Is the Second Shale Crude Boom Ending?

Production, exports, and prices in the balance of 2019.

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Data Sources for This Publication
CME Group
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To discover more about the data sources used, click here.

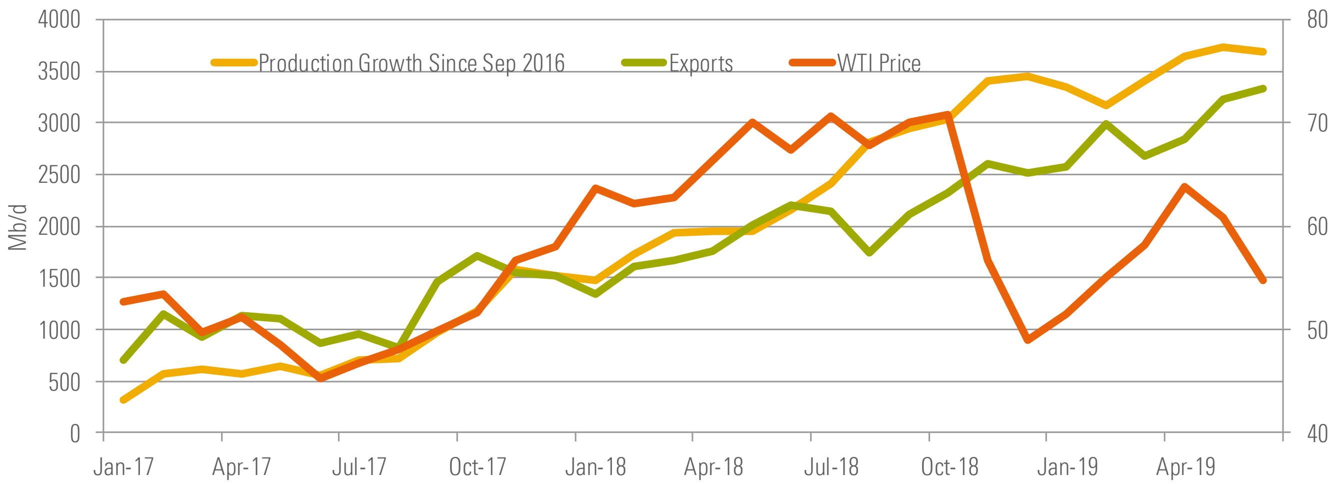
Unprecedented Growth

Between January 2017 and April 2019, the U.S. crude market experienced unprecedented growth in production and exports, propelled by higher prices and strong overseas demand. This period represents the second shale boom for crude after the first surge ended in 2015 amid oversupply and a price collapse. Some evidence points to this second boom coming to an end as production levels off and prices remain well below 2018 highs. Yet export volumes continue to grow, and production is forecast to return to growth by the end of 2019. This note looks at crude production, exports, and prices as well as the fundamentals driving output for the balance of 2019 and 2020.

Production

U.S. crude production has ballooned since September 2016, when output bottomed out at 8.5 million barrels/day after prices crashed in 2015. By April 2019, output had rebounded by 3.7 mmb/d to reach 12.1 mmb/d, according to the Energy Information Administration. During that one-and-a-half-year period, output surged an average 195 thousand barrels/day every month (Exhibit 1, yellow line). Since April, the rate of growth has slowed, according to the EIA's July Short-Term Energy Outlook, which forecasts May and June output as essentially flat with April. Rig counts are also down over 100 since a year ago in July, according to Baker Hughes. However, despite market talk of falling production that we discussed last month (see Big Drilling Decline in Promising Oklahoma Play), the STEO forecasts output growing by another 700 mb/d to 12.9 mmb/d by the end of 2019. This renewed growth is consistent with additional pipeline capacity coming on line in the West Texas Permian Basin during the final quarter.

Exhibit 1 U.S. Crude Production, Exports, and Prices, January 2017 to June 2019



Source: CME Group, EIA, Morningstar Commodities.

Exports

Previously restricted by a 1970s-era federal ban except for shipments to Canada, crude exports didn't increase markedly during 2016 after the ban was lifted in December 2015, because the international market was oversupplied. Exports only took off in 2017 in the wake of the November 2016 OPEC agreement to curtail production (see our March note Gulf Coast Crude Exports to Europe and Asia Drive 2018 Growth). Growing export volumes since the beginning of 2017 have kept pace with production increases, up by 2.6 mmb/d between January 2017 and June 2019, according to the EIA (Exhibit 1, green line). That growth reflects two fundamental factors: First, most new production is light sweet shale; second, U.S. refiners have had their fill of this type of crude because they are largely configured to process heavier sour grades that are imported. As a result, incremental production barrels must find a home in export markets to clear the surplus. Without exports, that surplus would build inventory and weigh on prices, discouraging new drilling.

Although production appears to have stalled in the past quarter, export growth has continued, reaching a record weekly high of 3.8 mmb/d and averaging 3.3 mmb/d in June, according to the EIA.

Prices

Through October 2018, production and exports were propelled higher by crude prices. The monthly average price for U.S. light sweet benchmark West Texas Intermediate crude delivered to Cushing, Oklahoma, increased 34%, from $52.61/barrel in January 2017 to $70.75/barrel in October 2018 (Exhibit 1, orange line). The increase reflected OPEC production discipline in reducing international inventories as well as some increase in demand. Higher crude prices justified the shale drilling investment driving higher output as well as reflecting a tight international market ready to absorb U.S. exports.

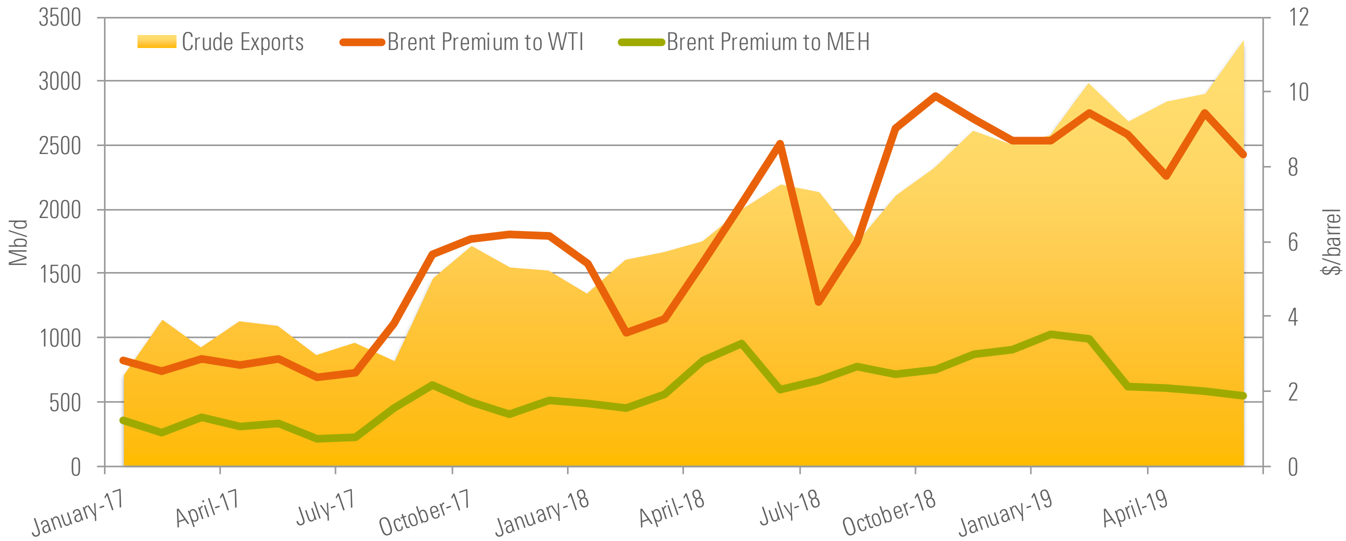
The rosy pricing picture ended in October 2018 as world supply exceeded expectations and WTI began a 44% decline in the final quarter. Uncertainty about Iranian sanctions and U.S- issued waivers, as well as concerns about the determination of OPEC and its partners to continue production curbs, muddied the supply picture. A trade war between the United States and China threatened demand growth. Yet by the start of 2019, the latest extension of the OPEC supply agreement calmed markets. That supply discipline, together with U.S. sanctions on Iran and Venezuela and production limits imposed on Canadian producers in Alberta, encouraged a price recovery to an average $64/barrel during April 2019. Since then, prices have fallen back to around $55/barrel on softer demand and fears of excess U.S. production.

Weakness

The implication of weaker prices since the end of last year might be that the production boom of 2017 and 2018 is coming to an end and that output and exports will stall in the balance of this year. Certainly, production has leveled off at around 12.1 mmb/d—for the moment—but we expect an uptick from new Permian pipelines in the final quarter. And although the drilling rig count is down, rig productivity and total output continue to grow.

Exports have shown little sign of retreat as international markets in Europe and Asia absorb higher volumes. The driver behind export strength is a wide WTI discount to international equivalent benchmark North Sea Brent and a narrower but consistent discount of WTI Houston to Brent (Exhibit 2). The overall trend in exports has followed a widening Brent/WTI Cushing spread that averaged close to $10/barrel last year and traded at around $8/barrel this year through June. The more significant premium for exports is that of Brent over WTI in Houston priced at the Magellan East Houston terminal. That Brent/MEH premium reflects prices for crude close to the Gulf Coast and export docks, rather than inland at Cushing, where congestion out of the Permian has weighed on values. That Brent/MEH premium has been narrower than Brent/Cushing but held steady at or above $2/barrel since January 2017—a wide enough margin to cover freight costs to Europe and Asia, keeping exports competitive. Importantly, the Brent/MEH premium didn't narrow when overall crude price levels dropped in October 2018, indicating that surplus U.S. production still needed to be cleared into overseas markets with an attractive discount.

Exhibit 2 Brent Premium to WTI Cushing and WTI Houston and Crude Exports



Source: CME Group, EIA, Morningstar Commodities.

Pressure Point

We believe the key pressure point on production and exports for the balance of 2019 and into 2020 will be price. If prices stay above $55/barrel, production will continue to grow in sweet spots like the Permian Basin. Higher break-even costs in plays like the Oklahoma Cana Woodford jeopardize new drilling in that basin, and transportation costs to export docks on the Gulf Coast make plays like the North Dakota Bakken less attractive to producers with limited budgets. So if prices drop below $55/barrel for a sustained period, then the current production stall could turn into a bust. As soon as production starts to fall, exports will follow suit, especially if a contango market develops where prices today are lower than in the future, encouraging storage.

Demand

Another factor driving prices in international markets is the supply/demand balance. If demand is growing and supplies tighten—helped by sanctions and the OPEC curbs—then the resulting higher prices will support the shale production/export cycle. Supply could also be threatened by geopolitical concerns such as the flow of oil past Iran through the Strait of Hormuz, which could escalate prices rapidly if conflict breaks out. The market appears to be discounting that possibility, but it always remains close to the surface in the Middle East.

If instead supply increases rapidly due to lack of OPEC and partners' discipline, an end to Iranian or Venezuelan sanctions, or growing U.S. exports, and new demand doesn't absorb surplus production, then prices will weaken further. If OPEC fails to respond with additional production cuts, then we can expect another price crash along the lines of that seen in 2015, when WTI fell to $26/barrel. That is not a scenario OPEC or its partner Russia relish, and they have shown strong discipline over the past three years in keeping to their production agreement. We therefore assume OPEC and partners have no reason to encourage excess supply. Rather, weakness on the demand side is the most likely cause of oversupply and lower prices. Current demand vulnerability results from the U.S.-China trade conflict, which threatens to undermine global economic growth. The Trump Administration's additional threat of sanctions on China last week caused oil prices to plunge 8% on Thursday on concerns about the impact on demand. If the trade conflict isn't resolved, then we expect oil prices to remain weak despite OPEC efforts to curtail supply.

Dock Congestion

Even if the supply/demand balance tightens and prices stay above $55/barrel, there is an additional threat to U.S. production and export growth during 2020: That is the risk of congestion moving from pipeline bottlenecks in production basins like the Permian to dock congestion at the Gulf Coast. We discussed the limitations of Gulf Coast dock capacity resulting from a lack of deep-water facilities in a May note (see Gulf Coast Crude Exporters Navigate Port Limitations). With new pipeline projects from the Permian basin to the Gulf Coast offering more than 4 mmb/d of capacity expected on line by the end of 2021 and a further 2 mmb/d of new capacity planned between Cushing and the Gulf Coast over the same period, demand for export dock capacity could easily double in coming years.

Although as many as seven new offshore deep-water single-point mooring buoy facilities that can handle 2 million-barrel very large crude carriers are currently planned, it is unclear how quickly these can be permitted and whether all of them will reach a final investment decision. In the meantime, new crude production hitting Gulf Coast docks could easily overwhelm existing facilities in 2020. That could leave shippers discounting their barrels in Corpus Christi and Houston as they compete for limited dock space. Those discounts at the coast could easily reach the $15/barrel level seen in the Permian at the Midland production hub during the summer of 2018, when pipeline takeaway capacity ran out and supplies backed up. Such discounts would push drillers to cut back investment and threaten production growth.

We'll discuss possible export congestion at Corpus Christi and Houston in an upcoming analysis.

Summary

The remarkable 19-month U.S. crude production and export growth spurt between January 2017 and April 2018 remains vulnerable to slowdown or reversal during the balance of 2019 and into next year. Production is leveling off in response to lower prices since October 2018, although we expect a kick up at the end of the year from new Permian pipelines. Exports continue to expand as international markets absorb U.S. crude at discounted prices to Brent. But even if OPEC supply discipline continues, lower demand growth in world markets remains a barrier to U.S. export growth. Last week's negative oil market response to escalation of the U.S.-China trade conflict shows an amicable resolution is required to restore international growth prospects. Even if demand recovers and production and exports expand, dock congestion along the Gulf Coast could hamper U.S. output in 2020 if ports aren't ready to handle the surge.

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