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The Big Cracks in Shale's Resilience

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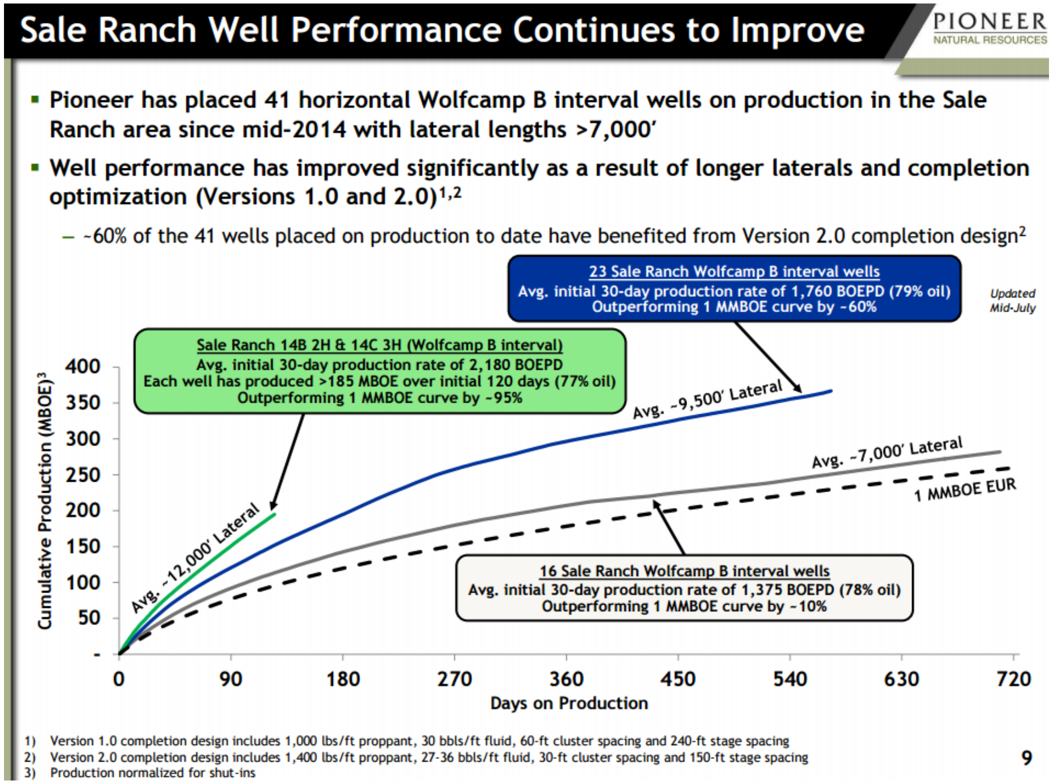
Everybody loves an underdog.

America's independent exploration and production companies, exploiting shale, have outmaneuvered Big Oil in reversing a decline in U.S. oil and gas output. They have also innovated their way to surviving the onslaught of low oil prices unleashed by OPEC.

Like all good stories, this one has some truth to it, along with some poetic license. We took a detailed look at the SEC filings of 11 large E&P companies ... since 2009 to see if the sector's productivity miracle is real.

The answer, surprise surprise, isn't straightforward. But it does suggest one thing: OPEC just gave this underdog a much-needed break.

Any E&P presentation these days has at least one slide showing how much more productive their wells are becoming. Here's an example from Pioneer Natural Resources:



There's a lot going on there, but the main message is that, since mid-2014, Pioneer has drilled about 25 wells in the Wolfcamp shale (an area in the Permian basin) with particularly intensive drilling. These are yielding more oil, more quickly than wells using older methods: 95 percent more in the first 30 days of production.

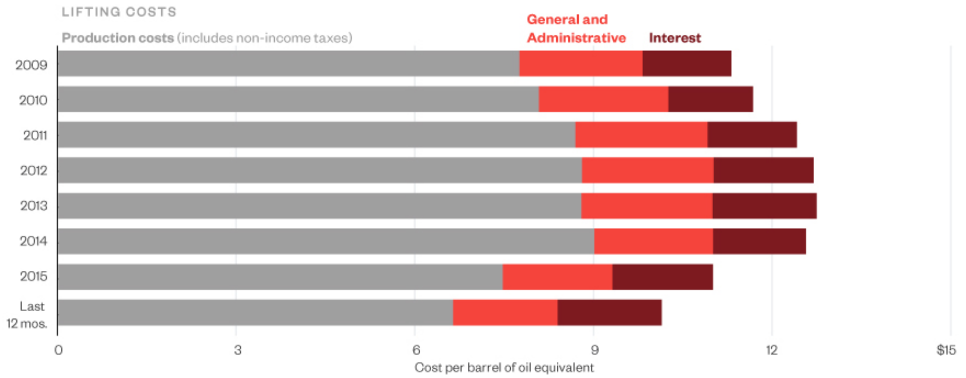
But 25 wells in two years do not make much of an E&P company; Pioneer drilled more than 200 in that region in 2015 alone. So these snapshots, showcasing the best wells, don't provide anywhere near a complete picture. After all, when you buy an E&P company's stock, or lend it money, you're taking exposure to the whole enterprise, not just a few wells.

We calculated an adjusted production cost per barrel of oil equivalent -- called the "lifting cost" in industry jargon -- for our set of companies. We included not just costs directly involved in producing oil and gas, but also the non-income taxes, general and administrative and interest costs reported in the companies' filings. This errs on the more conservative side, as not all overhead will necessarily relate to just oil and gas production (some of the companies also have sizable pipeline operations).

But these are, at heart, E&P companies, where each barrel is also supporting corporate overhead and a financing structure. So it's worth looking at a more fully loaded cost, using data from annual and quarterly SEC filings. On average, general and administrative costs and interest have accounted for $3.50 to $4.00 per barrel of oil equivalent produced, or roughly a third of the lifting cost overall, since 2009.

At All Cost

E&P companies tout reduced costs to produce oil and gas, but overhead and interest costs also have to be factored in



Note: Includes data for 11 major North America-focused exploration and production companies.
Source: Company filings, Bloomberg Gadfly analysis

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Unit costs have fallen sharply since oil prices began to collapse in 2014, dropping by 19 percent since then. The range of outcomes for individual companies is wide, with Southwestern's costs falling by just 8 percent, versus a drop of more than one-third for Continental. The biggest savings have been in direct production costs, down roughly a quarter, partly offset by rising interest costs.

At face value, a production cost of about $10 per barrel of oil equivalent doesn't sound so bad, even when oil has dropped into the $40s (the average so far this year is about $42).

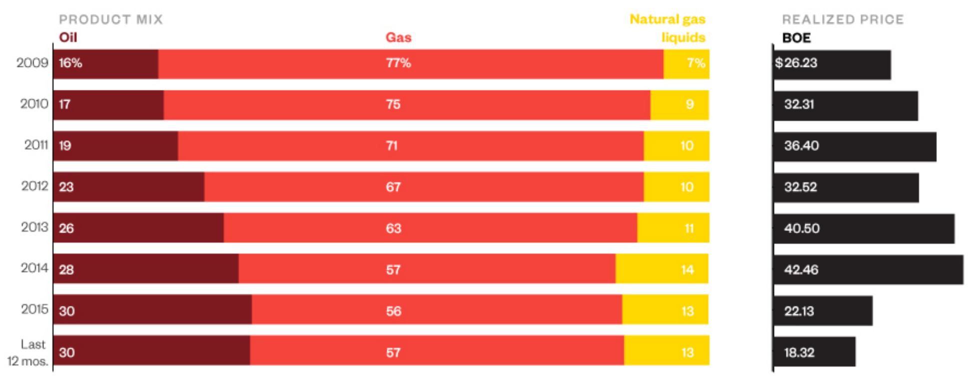
But E&P companies don't produce 100 percent crude oil -- far from it.

While our peer group produced 3.73 million barrels of oil equivalent per day in the year through June, only 30 percent of that was crude. The rest was lower-value natural gas and natural gas liquids. For the industry as a whole, the mix is roughly half and half.

So even when oil was trading above $100 a barrel, E&P companies were getting nowhere near that price overall, before taking hedges into account. For them, the low $40s was, on average, as good as it got, and that's despite shifting more of their output to oil over time:

Mixing It Up

Even after increasing the portion of more valuable crude in oil companies' production mix, sharp price declines drove down the price realized from each barrel of oil equivalent (BOE)



Note: Includes data for 11 major North America-focused exploration and production companies.
Excludes the impact of hedging. Percentages may not add to 100 due to rounding.
Source: Company filings, Bloomberg Gadfly analysis

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That 57 percent collapse in overall realized prices since 2014 to about $18 per barrel of oil equivalent is why, despite cost cuts, implied profit margins have dropped by almost three-quarters, on average. Again, these numbers are based on our conservative, all-in costs and don't factor in price-hedging effects. Here's the overall trend and figures for the individual companies:

At the Margin

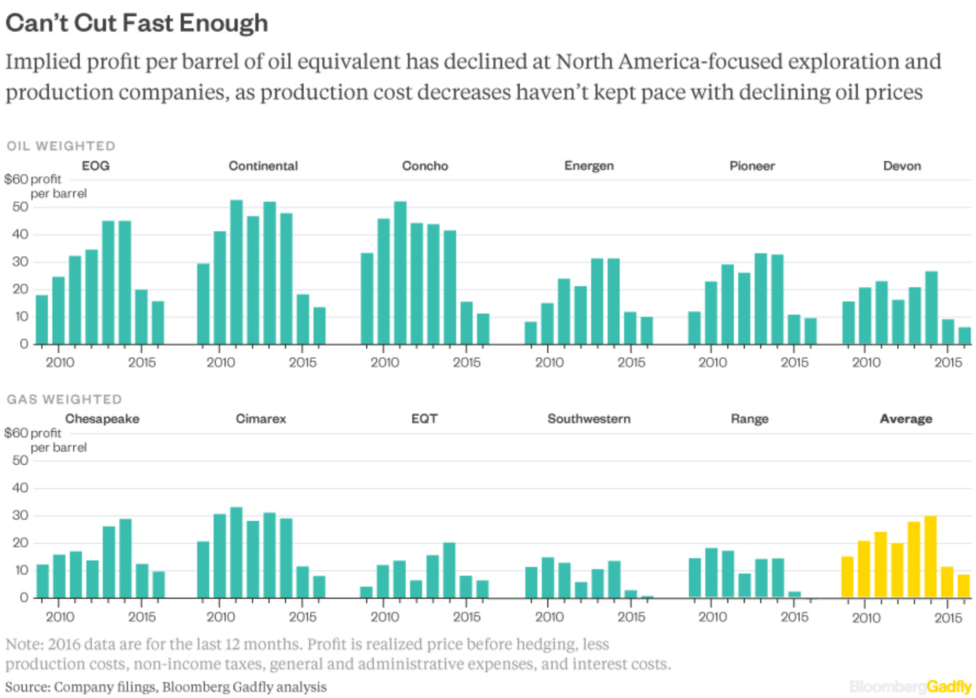
Lifting costs haven't declined as fast as the actual price per barrel of oil equivalent, lowering margins

Lifting cost Realized price

20092010201120122013201420152016

Source: Company filings, Bloomberg Gadfly analysis

Note: Excludes hedging effects.



Again, these vary widely, but oilier companies (the ones on top) have generally preserved margins better than their gassier peers.

Virtually all of the companies are still in the black, even if only barely (and hedging gains add to those margins in some cases).

But this profit isn't enough to fund finding and developing more oil and gas. Moreover, as E&P companies have been forced to take reserves off the books as prices drop -- see an explainer here -- so these unit costs have been rising. Sure, that's partly a denominator effect, but the money's already been spent, and those disappearing reserves didn't make the cut at lower prices:

Finders Creepers

Our peer group's average finding and development costs spiked due to de-booking of reserves in 2015, but had risen since 2011 anyway

20112012201320142015

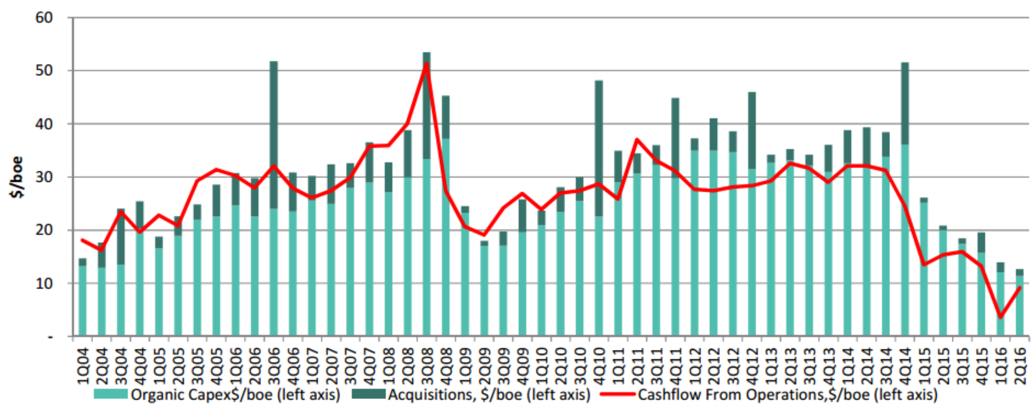
Source: Company filings, Bloomberg Gadfly analysis

Note: Data are 3-year weighted average finding and development costs for 11 large North America-focused E&P companies.

Average all-in lifting costs above $10, with finding and development costs of $15 to $25 thrown in, versus an average realized price of less than $20 -- it all adds up to reliance on forgiving capital markets to keep things going.

Bob Brackett, an analyst at Sanford C. Bernstein, estimates that, for a much wider sample of U.S. E&P companies, development and operating costs added up to $23 per barrel of oil equivalent in 2015, matching realized revenue with nothing left over. Indeed, he calculates the industry has been consistently outspending its cash flow since the third quarter of 2014 -- and wasn't exactly shy about doing so before 2014, as this chart from one of Brackett's recent reports shows:

EXHIBIT 37: **Cash flows from Operations and Capex**



Source: Company reports, Bernstein analysis, Bloomberg

Note: The production volume is an absolute measure and differs from quarter to quarter based on number of companies included in the calculations

Looking around the E&P industry, despite the fact that output hasn't collapsed as quickly as many thought, signs of strain are everywhere. Bankruptcies have spiked, with more than 100 since the start of 2015, according to law firm Haynes and Boone.

Companies are using more-intensive drilling to boost production and retreating to the very best rocks in their portfolios; witness the frenzy around the Permian basin.

Oilfield services contractors have been squeezed relentlessly, risking a hollowing-out of the industry's supply chain.

And M&A activity has been curiously muted, in part because majors like Exxon Mobil want certain shale assets but don't want the lower-quality stuff or the debt that would come as part of the package if they bought entire companies.

Michelle Foss of the Center for Energy Economics at the University of Texas at Austin has been tracking the fully-loaded costs for a sample of 12 large E&P firms (this column originated from several conversations with her). She finds, similarly, that current oil and gas prices aren't high enough to put the industry on a sustainable footing.

Her sample requires an average realized price north of $40 per barrel of oil equivalent to fund a 10 percent return on investment -- and even that wouldn't be enough to fund current capital spending.

Beneath the apparent resilience, she sees big cracks in the industry's foundation:

> Debt levels reflect the investment frenzy and burden the asset base further. Weaker portfolios generate less cash than stronger ones do. When prices are high, everything gets leased and drilled and overall production grows but the wedge that is uneconomic and burdensome when prices are lower gets bigger, too. Big cycles always generate lots of inefficiencies, and here we are in the aftermath of a really big cycle.

The numbers show that shale's resilience is part innovation, part negotiation -- mixed in with a whole lot of recapitalization. Forgiving investors and creditors, along with liquid hedging markets, have been crucial in bridging the widening gap between margins and spending.

Like oil, though, forgiveness isn't an endless resource. And that's why OPEC's recent price-boosting shift in strategy offers some relief at a crucial time.

1. *Chesapeake Energy, Cimarex Energy, Concho Resources, Continental Resources, Devon Energy, Energen, EOG Resources, EQT, Pioneer Natural Resources, Range Resources and Southwestern Energy.*

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