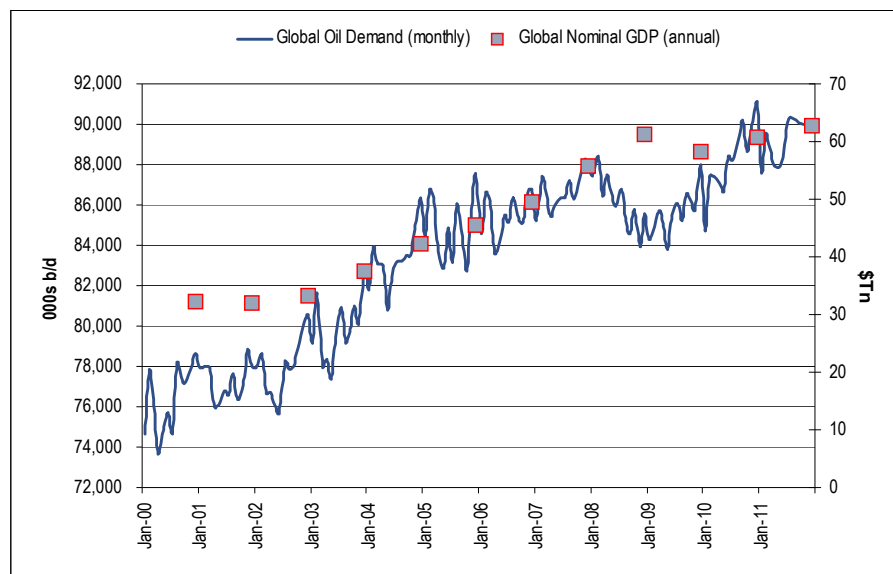
See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.

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Slip Sliding Demand Growth

Not much of a banner year...

Figure 1. Crude Oil Demand is Usually Tightly Linked to Economic Growth



Source: EIG, World Bank, Citi Investment Research and Analysis

2011 is turning into a much more typical year for demand growth than 2010, when apparent global oil demand increased by an extraordinary 2.8-m b/d, or 3.3% year-over-year, according to the International Energy Agency (IEA), with 600-k b/d of growth in the OECD and 1-m b/d in China. By historical standards, such a level of petroleum product demand growth would have implied global GDP growth of 5.6% whereas actual global growth of 4.1% would have implied a considerably lower level of product demand, closer to 1.8%, or 1.53-m b/d.

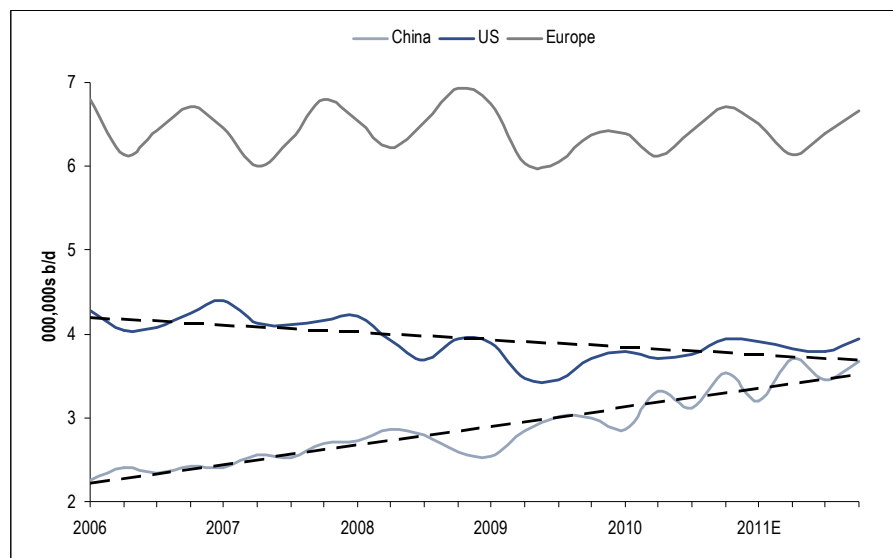
2010 significant restocking mirrored 2009 global de-stocking.

So what happened last year? Two factors seemed to be at work. On the one hand, it is clear that the huge drop in product demand between 2007 and 2009 of 1.8-m b/d (which included non-OECD demand growth compensating for 3.7-m b/d decline in the OECD) represented stocking. With prices collapsing and demand declining after mid-year 2008, refiners and end users alike would have been foolish to want to hold onto expensive inventory at the secondary and tertiary levels, and we believe with demand rebounding and prices rising last year, some of the incremental demand must have gone into restocking.

One-off factors in Europe and China and extreme weather also inflated 2010 demand...

On the other hand, one-off factors were also at work, especially in China, where much of the 1-m b/d demand increase was not due to the usual underlying causes at work (fixed asset investment, industrial production growth) but rather to one-off factors. The most important of these was the decision by Chinese authorities, late in Q3'10, to do whatever was possible to reach energy efficiency goals set for the 5-year plan that ended last year. The result was a slowdown in coal burn and an acceleration of demand for diesel to use in small power generators. Oil imports grew by 815-k b/d over the course of the year and domestic oil production surged by 300-k b/d, providing input for 1.1-m b/d of higher supply in the country. In order to increase domestic diesel supplies, refinery throughput surged by 1-m b/d at the end of the year and the government effectively barred diesel exports in Q4 and encouraged imports with net exports of some 300-k b/d in Q2 '10, dwindling to nothing by year end.

Figure 2. Chinese Demand for Distillate Fuel Is Fast Approaching US Levels



Source: CERA, Citi Investment Research and Analysis

In 2011 oil demand growth is returning to its traditional relationship to global GDP growth...so far.

This year, oil demand growth seems to have returned to its traditional relationship to global GDP growth, and the down revisions to expected economic expansion seem to be resulting in downward expectations of petroleum product demand growth. At the beginning of the year, Citi economist Willem Buiter foresaw global GDP growth of 3.7%, which according to historical experience would result in petroleum demand growth of 1.15-m b/d. The June 2011 forecast, which takes into account downward revisions for the US and Japan but not for China, is for global growth this year of 3.4%, implying product demand growth of only 1-m b/d. In this respect, the IEA's projected demand growth for the year of 1.2-m b/d looks more realistic than the EIA's and OPEC's forecasts for 1.4-m b/d demand growth.

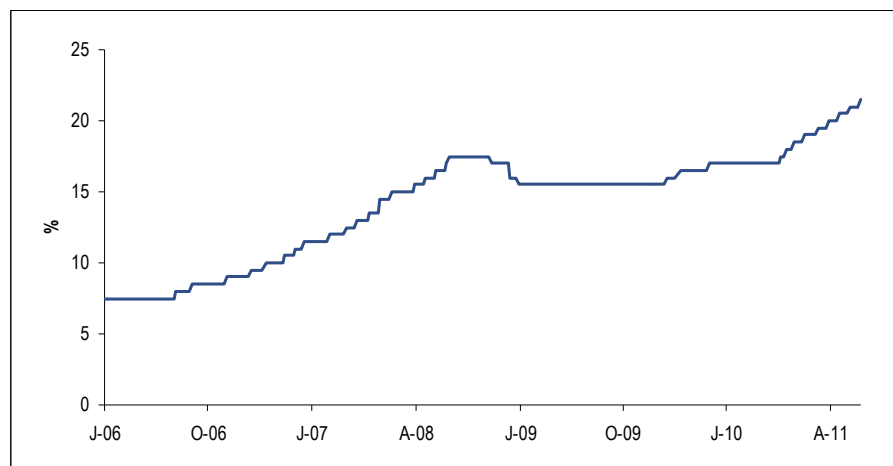
Year-on-year growth comparisons should deteriorate as 2011 progresses, partly because of slowing growth...

As 2011 unfolds, year-on-year comparisons of product demand growth are likely to deteriorate and indeed they already have. Q1 global demand appears to have grown by 2.2 m b/d, whereas Q2 demand growth has been a paltrier 700-k b/d. To be sure, some of the shrinkage in demand stems from the impact of the Japanese tsunami on that country's industrial production and total Japanese demand is likely to increase over the year as industrial activity rebounds and as oil use in power generation should replace lost nuclear capacity increases. But the global economic outlook looks likely to be significantly downgraded. OECD demand in particular looks likely to continue to falter as the year progresses with US economic growth now downgraded to 2.5% from an earlier projected 3.0%, and as industrial Europe's periphery continues to lag as well. The unfolding nature of the European sovereign debt situation looks likely to have a further impact.

...some of which is due to tightening monetary policy in emerging markets...

Emerging market demand growth is also likely to slip, as central banking authorities tighten monetary policy to deal with inflationary pressures. Even the recent Chinese data release, which surprised to the upside on economic growth for 1H2011, could still imply a harsher landing with reduced activity versus earlier projections by year end. Chinese Q2 GDP growth of 9.5% y-o-y is reduced from last year's 10.3%, even if it was above 9.3% consensus forecasts.

Figure 3. China Required Deposit Reserve Ratio



Source: People's Bank of China

...but much of it is due to one-off factors in 2010.

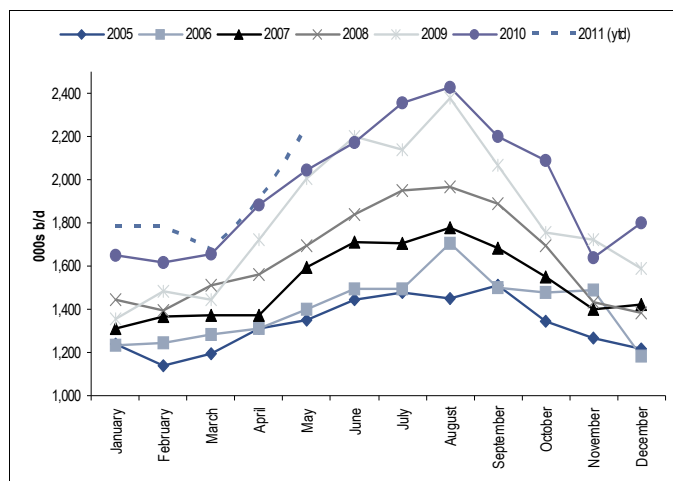
In addition to a slowdown in the path of global growth in 2011, year-on-year demand comparisons should also deteriorate as a result of the unusually large demand increases of late 2010. China is a perfect example of this. 2010 demand growth of over 1-m b/d was largely propelled by the surge in diesel for power generation in Q4'10. Q1'11 q-o-q growth in China was a more restrained 900-k b/d. The IEA's projected Q4 Chinese demand of 9.87-m b/d would be only 210-k b/d above last year's level. It would not be surprising to find 4th quarter comparisons to end up even much lower, in our view.

Summer regional demand could mask slowing global conditions.

It could well take some time before clearer evidence of slowing demand growth becomes available. While evidence is mounting that there will not be a noteworthy increase in gasoline demand in the United States over the summer, higher distillate demand in China and higher fuel oil, distillate and crude oil demand in the Middle East are still in the cards, with the only question being the extent of the summer demand surge. In the US, the latest weekly data continue to depict lower total product demand y-o-y (-1.45%), including lower demand for both gasoline and distillate fuel oil.

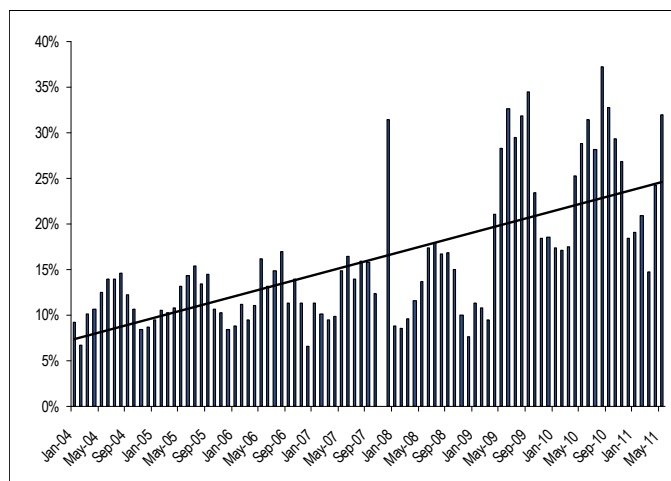
In the Middle East, there is normally a surge in direct crude oil burn as well as use of different fuel oils for power generation for summer air conditioning and desalinization requirements. In Saudi Arabia alone, this could reach over 1-million b/d this month and next before declining significantly in the fall, potentially releasing more crude oil for exports.

Figure 4. Saudi Arabia Petroleum Demand, 2005 – May 2011



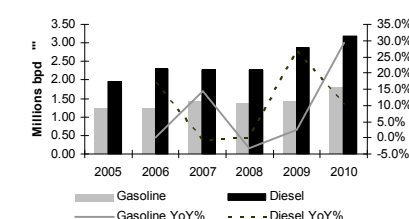
Source: JODI, Citi Investment Research and Analysis

Figure 5. Saudi Arabia Direct Crude Oil Burn, % of Demand



Source: JODI, Citi Investment Research and Analysis

Figure 6. China Stocks



Source: Citi Investment Research and Analysis

In China, a long-anticipated surge in diesel demand to substitute for constraints in power generation and transmission has not yet materialized, but it still might. In the year to June, power generation requirements grew in tandem with fixed asset investments by about 20%, far greater than the growth in generating capacity, which grew by about half that. Meanwhile, coal prices also rose by about 20%, while tariffs in power transmission were allowed to increase a far lower 3-4%. That alone was putting pressure on the transmission system, promising greater reliance on diesel in small generators at the user end. June data support this view, with China generating a record amount of electricity, up 16% from the same month a year ago, in line with the 15.1% increase in industrial production y-o-y. But a clincher to greater diesel demand was expectations of continuing drought in Eastern and Central areas of the country, which were curtailing hydro-electric generation. With recent rain, hydrogeneration rose 12% last month alone. In anticipation of higher diesel requirements, government authorities placed a ban on distillate exports and companies were gearing up for importing diesel to make up any gaps. But as June data indicate, the country remains a net exporter of middle distillates and an import surge has not materialized.

China is playing an increasingly important role in global distillate markets...

Nonetheless, there is little doubt that when it comes to the distillate market, Chinese demand is playing a critical role. Overall distillate demand grew at least 12.5% last year and perhaps more. It would not be surprising if half of China's demand increase in 2010 was for combined industrial use and power generation requirements. If, as data suggest, Chinese distillate demand grew by 400-k b/d in 2010, it would have represented about 30% of total global requirements. Much of the new distillate demand was satisfied by domestic refining (just as much of China's crude oil requirements were satisfied by a 300-k b/d increase in domestic output). But the demand growth, and particularly the late year demand surge, had a tangible impact on global markets. In Q2 2010, for example, China was a net exporter of some 290-k b/d of middle distillates. By year end the economy was a net importer with a swing from peak exports to peak imports of about 400-k b/d. Even so, conditions could change by the end of the summer and a further surge in summer demand could both mask the extent of global growth and overstate underlying trends over the course of Q3.

When it Comes to Middle Distillates Libya Counts

Global demand growth has been increasingly concentrated in the middle distillate pool, which is essentially diesel, jet fuel and distillate fuel oil. Middle distillates now constitute 35.8% of total petroleum product demand. But incremental product demand over the past five years has been over 50% middle distillates. The premium on middle distillate demand in emerging markets is that it is used not only as a transportation fuel but also as a substitute for other fuels when they are not readily available in power generation, for reasons discussed above.

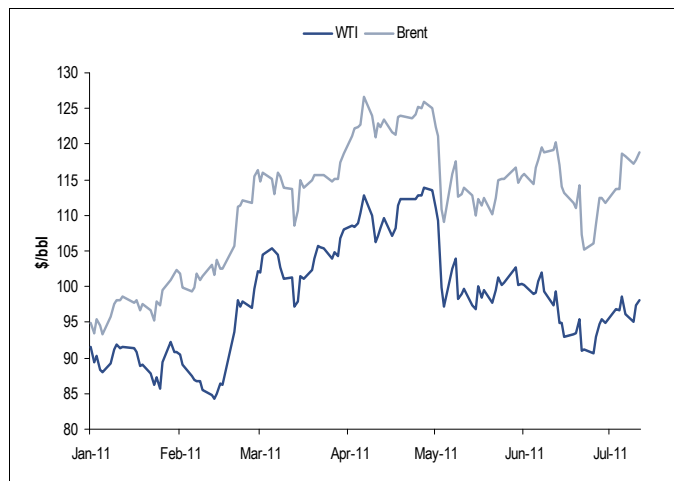
Over time, as governments have regulated limits to sulfur content in diesel and other middle distillate products, a premium has been placed on light, sweet (or low sulfur) fuels, especially where sophisticated upgrading refining capacity is not available. The Libyan supply disruption this year has been particularly impactful in for refiners that are incapable of upgrading lower gravity and higher sulfur crude oil streams, and the result has been a higher premium on Brent crude oil prices, the main global benchmark for light, sweet crude oil streams. Indeed one of the main reasons that oil prices have risen far more than might be justifiable from the pure supply vs. demand perspective is the particular tightness in the low-sulfur crude oil market.

**Brent oil should carry a premium so long
as Libyan production is off line.**

Of the estimated 12.5-m b/d of production of crude oil that is light and sweet, African countries produce 42% and among the Africa producers, Libya is the largest. Its historical light, sweet crude oil output is significantly larger than the next two producers, Algeria, and Nigeria. Libya's lost output of close to 1.5-m b/d was 88% both light and low in sulfur. Despite the vast shut-in capacities of the large Middle East producers, especially Saudi Arabia, none of them has proved capable of replacing Libyan volumes. To be sure, worldwide there is sufficient upgrading capacity to transform heavier and sourer crude oil into light, low sulfur products. But the main buyers of North African sweet crude oil, the refiners of the Mediterranean, are not likely to close their doors to processing higher cost crude (governments in Italy, France, Spain, and Greece are not eager to see higher unemployment, in our mind); nor are the European regulators likely to loosen restrictions on sulfur in their diesel pools.

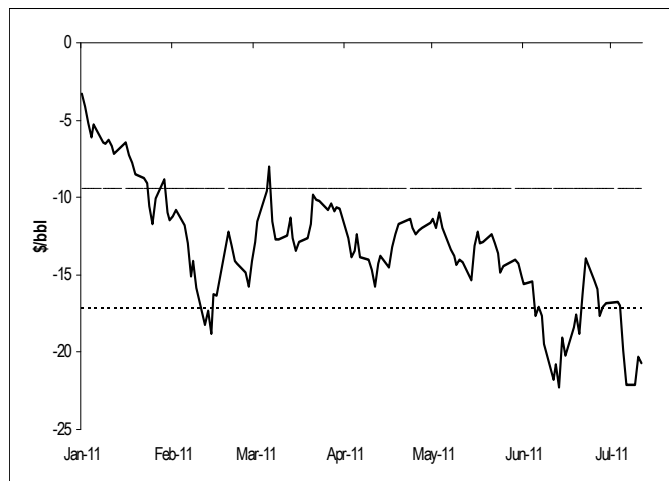
Mediterranean crude oil is generally bought on the basis of the Brent benchmark. As a result, with Libyan crude unavailable, refiners are bidding up the price of Brent benchmarked crude oil to assure that their refineries remain in operation, especially as most of them are unable to upgrade heavier, sourer crudes. Thus, increased distillate demand globally, combined with the lower Libyan output, has resulted in higher prices both of petroleum products and of crude oil.

Figure 7. Crude Oil Prices, YTD



Source: Bloomberg, Citi Investment Research and Analysis

Figure 8. WTI-Brent Spread, YTD



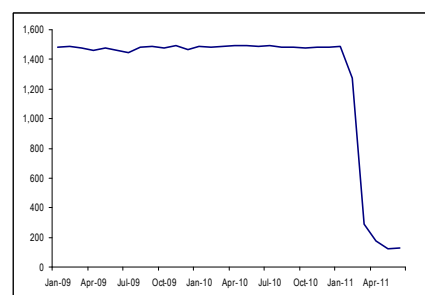
Source: Citi Investment Research and Analysis

Slippery New Policy Paths

Political rather than market forces have been dominating the oil market so far in 2011, with repercussions that are difficult to project clearly for the rest of this year and next.

Several aspects of the so-called Arab spring are having rippling effects in the markets, well beyond this year, and how they play out will be determinative of how oil is prices over the next two years.

Figure 9. Libyan Crude Oil Supply (000s b/d)
January 2009 - Present



Source: EIG, Citi Investment Research and Analysis

Let's start off with Libya, where we have already discussed the magnified impacts of the loss of only 1.6% of global production, given the special role of Libyan crude oil in the overall pool of light/sweet crude. At one extreme, there is a possibility, with a fading probability, that leader Qaddafi will leave by the end of the summer, an interim government will be put in place and Libyan production will be restored by year's end. That would have a dramatic impact of global oil prices, almost certainly bringing Brent well below \$100 a barrel. Indeed, in our low price scenario depicted in an appendix to this report, we foresee the possibility of Brent pricing in Q4 at \$95, bringing the OPEC basket to \$90 and WTI to \$72. Lower demand could also lead to the same price path. A combination of lower demand and a Libyan recovery would exacerbate downward pressure on prices.

While we put only a 10% probability on a radically lower price path, it is also reasonable to assume that over time, and within calendar year 2012, there will be Libyan crude oil on the market. It is in our judgment reasonable to assume that by Q3'12, at least 1/3 to 1/2 of Libyan crude now off market will be back in the market, and when this happens it will have a tangible impact on global markets.

Bullish Implications of the Arab Spring

While a return of Libyan oil to global markets would be bearish, other longer-term ripple effects of the Arab spring point to tighter markets ahead, all other things being equal. These include the following:

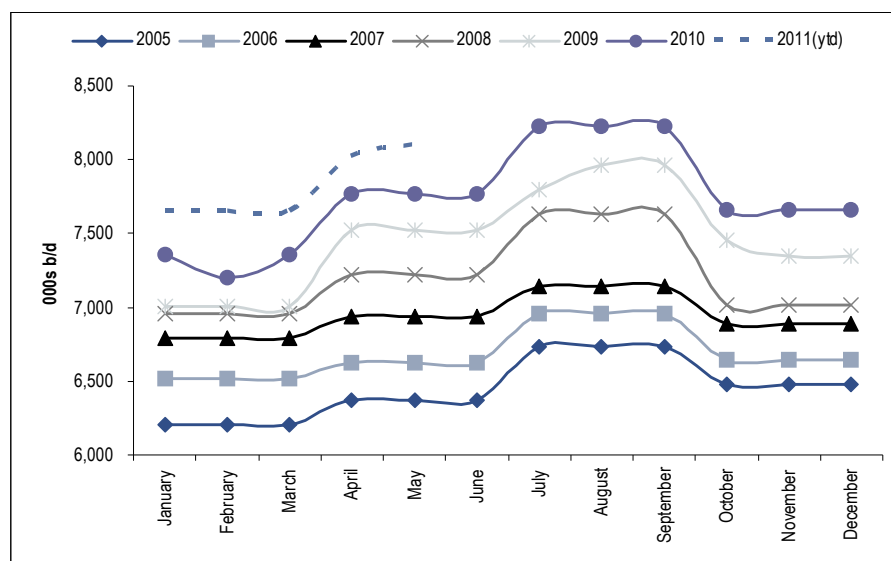
Oil producers' minimum budget requirements are rising rapidly.

- Oil producing and exporting countries are confronting increased pressures to spend more to deliver services to their publics. Such spending pressures result in part from a set of governance issues that affect the majority of oil producing countries, including elderly leaderships, records of corruption, lack of structures for participation in government decision-making and a structural divide between the "haves" and "have-nots" (no matter how defined). As a result of higher spending pressures, all oil producing countries are seeing the minimum break-even budget price of oil rising to unprecedented levels at a very rapid rate. Already Iran, Russia and Venezuela have budgetary requirements that imply a minimum of \$100 per barrel or more to balance budgets. Even so called low-cost producing countries—Kuwait, Qatar and the UAE—have seen their minimum "social" cost of oil rising to \$50 or more. And for the largest producer, Saudi Arabia, the \$100 per barrel minimum now appears to be in sight.

Domestic subsidies increase oil producers demand, reduce export surpluses.

- Despite commitments that key oil producing countries like Saudi Arabia have been making in the context of the G-20 Forum or the International Energy Forum to reduce and aim to eliminate energy subsidies, the domestic political problems associated with the Arab Spring make this largely impossible. That means that with low, subsidized energy prices, domestic demand is likely to continue to accelerate, reducing the amount of oil available for export. For the Middle East as a whole, oil demand grew by 1.6-m b/d from 2005 to 2010. At this pace, global oil demand would rise by 2-m b/d by 2015 and an additional 2.5-m b/d by 2020. With production capacity expansion limited, the bulk of this would come at the expense of global markets.

Figure 10. Overall Middle East Demand up about 1.6-m b/d since 2005 as peak summer consumption could level at nearly 8.5-m b/d this year



Source: EIG, Citi Investment Research and Analysis

Bearish Short-Term Politics...

A new OPEC order that coordinates with the US and IEA...

Perhaps the most remarkable aspects of what might be called the “new geopolitics of oil,” involve the split that has occurred within OPEC and the unprecedented coordination between Saudi Arabia (and perhaps also fellow GCC members Kuwait, Qatar and UAE) and the members of the IEA for overlapping but different reasons to help reduce oil prices.

To be sure, the division that emerged at last June’s OPEC meeting between the GCC countries with spare capacity and the others is not new. Since the start of the OPEC producer group, there has been a division between those that have wanted to maximize revenues by raising prices and those that have wanted to balance markets through swings in production, to put both a floor under and a lid on top of prices. But the acerbic and overt antagonisms that unfolded at the most recent OPEC ministerial meeting was based added an injection of “high politics” into this normally limited difference of views over oil policy. The “high politics,” particularly in the conflicting regional policy perspectives of Saudi Arabia (and other GCC monarchies) and Iran was also exacerbated by the unfolding of the Arab spring and the tensions that arose over protests in Bahrain and Syria.

It was partially as a result of that conflict, and the embarrassment of the Saudi leadership in not being able to hold sway in OPEC in its request for a production increase to meet the Libyan production shortfall, that the Kingdom decided to raise its production radically. In January, Saudi production was generally recognized at having been close to the country’s quota level of 8-m b/d. By April, the Saudis had increased production by about 800-k b/d, when total output exceeded 8.8-m b/d. And then, at the OPEC meeting, the Saudis announced another increase to close to 10-m b/d.

...although skeptics disagree.

There are many skeptics who disbelieve either the Saudi resolve to produce at this level or the country’s ability to do so. To some degree that is a result of how the increase might have been divided between domestic uses (higher refinery runs, higher summer domestic use of crude oil for direct burn in power generation) and foreign deliveries.

It is our view that there is a high probability that come September, there will be clear evidence that Saudi Arabia is producing 10-m b/d and there is also likely to be a switch between domestic use for power generation and foreign sales, with growing foreign sales into the end of Q3 and Q4. The Kingdom’s main motivation would be to limit and reduce the revenue of Iran and perhaps some other countries. Indeed, despite the long-term likelihood that the Kingdom will require a higher per barrel price of oil to balance its budget, over the short run the country has been running a surplus and maintains exceptionally high reserves. It could withstand significantly lower prices for some time.

The IEA seems ready, willing and able to release more strategic stocks this fall should the oil markets not have a “soft” landing...

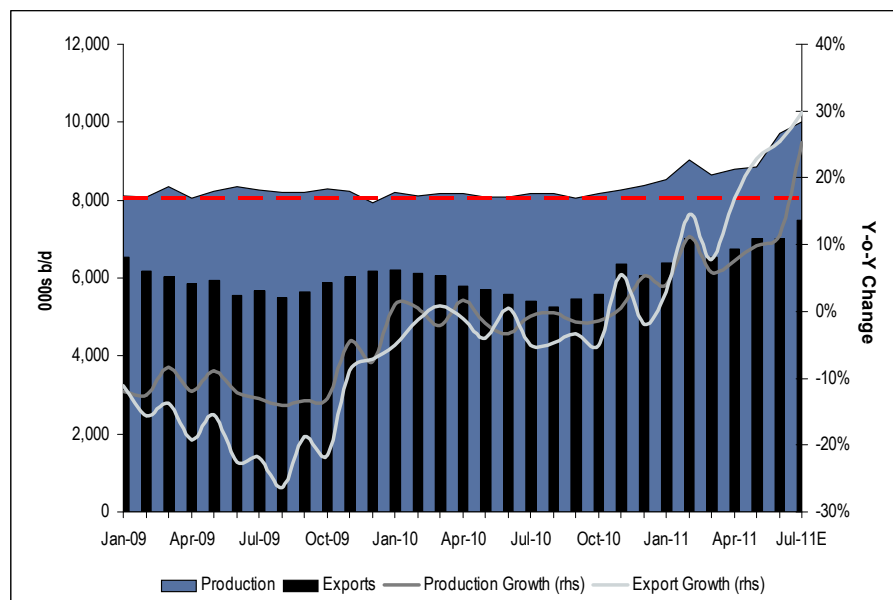
It is also now clearly the case that there was considerable coordination between Saudi Arabia and the International Energy Agency in the recent release of strategic stocks into markets. This release included over 30-m bbls of light, sweet crude oil from the US SPR and a combination of crude oil and petroleum product releases in Western Europe and Japan. The impact of this release should also start to be evident by the end of the summer. It remains to be seen whether there will be another SPR release. The Paris-based agency’s executive director, Nobuo Tanaka, has made it clear that the agency is prepared for another round of “easing” should it be “required.” In our opinion, if by September there isn’t evidence that the release has had an impact on physical markets, it would probably be a factor in a decision for a second release of strategic stocks, if one had not occurred before.

Finally by September the other major seasonal factor affecting summer markets, North Sea maintenance, will be coming to an end. The IEA currently projects European oil output rising from a total of 3.96-m b/d in Q3 to an average of 4.26-m b/d in Q4. North Sea loadings, which are mainly light, sweet crudes, like Libyan crudes, are reduced to their lowest level in August. Thus, this year we expect North Sea crude oil loadings to average 1.98-m b/d during that month, down from July loadings of 2.25-m b/d.

How long can the Saudi Arabian production increase last?

Even so, the major question is how long Saudi Arabia will continue to produce at 10-m b/d or higher. The longer it does so, the more likely it will push up global inventories and weigh heavily on prices. The Kingdom last used oil as an instrument of foreign policy in this manner in 1997 and 1998. At that time, it was trying to pressure Venezuela into abiding by its OPEC quota. One unintended consequence of Saudi overproduction was the magnitude of the price drop from the mid \$20 range in spring 1997 to under \$10 per barrel in winter 1998-99. One factor in that price crash was the Asian financial crisis that unexpectedly reduced Asian oil demand. Another was a couple of extremely warm winters, slashing normal Northern Hemisphere winter demand. It remains to be seen whether KSA's persistent high production and some unexpected demand-side factors will again be at work. If so, the world could see a macroeconomic boost from lower oil prices, despite the overall bullish factors that might be at work over a longer time horizon.

Figure 11. Saudi Arabia Crude Oil Supply



Source: JODI, OPEC, Citi Investment Research and Analysis

...with a bullish twist from spare capacity

Of course higher Saudi oil production also implies lower oil production capacity available to meet a crisis. Saudi Arabia claims to have 12.5-m b/d of production capacity. That might theoretically be true. It is our judgment that around 11.8-m b/d of capacity is readily available for commercial use. When Saudi Arabia was producing 8-m b/d before the Libyan supply disruption, it made claims to 4.5-m b/d of spare capacity. With production now at 10-m b/d and potential commercial capacity more realistically pegged at 11.8-m b/d (as 700-k b/d is commercially less

viable due to sulfur content and API gravity), spare capacity would be only 1.8-m b/d. That means that in case another disruption takes place in the producing world, the Kingdom would have insufficient capacity to keep a lid on prices.

It has been our judgment that there is about 1-m b/d of additional capacity available in Kuwait and the UAE, and virtually none anywhere else in the world. At today's prices it seems fairly clear that every member of OPEC other than these three and perhaps Qatar to some degree are producing at capacity.

In addition (and of some additional solace), is oil in storage in Saudi Arabia which according to the latest data submissions of the Kingdom stood at 238.6-m bbls in May. That's some 40-m bbls higher than crude oil inventories stood in January 2009, when the most recent OPEC quotas were agreed. Furthermore, the Kingdom might in our view be holding strategic stocks both at home and abroad that are not publically acknowledged or reported.

Even so, it remains the case that the recent boost to production puts additional price risk into the market so long as it has compressed the availability of spare capacity to be called upon in an emergency. Traditionally, periods of low spare capacity correlate with periods of high and rising prices.

Three Scenarios...

We see prices sliding to year end.

Our base case for the rest of the year see prices capping out in Q3 at about the same average price level as Q2. The base case also sees markets loosening by year end, through the combination of market forces decelerating the rate of demand growth, as well as supply factors, impacted by more production entering the market through new upstream developments, and from the combined boost in Saudi and other Middle East production and the IEA inventory responses.

In the base case we see Brent prices averaging \$112 for the year and falling to \$100 in 1H 2012. We recognize that this is contrary to prevailing market views. We place a 60% probability of the factors underlying the base case unfolding more or less as we see them.

Higher prices than our base case are more likely than lower prices.

Alternatively we have developed higher and lower price scenarios. We believe the risks in the market are tilted toward a higher price than toward a lower price, which is why we place a 30% probability of a higher case, which would see Brent prices rising to \$130 in Q4 and averaging \$119 for the year. Our low price scenario, based on higher production and lower demand, would bring prices back to the range within which oil was trading before last winter. If Libyan production were to be brought back on line, and if demand, going forward, resumes its normal relationship to GDP and other factors, the pre-late 2010 range bound market would appear fully justifiable in our eyes...

Appendix I: Oil Price Forecast

Figure 12. Base Case – 60% Probability

	2010	1Q11	2Q11	3Q11	4Q11	2011	11 vs. '10	1Q12	2Q12	1H12	1H12v1H11
Demand											
OECD	46.1	46.2	44.6	46.1	46.6	45.9	-0.2	46.1	45.1	45.6	0.2
Non-OECD	41.9	42.5	43.2	43.8	43.9	43.4	1.5	44.0	44.7	44.4	1.5
Total Demand	88.0	88.7	87.8	89.9	90.5	89.2	1.2	90.1	89.8	90.0	1.7
Supply											
Non-OPEC											
Crude	48.8	49.2	49.1	49.4	50.0	49.4	0.6	50.0	49.6	49.8	0.6
Other	3.9	3.8	4.0	4.3	4.2	4.1	0.2	3.9	4.1	4.0	0.1
Total Non-OPEC	52.7	53.0	53.1	53.7	54.2	53.5	0.8	53.9	53.7	53.8	0.8
OPEC											
Crude	29.6	29.9	29.6	30.4	30.6	30.1	0.5	30.5	30.6	30.6	0.8
Other	5.2	5.8	5.8	6.0	6.0	5.9	0.7	6.2	6.3	6.4	0.6
Total OPEC	34.8	35.7	35.4	36.4	36.6	36.0	1.2	36.7	36.9	36.8	1.25
Total Supply	87.5	88.7	88.5	90.1	90.8	89.5	2.0	90.6	90.6	90.6	2
Stock Change	-0.5	0.0	0.7	0.2	0.3	0.3	0.8	0.5	0.8	0.6	0.3
Crude Oil Prices											
Ice Brent	\$80.34	\$105.04	\$116.99	\$110	\$105	\$109	\$28.92	\$100	\$100	\$100	(\$11)
OPEC Basket	\$77.39	\$101.27	\$112.15	\$105	\$100	\$105	\$27.22	\$95	\$95	\$95	(\$12)
WTI	\$79.61	\$94.42	\$102.34	\$90	\$82	\$92	\$12.58	\$80	\$80	\$80	(\$18)

Source: Citi Investment Research and Analysis

Figure 13. High Case – 30% Probability

	2010	1Q11	2Q11	3Q11	4Q11	2011	11 vs. '10	1Q12	2Q12	1H12	1H12v1H11
Demand											
OECD	46.1	46.2	44.6	46.1	46.8	45.9	-0.2	46.2	45.2	45.7	0.3
Non-OECD	41.9	42.5	43.2	44.2	44.1	43.5	1.6	44.1	45.0	44.6	1.7
Total Demand	88.0	88.7	87.8	90.3	90.9	89.4	1.4	90.3	90.2	90.3	2.0
Supply											
Non-OPEC											
Crude	48.8	49.2	49.1	49.1	49.7	49.3	0.5	49.7	49.6	49.7	0.5
Other	3.9	3.8	4.0	4.3	4.2	4.1	0.2	3.9	4.2	4.1	0.2
Total Non-OPEC	52.7	53.0	53.1	53.4	53.9	53.4	0.7	53.6	53.8	53.7	0.7
OPEC											
Crude	29.6	29.9	29.6	30.4	30.4	30.1	0.5	30.4	30.2	30.3	0.55
Other	5.2	5.8	5.8	6.0	6.0	5.9	0.7	6.1	6.1	6.1	0.3
Total OPEC	34.8	35.7	35.4	36.4	36.4	36.0	1.2	36.5	36.3	36.4	0.85
Total Supply	87.5	88.7	88.5	89.8	90.3	89.3	1.8	90.1	90.1	90.1	1.5
Stock Change	-0.5	0.0	0.7	-0.5	-0.6	-0.1	0.4	-0.2	-0.1	-0.2	-0.5
Crude Oil Prices											
Ice Brent	\$80.34	\$105.04	\$116.99	\$125	\$130	\$119	\$38.92	\$135	\$135	\$135	\$23.99
OPEC Basket	\$77.39	\$101.27	\$112.15	\$120	\$125	\$115	\$37.22	\$130	\$130	\$130	\$23.29
WTI	\$79.61	\$94.42	\$102.34	\$105	\$115	\$104	\$24.58	\$120	\$120	\$120	\$21.62

Source: Citi Investment Research and Analysis

Figure 14. Low Case – 10% Probability

	2010	1Q11	2Q11	3Q11	4Q11	2011	11 vs. '10	1Q12	2Q12	1H12	1H12v1H11
Demand											
OECD	46.1	46.2	44.6	46.0	46.4	45.8	-0.3	46.1	45.0	45.6	0.1
Non-OECD	41.9	42.5	43.2	43.7	43.8	43.3	1.4	44.0	44.5	44.3	1.4
Total Demand	88.0	88.7	87.8	89.7	90.2	89.1	1.1	90.1	89.5	89.8	1.6
Supply											
Non-OPEC											
Crude	48.8	49.2	49.1	49.4	50.0	49.4	0.6	50.1	50.0	50.1	0.9
Other	3.9	3.8	4.0	4.3	4.2	4.1	0.2	3.9	4.2	4.1	0.2
Total Non-OPEC	52.7	53.0	53.1	53.7	54.2	53.5	0.8	54.0	54.2	54.1	1.1
OPEC											
Crude	29.6	29.9	29.6	30.4	30.6	30.1	0.5	30.7	30.8	30.8	1.0
Other	5.2	5.8	5.8	6.0	6.0	5.9	0.7	6.2	6.3	6.3	0.5
Total OPEC	34.8	35.7	35.4	36.4	36.6	36.0	1.2	36.9	37.1	37.0	1.5
Total Supply	87.5	88.7	88.5	90.1	90.8	89.5	2.0	90.9	91.3	91.1	2.5
Stock Change	-0.5	0.0	0.7	0.4	0.6	0.4	0.9	0.8	1.8	1.3	0.95
Crude Oil Prices											
Ice Brent	\$80.34	\$105.04	\$116.99	\$105	\$95	\$106	\$25.17	\$90	\$85	\$88	(\$24)
OPEC Basket	\$77.39	\$101.27	\$112.15	\$100	\$90	\$101	\$23.47	\$85	\$80	\$83	(\$24)
WTI	\$79.61	\$94.42	\$102.34	\$82	\$72	\$88	\$8.08	\$70	\$65	\$68	(\$31)

Source: Citi Investment Research and Analysis

Appendix II: Official Oil Balances, July 2011

Figure 15. International Energy Agency

m b/d	2010	Q1 2011	Q2 2011	Q3 2011	Q4 2011	2011	Q1 2012	Q2 2012	Q3 2012	Q4 2012	2012	2010 Growth	2011 Growth	2012 Growth
Demand	88.34	89.07	88.18	90.34	90.56	89.54	90.44	89.86	91.77	91.97	91.02	3.09	1.20	1.48
OECD Demand	46.20	46.30	44.34	46.13	46.50	45.82	46.13	44.48	45.90	46.27	45.70	0.62	-0.38	-0.12
Non-OECD Demand	42.14	42.78	43.84	44.21	44.06	43.73	44.32	45.38	45.87	45.70	45.32	2.47	1.59	1.59
Supply	87.40	88.60	87.60									1.70		
Non-OPEC Supply	52.60	52.80	52.40	53.20	54.00	53.10	54.00	53.90	54.00	54.30	54.00	1.00	0.50	0.90
Non-OPEC Supply ex FSU	39.10	39.10	38.80	39.50	40.20	39.40	40.30	40.10	40.40	40.60	40.30	0.80	0.30	0.90
FSU	13.50	13.70	13.60	13.70	13.80	13.70	13.70	13.80	13.60	13.70	13.70	0.20	0.20	0.00
OPEC NGL/Condensate	5.30	5.80	5.80	5.90	6.00	5.90	6.20	6.20	6.40	6.40	6.30	0.40	0.60	0.40
Call on OPEC Crude and Stocks	30.40	30.50	30.00	31.30	30.60	30.60	30.30	29.80	31.40	31.20	30.70	1.70	0.20	0.10
OPEC Crude	29.50	30.00	29.40									0.40		
Stock Change	-0.90	-0.50	-0.60									-1.30		

Source: IEA

Figure 16. Organization of the Petroleum Exporting Countries

m b/d	2010	Q1 2011	Q2 2011	Q3 2011	Q4 2011	2011	Q1 2012	Q2 2012	Q3 2012	Q4 2012	2012	2010 Growth	2011 Growth	2012 Growth
Demand	86.80	87.50	86.60	89.10	89.40	88.20	88.90	87.90	90.50	90.70	89.50	2.10	1.40	1.30
OECD Demand	46.10	46.50	44.90	46.60	46.80	46.20	46.60	45.00	46.60	46.80	46.20	0.50	0.10	0.00
Non-OECD Demand	40.70	41.00	41.70	42.50	42.60	42.00	42.30	42.90	43.90	43.90	43.30	1.60	1.30	1.30
Supply	86.40	87.60	87.00									2.20		
Non-OPEC Supply	52.30	52.90	52.50	52.80	53.30	52.90	53.60	53.40	53.50	53.80	53.60	1.20	0.60	0.70
Non-OPEC Supply ex FSU	39.10	39.60	39.20	39.50	39.90	39.50	40.10	40.00	40.00	40.30	40.10	1.00	0.40	0.60
FSU	13.20	13.30	13.30	13.30	13.40	13.40	13.50	13.40	13.50	13.50	13.50	0.20	0.20	0.10
OPEC NGL/Condensate	4.90	5.10	5.30	5.40	5.40	5.30	5.50	5.60	5.70	5.80	5.70	0.60	0.40	0.40
Call on OPEC Crude and Stocks	29.60	29.50	28.80	30.90	30.70	30.00	29.80	28.90	31.30	31.10	30.20	0.30	0.40	0.20
OPEC Crude	29.30	29.60	29.20									0.60		
Stock Change	-0.30	0.10	0.40									0.30		

Source: OPEC

Figure 17. United States Department of Energy

m b/d	2010	Q1 2011	Q2 2011	Q3 2011	Q4 2011	2011	Q1 2012	Q2 2012	Q3 2012	Q4 2012	2012	2010 Growth	2011 Growth	2012 Growth
Demand	86.73	87.41	87.36	89.02	88.83	88.16	89.73	89.11	89.99	90.11	89.74	2.40	1.43	1.58
OECD Demand	46.03	46.09	44.67	46.14	46.78	45.92	46.60	44.94	45.79	46.49	45.96	0.61	-0.11	0.04
Non-OECD Demand	40.70	41.32	42.68	42.89	42.04	42.24	43.13	44.17	44.21	43.62	43.78	1.79	1.54	1.54
Supply	86.90	87.47	87.60	87.87	87.86	87.70	89.18	89.32	89.21	89.82	89.38	2.57	0.80	1.68
Non-OPEC Supply	51.75	52.15	52.41	52.17	52.42	52.29	53.18	53.19	52.85	52.92	53.03	1.29	0.54	0.74
Non-OPEC Supply ex FSU	38.58	38.87	38.90	38.76	39.05	38.90	39.57	39.67	39.48	39.68	39.60	1.02	0.32	0.70
FSU	13.17	13.28	13.51	13.41	13.37	13.39	13.61	13.52	13.37	13.24	13.43	0.27	0.22	0.04
OPEC NGL/Condensate	5.39	5.54	6.01	6.09	6.11	5.94	6.25	6.30	6.35	6.37	6.32	0.61	0.55	0.38
Call on OPEC Crude and Stocks	29.59	29.72	28.94	30.76	30.30	29.93	30.30	29.62	30.79	30.82	30.39	0.50	0.34	0.46
OPEC Crude	29.77	29.78	29.17	29.61	29.32	29.47	29.75	29.83	30.01	30.53	30.03	0.67	-0.30	0.56
Stock Change	0.18	0.06	0.23	-1.15	-0.98	-0.46	-0.55	0.21	-0.78	-0.29	-0.36	0.17	-0.64	0.10

Source: DOE

Appendix A-1

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