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## MACROCOSM **A Bottom in Oil Prices, But No Top in US Production** Wednesday, April 5, 2023 **Michael Warren**

As predicted, OPEC+ cut quotas, and as usual, the shale doomsayers see imaginary peaks.

We got a big one right when <u>we said two weeks ago that Brent oil was</u> <u>ridiculously underpriced at \$74, predicting that OPEC+ would surprise</u> <u>markets with a big production cut</u> (please see the chart below, and see <u>"Oil's Bumpy Road to \$100"</u> March 22, 2023).

- <u>We knew OPEC+ had to do it.</u> With WTI trading as low as \$64, the Biden administration foolishly said it would <u>"not rush"</u> to buy crude oil to refill the Strategic Petroleum Reserve. <u>In December it had</u> <u>committed to buy</u> when prices fell within the range of \$67 to \$72 per barrel, and indeed did so at the time.
- The nation's emergency stockpile was depleted by 250 million barrels last year to lower gasoline prices in the run-up to the midterm congressional elections. In the aftermath, we (see <u>"Surprises of 2023 Volume 2: Oil Demand, With or Without EVs"</u> January 11, 2023) – and the cartel – had every reason to think the administration was putting a floor under oil prices. But once again, reliance on the constancy of the administration's energy policies was rewarded with betrayal.
- So OPEC+'s move is another rebuke to President Joseph R. Biden



Update to strategic view

OIL: As we predicted when crude prices were sharply lower two weeks ago, OPEC+ has cut its production sharply, including the extension to the end of the year of cuts already announced by Russia. The Biden administration missed a bet by "not being in a hurry" to replenish the Strategic Petroleum Reserve at about \$70 WTI, as it had said it would do in December. Global storage levels continue to point to crude prices above \$100. In the US shale skeptics continue to argue that high-quality wells are gone, and that producers will not be able to respond to better price incentives. In reality estimated ultimate recoverv continues to rise for US shale, even as initial production rates fluctuate mostly in response to volatile pandemic-era price swings.

[Strategy dashboard]

Source: OPEC, TrendMacro calculations

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after his humiliating visit to the Kingdom last July (see <u>"It's</u> Official: OPEC Wants \$100 Oil" September 30, 2022).

- Now there is the equivalent of only one year's worth of Saudi annual production left in America's SPR, And if we know one thing about oil markets it is this: depleted stocks means higher prices. Based on historical relationship, at today's level of OECD stocks, Brent should be at \$112 (again, see <u>"Oil's Bumpy Road</u> to \$100" March 22).
- <u>So while the Biden administration reneged on its promise to put</u> <u>a floor under oil prices, OPEC+ has done so.</u>

More on the OPEC+ production cuts:

- Russian Deputy Prime Minister Alexander Novak had already announced a reduction in production by about a half million barrels per day through June (again, see <u>"Oil's Bumpy Road to</u> <u>\$100"</u>). We predicted it would be <u>extended to the end of the</u> <u>year</u>.
- Turkey has halted nearly a half million barrels per day of crude oil exports from Kurdistan on the <u>Ceyhan pipeline</u>, given the France-based International Chamber of Commerce arbitration ruling in favor of Iraq against the Kurdistan Republic that utilizes the pipeline. Expectations are that this issue will be resolved soon as Iraq pledged to cut only 200,000 barrels in its OPEC+ quota.

<u>These OPEC+ cuts will put Europe further behind the energy eight ball.</u> Europe has to be looking to the US for crude and product imports in 2023 more than any time in the past.

 <u>While the Energy Information Agency forecasts global demand for</u> <u>oil and liquids will fully recover this year</u> to over 100 million barrels, US oil production will still not regain the peak production of 13



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Source: EIR DPR, TrendMacro calculations



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million that it hit in November 2019 either this year or next. With US oil production now more than 500,000 off that peak, the usual chorus of shale oil production naysayers (shale constitutes 90% of US production) have reappeared in the press to claim its imminent demise. Nothing new here. We can cite dozens of articles over many years from organizations such as <u>Resilience</u> (2016) <u>Bloomberg</u> (2019) <u>Wall Street Journal</u> (2020 and 2022), and Investors Business Daily (2020) that always "peak shale production" is here.

- All of these failed predictions have a similar theme: declining new drill production rates per rig appear to have peaked (please see the chart on the previous page). According to the press, these declining rates suggest that the number of prime drilling locations are decreasing; and operators have to shift to drill more marginal acreage within their plays. Not so.
- <u>Never forget: operators need to complete wells to produce oil.</u> Horizontal wellbore fracking operations stimulate oil production either immediately after the well is drilled or months or even years in the future.
- <u>More completions happen when oil prices are high</u> (please see the chart below) because operators want to add volumes quickly at higher oil prices, thereby boosting profits. These completions could be from prime areas where initial production rates are sky-high, or non-prime areas that contain wells with lower internal rates of return.
- When oil prices are low, there are fewer completions because operators want to leave their oil in the ground instead of completing wells and paying to store production above-ground when their profit margins are shrinking.
- The Permian Basin (the blue line in the chart below) provides the clearest examples: when oil prices fell in 2015 and 2016, and again when they fell in the pandemic panic in 2020. The other plays also



Source: EIR DPR, EIA STEO. TrendMacro calculations



follow this trend – but with smaller numbers, because they are smaller plays.

- While the number of wells completed are influenced by WTI prices, new drill production rates per rig should not be confused with a plays' average 30-day initial production rate, which tends to rise during low prices and moderate or fall during high prices. We have mentioned in our <u>"Data Insights: Oil"</u> reports that monthly new drill production rates per rig can be distorted when more wells are completed while the number of rigs in the field fall (or vice versa). It is an easy statistic to use to assess if operators are producing less or more oil when rig counts and completion crews are stable, but how often does that happen – especially recently?
- Unfortunately, these new drill production rates, however flawed, are cited more often than not in the press to discuss IP rates simply because they are updated every month and are easily accessible in the <u>EIA's Drilling Productivity Report</u>. The real 30-day IP rates (buried deep inside the <u>EIA's Annual Energy Outlook</u>) for each shale play by county and formation are only published annually and with a 10- to 18-month lag. And there has been a major revision with the data from 2019.
- The chart below compares Permian new drill production rates per rig from the DPR and the AEO's 30-day IP rate, against estimated ultimate recovery. <u>EUR is the most important statistic to track</u> <u>because it measures the amount of oil produced during the entirety</u> <u>of a new well's lifecycle</u> (see "Despite the Gloom, Still a Shale <u>Boom"</u> August 13, 2019). The 30-day initial production rate can be temporarily heightened by allowing <u>pressure flow</u> to build up prior to fracking in order to create a gusher – which could end up actually lowering the well's EUR.
- Over 95 percent of Permian production comes from counties that have registered the highest number of weekly rig counts since 2019. In the chart below, EUR and the 30-day IP rate are





compared to new drill production rates per rig.

- <u>The key point is that the EUR</u> (the red vertical bars in the chart on the previous page) <u>has consistently risen from 2019 to 2021, even</u> <u>in the pandemic crisis period</u>. This demonstrates that the entirety of production from a new well in 2021 is expected to yield 72,000 more barrels of oil in its 20-year lifecycle than a well drilled in the same play just two years earlier.
- The 30-day IP rate (the green line in the chart on the previous page) fell in 2021 after rising sharply in 2020 (when operators completed only the best wells in the face of shockingly low process).
- Drill production rates per rig (the brown line in chart on the previous page) has matched the EUR from 2019 to 2021, and fell in 2022. But that's really not relevant, because it's a misnomer. Completion crews produce oil and gas when they frack (or complete) a drilled well.
- While we don't have EUR data for 2022 yet, we know we're not going to get any downside surprises. We know prime drilling locations are not drying up, based on oil and gas companies' quarterly presentations.
- Finally, the chart below shows the total number of producing wells in the Permian, and the percentage of those wells that annually produce more than 800 barrels per day. In 2019, the DPR reported that operators in the Permian completed about 900 fewer wells than they did in 2018 due to pipeline constraints (see <u>"Oil's Bullish Bottlenecks"</u> April 24, 2018), but high oil prices kept lower-rate production wells on-line – so the number of producing wells rose. The lack of 2019 new completions, however, reduced the total number of wells producing more than 800 barrels by 1 percentage point. In 2020 oil prices collapsed – the percentage of wells producing more than 800 barrels fell from 13% to 9% as operators completed almost 2,000 fewer wells than they had in 2019. Lower producing wells were also taken off-line, thereby lowering the total



Source: EIR DPR, TrendMacro calculations



number of producing wells – the first time that happened since the price decline in 2015 and 2016.

- In 2021, with no pipeline constraints and a post-pandemic rebound in demand that propelled oil prices higher, operators completed about 2,000 more wells in the Permian than they had the year before, boosting the region's overall total number of producing wells and the percentage of wells producing more than 800 barrels per day from 9% to 11%.
- Operators have the asset base and capability to overtake the 2019 peak in producing wells and the 2018 peak in the percentage producing more than 800 barrels per day. That has already raised Permian production to an all-time high at 5.6 million barrels per day.
- But more pipelines or expanded throughput capacity would be needed for the Permian to grow production to 7 million.
- The more prominent and intractable bottleneck to US oil production is the anti-fossil fuel agenda of the Biden administration. <u>His off-</u> <u>script comment in this year's State of the Union address</u> that "we're still going to need oil and gas for a decade" doesn't provide the necessary confidence to invest in US oil and gas projects that can take years to complete and produce for decades thereafter.

## **Bottom line**

As we predicted when crude prices were sharply lower two weeks ago, OPEC+ has cut its production sharply, including the extension to the end of the year of cuts already announced by Russia. The Biden administration missed a bet by "not being in a hurry" to replenish the Strategic Petroleum Reserve at about \$70 WTI, as it had said it would do in December. Global storage levels continue to point to crude prices above \$100. In the US shale skeptics continue to argue that high-quality wells are gone, and that producers will not be able to respond to better price incentives. In reality estimated ultimate recovery continues to rise for US shale, even as initial production rates fluctuate mostly in response to volatile pandemic-era price swings.

