

MACROCOSM

US and OPEC: The New New World Oil Order, Volume II

Monday, July 27, 2015

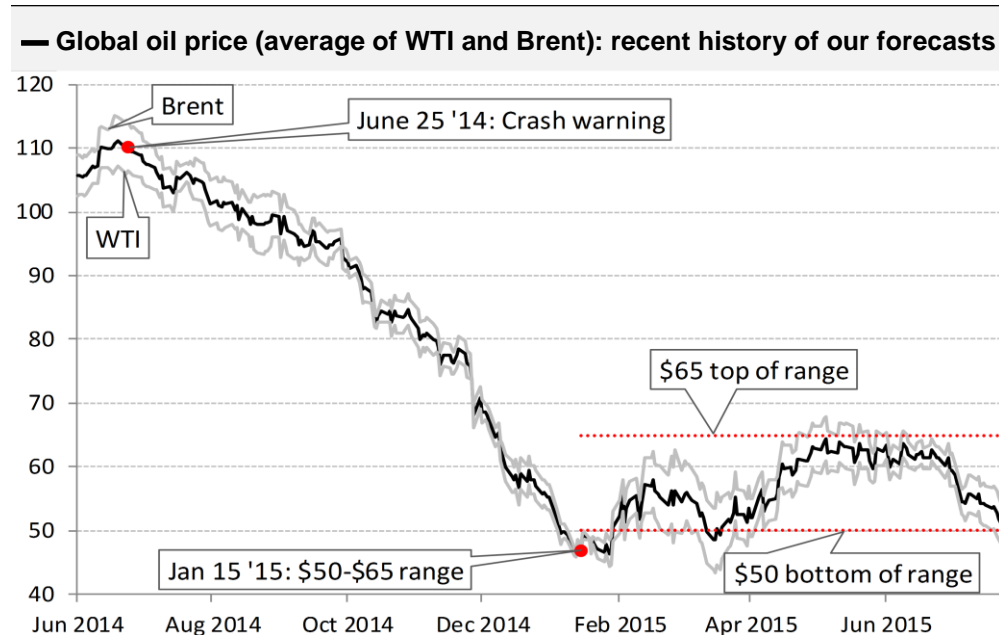
Michael Warren

Don't trust the production picture. US will drop hard, and OPEC's gains are not repeatable.

As global oil prices test their Q1 lows, US production has exceeded our expectations, and we are revising our 2015 forecasts upward. OPEC production -- at least in Saudi Arabia and Iraq -- has also been an upside surprise. But already in the back half of the year and looking out to next year, we don't see these upside surprises as repeatable or even sustainable in 2016. And we are far more conservative than the consensus on the likelihood of a flood of new Iranian supply coming onto global markets in 2016, seeing instead a slowly growing stream (see ["Iran: The New New World Oil Order, Volume I"](#) July 20, 2015).

- At this time we are staying with our forecast that global oil prices will remain in a range between \$50 and \$65 in 2015, with some allowance for speculative overshoot -- we're seeing some of that now. It's a very tough call for us -- especially in light of falling commodity prices generally, which could act as an exogenous impact on oil prices (please see the chart below).

US production has been unexpectedly stubborn, with June total production



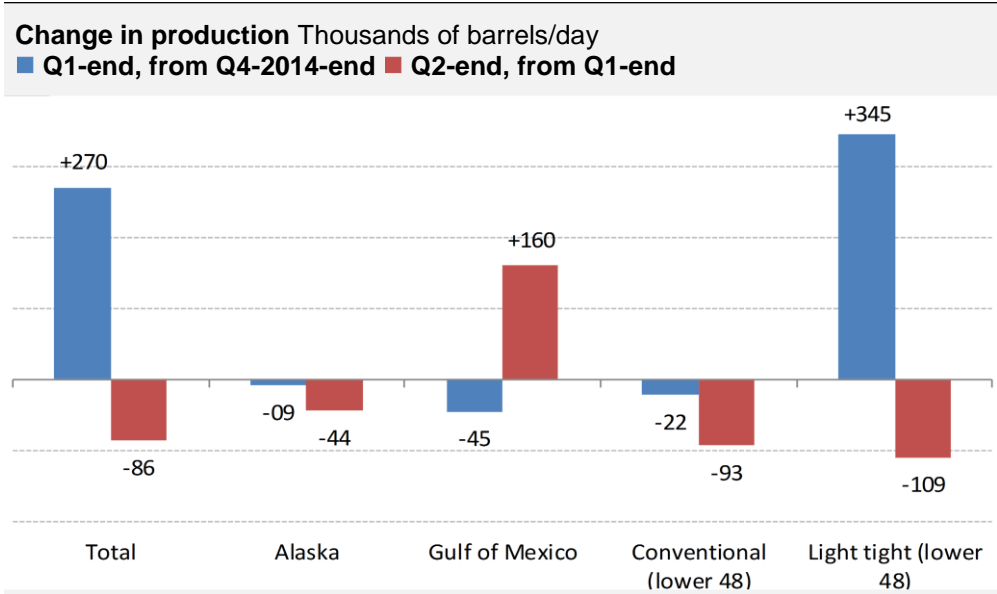
Source: Bloomberg, TrendMacro calculations

Update to strategic view

OIL: H1-2015 US production has surprised on the upside, and we raising or forecast for average 2015 production. Saudi and Iraqi production have also surprised, and Iran remains a wild card. Strong US production is unsustainable at today's prices, and represents in part a desperate attempt to stimulate cash flow by shifting 2016 production in 2015. With permits and spuds falling dramatically, and CAPEX held back by financing constraints and global competitive uncertainties, we don't see how US production can't fall hard in 2016. Saudi and Iraqi production may be sustainable, but is not repeatable. It's a close call, but for now we're sticking with our price forecast for a 2015 trading range between \$50 and \$65, allowing for some speculative overshoot such as we are seeing now.

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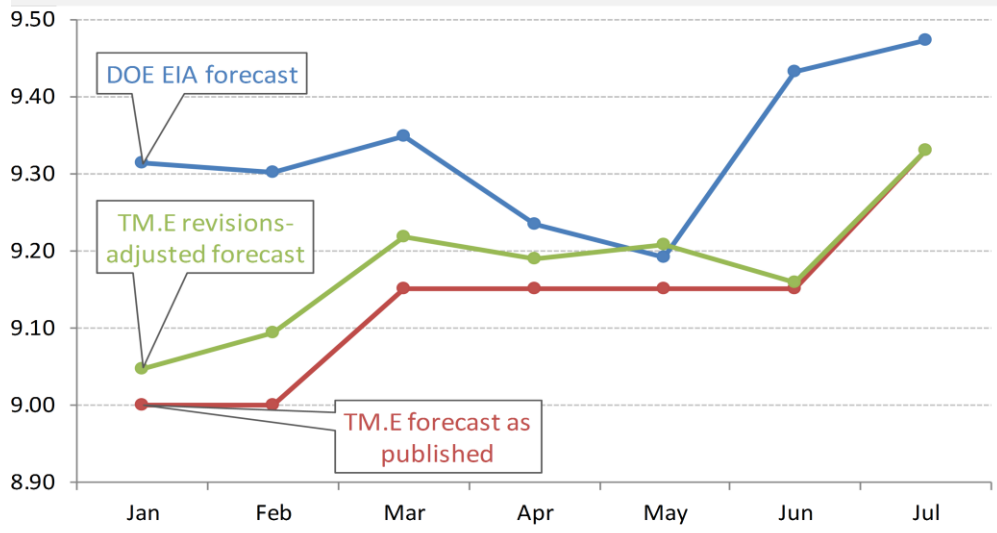
running 184,000 barrels/day above the year-end 2014 rate (see "[Greece? China? Oil's the Risk](#)" July 8, 2015). *But this is largely explained by production growth in Q1* (please see the chart below). Production has fallen in Q2 in all categories except Gulf of Mexico, where long lead-time projects happen to have just come online. Light tight oil (LTO) production peaked in March, and is off 109,000 barrels/day in Q2. Alaska and conventional production in the lower 48 fell in both Q1 and Q2.



Source: DOE EIA, TrendMacro calculations

- Following industry convention of forecasting average calendar year production, we are upward-revising our 2015 forecast to 9.33 million barrels/day, from 9.15 million previously (please see the chart below).
- The change of 180,000 barrels/day derives from raising our onshore forecast by 90,000, offshore by 40,000 and adjusting the

Forecasted 2015 US production Average, millions barrels/day



Source: DOE IEA, TrendMacro calculations

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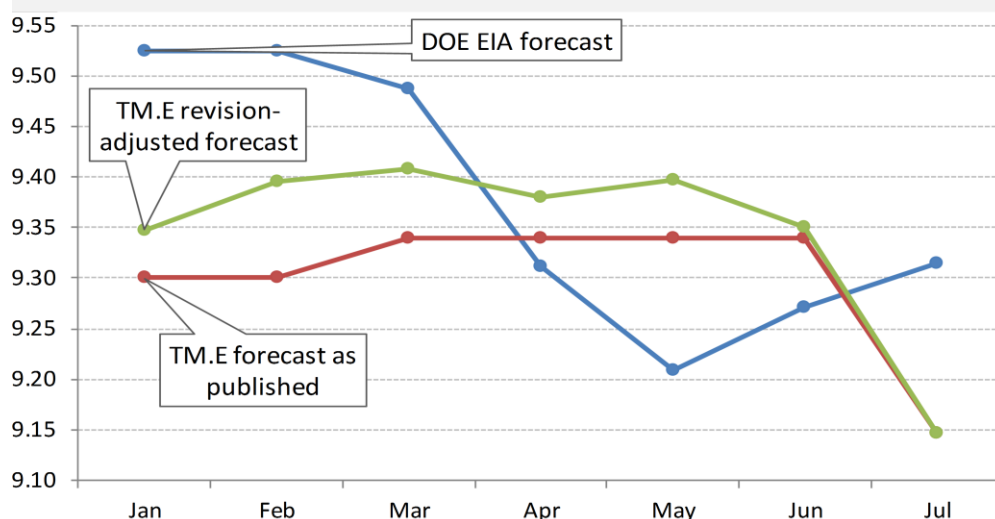
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2014 benchmark upward by 50,000 to reflect Department of Energy data revisions.

- *But more salient to domestic crude markets is the outlook for the path of future production, not the average for a year that is already more than half-completed. That path is not a happy one, already showing a weak Q2 following a strong Q1. That path will only get more difficult, as it seems to us that LTO producers are desperately bringing forward 2016 production into 2015.*
- So we are lowering our forecasts for 2016 production to 9.15 million barrels/day, which is 200,000 below our 2015 forecast (please see the chart below).

Forecasted 2016 US production Average, millions barrels/day



Source: DOE IEA, TrendMacro calculations

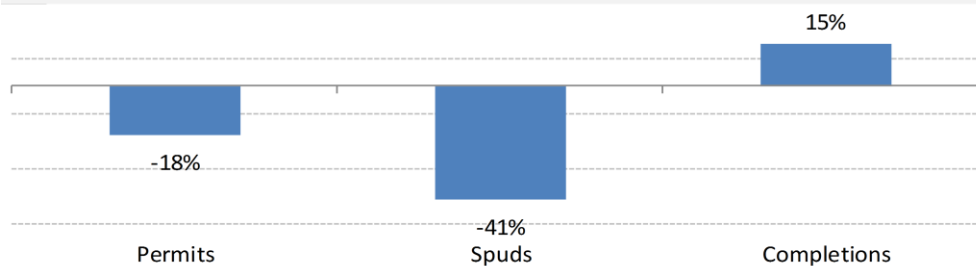
We think the key to understanding US pricing dynamics is to begin with the reality that LTO production has, in fact, rolled over -- it peaked in March. But the decline in LTO production has been surprisingly gentle. The mystery is why it has not been more rapid -- markets act like they are thinking the rapid decline will never come. It will.

- The manner in which some operators have utilized their CAPEX has effectively brought forward production from 2016 and pushed it into 2015, postponing the day of reckoning in which production must steeply drop.
- Since LTO production became economic, operators had developed a backlog of wells that had been drilled (spuds), but not yet hydraulically fractured -- the so-called "fracklog." Holding off on fracturing a well (the act of pushing massive amounts of water, sand and chemicals down-hole under high pressure) can be caused by any number of reasons -- the lack of completion teams, waiting for the completion design to be perfected, the decision to complete only one well on a pad with multiple well bores to hold acreage by production (HBP), the inability to connect production to infrastructure, or simply waiting for higher prices to justify completion (see ["I Have Seen the Future, and It Fracks"](#) February

24, 2015).

- But now, under the lash of low prices and the need to meet financing obligations, even uneconomic completions become a source of much-needed cash. The initial drilling of a well is about half its total capital cost -- so seeing the drilling investment as a sunk cost, completions can be seen as creating a cash generating asset at half-price, and playing inter-period accounting games to boot (that is, completing a well with 2015 CAPEX that had been spudded with previous years' CAPEX). To be sure, various operators in different financial positions are pursuing their own unique strategies. But in the aggregate, US operators have deployed more of their scarce 2015 CAPEX to complete wells than to drill wells. This is like grabbing the low-hanging fruit today -- and leaving only high-hanging fruit for the future.
- For example, in the Bakken, the granddaddy of US light tight oil production, in the first half of 2015 we have seen an 18% decline in permits issued YOY, and a 41% decline in spuds. But at the same time, completions have increased by 15% (please see the chart below).

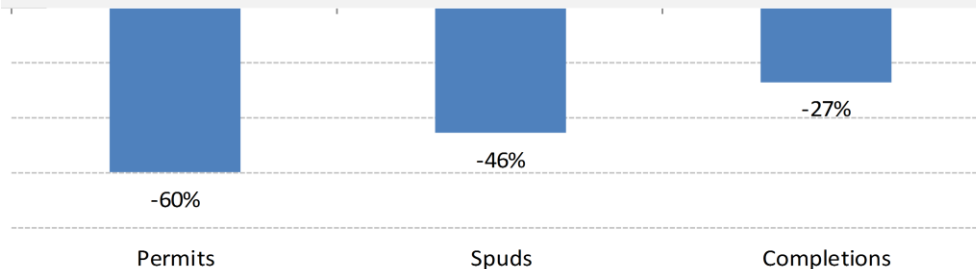
Bakken play: H1-2015 versus H1-2014 YOY percent change



Source: ND Department of Natural Resources, TrendMacro calculations

- In Texas, where about half of all US wells are permitted, spudded, and completed, there has been a 27% decline in completions in H1-2015 year-over-year. While that is a decline, it is important to set it in relation to permits and spuds, which are down far more (please see the chart below). Here, too, the future is being mortgaged to the present.

Texas: H1-2015 versus H1-2014 YOY percent change

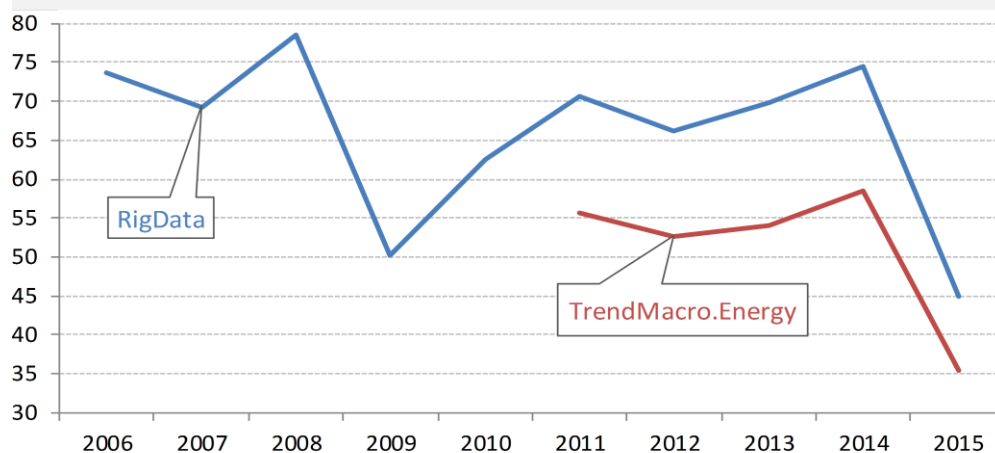


Source: Texas Railroad Commission, TrendMacro calculations

- Across the US, as of May 2015, less than 15,000 new drill permits had been issued in the US from the major oil and gas drilling

states. We forecast that 35,000 permits will be issued by the end of the year (please see the chart below). While another 20,000 permits this year to get up to that total may seem like a lot under the present pressures of low prices and global uncertainties, bear in mind that 35,000 is extraordinarily low based on historical norms (please see the RigData series in the chart below) -- about the least possible number if the industry wants to even maintain a pulse. Permits were 50,000 in 2009, when oil prices had fallen into the mid-\$30's in the wake of the Great Recession.

US oil and gas drilling permits Thousands, year total, 2015 est. annualized

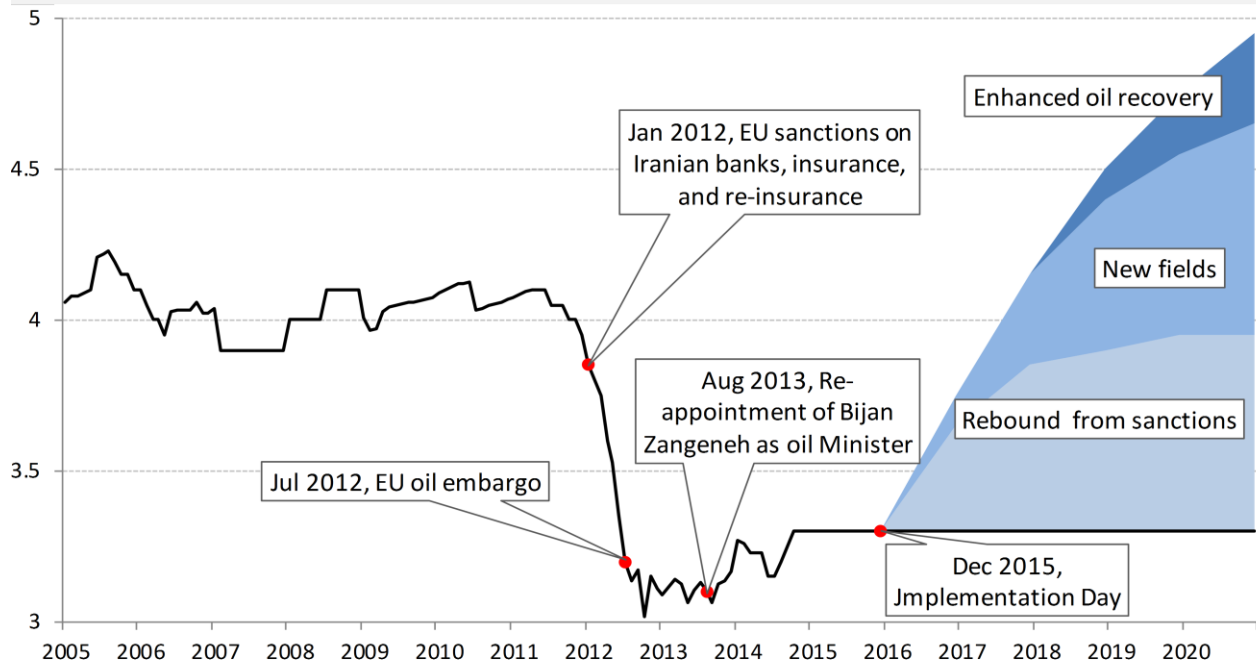


Source: State data, RigData, TrendMacro calculations

Going forward into that future, US operators face multiple headwinds and uncertainties, on their balance sheets and from their global competitors.

- *First and foremost, operators face a most hostile price environment.* For many, cash flow has been propped up by hedges. A cursory look at quarterly filings suggests that many operators had hedged from \$75 to \$90 going into 2015 -- [reportedly](#) worth payoffs of \$2.4 billion in a single quarter. But these hedges are falling by the wayside as the year progresses, being replaced with forward contracts in the \$60 range.
- *Operators also face significant uncertainty arising from the nuclear deal with Iran* -- which [according to the rogue nation's own estimates](#), could add 1 million barrels/day to global supply by the end of 2016. This is about twice our estimate (please see the chart on the following page, and ["Iran: The New New World Oil Order, Volume I"](#) July 20, 2015) -- and even that is contingent on "Implementation Day" under the [Joint Comprehensive Plan of Action](#) occurring as soon as December 2015. In a [conference call for TrendMacro clients last week](#), the former State Department sanctions expert who advised the US negotiating team argued that "Implementation Day" will come in March 2016 at the very soonest -- giving Iran only a nine-month year in which to achieve its 1 million barrels goal.
- *Iran aside, OPEC production in 2015 has surprised us on the upside.* The Saudis and Iraqis continue to increase output and grab

— Iran crude oil and lease condensate production Mil barrels per day, 2015 est at end-2014 level
 ■ ■ ■ Estimated production after sanctions and embargo lifted

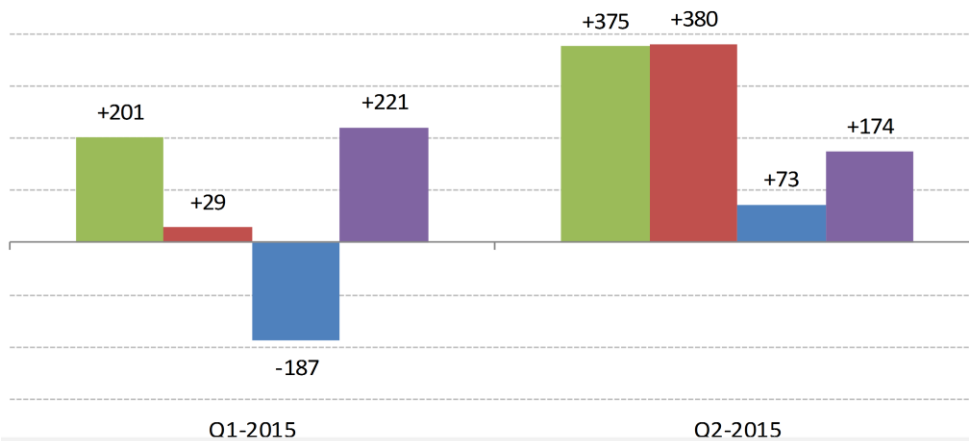


Source: DOE IEA, TrendMacro calculations

market share, but primarily at the expense of the other OPEC members who have actually decreased production (please see the chart below, and ["Market Share for Cannibals"](#) June 8, 2015).

- The surge in Saudi production isn't just about capturing market

Change in crude production Quarter average, thousands barrels/day
 ■ Saudi Arabia ■ Iraq ■ Rest of OPEC ■ US



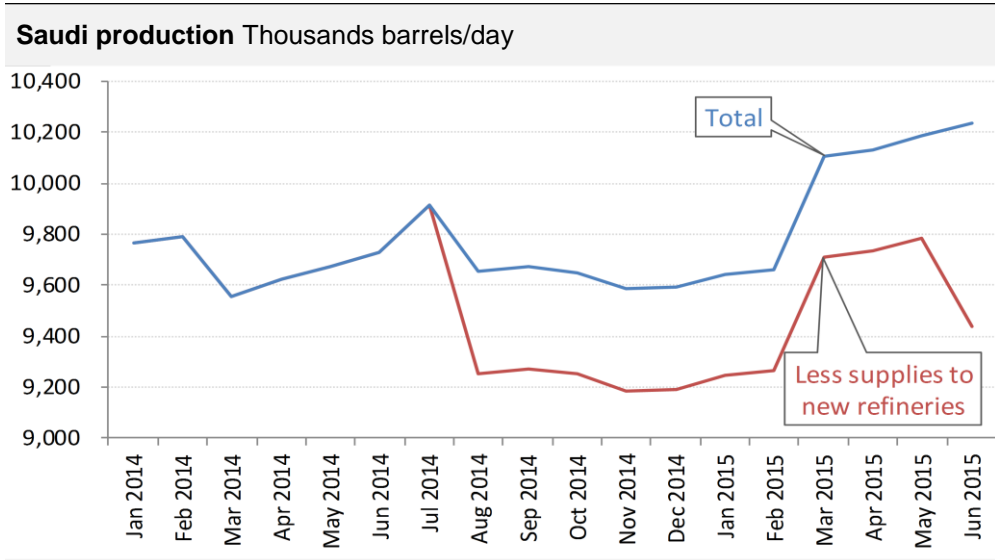
Source: OPEC, DOE IEA, TrendMacro calculations

share. The Saudis are in a transition period in which they are losing crude contracts in Europe and trying to replace them elsewhere, while adding significant refinery capacity at home.

- European refining has been disadvantaged by the US shale and light tight oil boom. Refining is an energy-intensive process, with

costs significantly impacted by natural gas prices. Considering Europe's natural gas cost disadvantage to the US, (\$9/million BTU versus only \$3), Europe's refineries pay \$3 to \$6 per barrel more in refinery processing costs. Add to that lower feedstock costs represented by the \$6 differential between Brent and WTI and it is no wonder that the European refinery complex has been eliminating capacity over the past three years, as it becomes increasingly impossible to compete with American-sourced diesel.

- So Europe has been reducing crude imports from the Saudis. While the Saudis had been planning to increase value-added production (gasoline and diesel) for quite some time, it is lucky that it started planning for increased exports of refined products over a decade ago. Now, instead of letting the Americans have Europe's diesel market, the Saudis will fight for market share with exports of their refined product.
- The present production surge comes at a time when Saudi is trying to sustain and build up crude stockpiles for two relatively new 400,000 barrels/day refineries, Yanbu and Jubail. The Jubail refinery, started in August 2014, is a joint venture with Total, and supplies mostly the domestic market, although it exported 6% of production to Europe via jet fuel last year.
- The Yanbu refinery is a joint venture between China's Sinopec and Saudi Aramco, with a focus on diesel exports for Europe and East Africa. Coming online in June 2015, it exported 160,000 of its 263,000 barrels/day production of diesel in June. The first batch of exports has helped push diesel prices close to parity with gasoline for the first time in six years as US refiners confront intense competition in the European market.
- So Saudi production has to be seen net of its own 800,000 barrels/day refinery demand. Without that demand, the Saudis are producing below their 9.65 million barrels/day level prior to the build-up in storage and production at the two new refineries (please see the chart below).
- We don't expect the Saudis to produce at the 11-12 million



Source: OPEC, TrendMacro calculations

barrels/day as some Wall Street houses have claimed. We estimate 10.5 million barrels/day, as this will have effectively replaced crude exports contracts lost to reduced refinery demand from Europe, while capturing refined product market share.

- Besides, present Saudi production is already at an historic peak. It is not clear at all that production could be increased significantly from here, even if the Saudis wanted to.
- The situation in Iraq is fluid and complex, making production projections extremely difficult. Export infrastructure is the main obstacle that has limited Iraqi production -- its availability and capacity is subject to unpredictable military contingencies.
- When last year ISIS destroyed the 300,000 barrels/day operational part of the pipeline connecting Kirkuk in Iraq to Ceyhan in Turkey, the incident got the Iraqis back to the negotiating table with the Kurdistan Regional Government (KRG). An agreement was signed late last year to allow Iraqi production to export through KRG pipelines, which increased exports from the Kirkuk field from 30,000 barrels/day in November 2014 to 450,000 in May 2015.
- Exports from southern Iraqi fields also surged by nearly 400,000 barrels/day after ISIS destroyed the 310,000 barrels/day Banji refinery in Mosul in March.
- Altogether, Iraq has pushed production to over 4 million barrels/day with a higher percentage of crude hitting the export market, leaving the war-torn country needing to import refined products to meet demand. Yet in July Iraq has cancelled 14 tankers that were to pick up its crude in the port of Ceyhan because of disagreements over Iraq's State Oil Marketing Organization (SOMO) fund transfers to KRG. This could take 450,000 barrels/day away from Iraqi production, as Kirkuk will need to choke back oil wells given the apparent closure of this transport infrastructure.
- Iraqi production is averaging 3.6 million barrels/day in 2015. We had expected that Iraq could add up to an additional 0.5 million above the 2014 average of 3.0 million (see "[Saudisfaction Guaranteed](#)" March 13, 2015). Although Iraq has been able to average slightly higher than our expectations in H1-2015, H2-2015 is setting up to be very difficult unless Iraq can restart exports through KRG by September.
- So we see the surprising surge in Iraqi production as potentially unsustainable, and highly unlikely to be repeatable. Production may indeed revert back to an average of 3.6 million barrels/day over the coming quarter.

Bottom line

H1-2015 US production has surprised on the upside, and we raising our forecast for average 2015 production. Saudi and Iraqi production have also surprised, and Iran remains a wild card. Strong US production is unsustainable at today's prices, and represents in part a desperate attempt to stimulate cash flow by shifting 2016 production in 2015. With permits and spuds falling dramatically, and CAPEX held back by financing constraints and global competitive uncertainties, we don't see how US production can't fall hard in 2016. Saudi and Iraqi production may be

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