



Beyond the Gas Pump: A New World Order for Oil

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At six-year lows, everyone is waiting for the price of oil to bounce back, but many indicators suggest that it's not likely to regain its previous highs anytime soon.

Crude oil prices will struggle to find a bottom in the near term, as the market continues to be awash in oil in the face of lower-than-expected global demand, especially from emerging economies. But while prices are eventually expected to rise, there are signs that this may not be the typical boom-and-bust cycle the oil industry has experienced in the past, especially as shale oil occupies a growing role in the world's oil supply.

Since hitting a peak in June, oil prices have skidded by about 60% to land at six-year lows and they have remained mired in the doldrums. On Jan. 20, Brent crude for March delivery fell another 1.5% to \$48.11 a barrel on the ICE Futures exchange in London, while, on the New York Mercantile Exchange, crude oil futures for February delivery fell 5.3% to \$46.13 from the prior trading day. Weighing on prices were China's slowing economic growth and cuts in the International Monetary Fund's global GDP forecast for this year and 2016. It could be a while before oil gets to firmer ground.



When prices recover, however, it will be not be the same old ballgame. "Rebalancing of the market does not equate to a return to the status quo ante," the International Energy Agency said in its oil market report released on Jan. 16. "It is clear that the market is undergoing a historic shift." The agency pointed to two factors: the embrace of market forces by Opec to manage oil prices instead of resorting to production cuts and the U.S. light tight (shale) oil "revolution."

In November, Saudi Arabian oil minister Ali Al-Naimi told various news outlets that the 12 member-nations of Opec will maintain the organization's target output of 30 million barrels per day—about a third of total world production—even in the face of sliding oil prices. Historically, as one of the world's largest oil producers, Saudi Arabia led the way in cuts to manage pricing. This time, it instead motioned for non-Opec producers to step up. According to the U.S. Energy Information Administration, total global petroleum production was 92.2 million barrels per day in 2014 while total consumption was 91.4 million barrels per day.

Franklin Allen, a professor of finance at Wharton and at Imperial College in London, said the Saudis' change in strategy has added to the selloff in oil. "They are willing to keep pumping oil even though the price is dropping dramatically," he says. "I think they realize that if they kept the price where it was, they would basically end up with very little market share."

Indeed, in an interview with *USA Today* published on Jan. 11, Saudi Prince Alwaleed bin Talal confirmed as much. When his country cut production in the past, it ended up losing market share as other nations took up the slack. Getting both Opec and non-Opec nations to honor a commitment to decrease production has not worked. "We can't trust all Opec

countries, and can't trust non-Opec countries," he said. "So it's not on the table because the others will cheat. The past has proven that."

Opec's clout has been steadily changing since 1973, when its Arab nation members imposed an oil embargo against the U.S. and certain other countries for supporting Israel in the Arab-Israeli war, leading to famously long lines of cars at American gas stations and double-digit inflation. Today, Opec produces 40% of the world's crude oil, and its exports represent 60% of petroleum traded internationally, according to the EIA.

But the rise of shale oil is having an impact. In the week ending Jan. 9, U.S. crude oil production rose to a record 9.2 million barrels per day, the EIA said.

"Since the Arab oil boycott in 1973, Opec has been a dominant force in determining the price of oil. There have been numerous instances of a short-term 'glut' in oil, and in every instance, prices have reverted to normal," says Howard Pack, Wharton professor emeritus of business economics and public policy, who has written several books on Arab economies. "This time may indeed be different. Several forces are at work that suggest a more permanent downward adjustment of energy prices."

Pack points to a "significant" change in oil supplies from the emergence of shale oil due to fracking, a technology that pumps liquids into wells at high pressure to break apart rock formations and release oil or gas. "This has reduced U.S. demand for imported oil, and American exports of oil have added substantially to world supply," he says.

"Simultaneously, there has been a slowing growth, or actual decline, in gross domestic product in the other two major markets for oil, the EU and China. In neither region are the prospects for higher growth rates very favorable."

The question now is how much pressure low oil prices will exert on shale and other oil producers, even to the point of running them out of business. While Saudi Arabia can withstand low oil prices, other countries will have difficulty, because oil revenues are used to fund social programs and other government activities. Indeed, the Russian ruble has already taken a big tumble.

Meanwhile, BP, Schlumberger, and Apache, as well as merger partners Baker Hughes and Halliburton, are among several oil companies cutting back on production and laying off workers as lower prices start to take their toll. Various shale oil producers in Texas have already reduced output, according to a Jan. 19 story in the *New York Times*. "I think it will certainly have some effect," Allen says. How much low prices will impact the shale oil industry remains to be seen, since it is the first time producers have seen a major downturn. "These are very uncertain issues," Allen adds.

How we got here

Opec's move to maintain production has to be seen in light of Saudi Arabia's experience in the 1980s, when it was the world's main oil producer. "They took it upon themselves as a member of Opec to cut production in an effort to support the price," says Erik Gilje, a Wharton finance professor. But other nations did not follow suit and the Saudis lost share. That is why today the Saudis are willing to put up with short-term pain in the next six to 12 months to pressure other suppliers to cut, he adds.

After the oil embargo of 1973, oil production by the U.S. and non-Opec countries grew while alternative energy projects also blossomed. "There was a significant ramp up of the North Sea oil production, a ramp up in Alaska and in many different places," Gilje notes. These were oil "discoveries made in the 1970s, but because of the long cycle time [in oil

production], they didn't end up coming to the market until later.”

Shale oil in particular has taken off. While the actual process of fracking has been going on for decades, it was only in the last few years that shale oil has become a global force due to technological innovation. Five years ago, total shale oil production in the U.S. was around 300,000 barrels a day, Gilje says. By 2013, it had risen to 2 million barrels a day. Today, output has at least doubled to between 4 and 5 million barrels a day, he adds. Two of the biggest producers of shale oil are the Eagle Ford Shale in Texas and Bakken Shale in North Dakota.

Historically, oil wells were drilled straight down or at a slight angle. Then horizontal drilling came along—drilling a mile or two down and then taking a 90-degree turn and drilling another mile or two over. Around early 2000, in an area called Barnett Shale in Texas, the technology was fine-tuned to combine horizontal drilling and fracking to boost the recovery of natural gas, a move that made the wells “very economically profitable,” Gilje says. “It was that combination that spawned the [shale] revolution, first in natural gas and then in oil.”

Shale oil producers are continuing to improve the technology. Gilje points to the experience in Eagle Ford, where a well drilled in 2011 doubled its production by 2014 in part by improving the spacing of the wells. Producers have been drilling fewer wells and getting more out of them. Such innovations make projections of shale oil production a bit more difficult to predict for investors. Indeed, higher-than-expected U.S. shale oil production helped tank oil prices in past months because the market did not see it coming, he adds.

Shale oil is also cheaper and quicker to produce, taking weeks and months instead of years for traditional oil wells. Gilje says there are areas where shale can be produced with a 10% after-tax rate of return if oil is at \$40 a barrel. In contrast, traditional major offshore projects in Brazil and elsewhere need oil prices to be much higher to be viable.

However, Gilje notes that most big oil companies are hedged against low oil prices by one or two years. So even if oil prices have tanked, futures contracts could have locked in sale prices at \$90 to \$100 per barrel. “What that means is they can adjust their capital budget and adjust their assets over a time period to ensure their survival,” he says, acknowledging that some firms would be “in distress.”

Other countries can also produce shale oil, but the U.S. is in a uniquely advantageous position, Gilje says. The issue of property rights is not as cumbersome to overcome, because U.S. landowners are compensated in royalty streams and upfront bonuses. The U.S. also has the infrastructure to produce and bring the oil to market, including access to water for fracking where development is occurring. In addition, the U.S. can have 20 to 30 companies each innovating in their own way in drilling, with the result that the best technology is developed.

Compare that to Argentina's Vaca Muerta, or Dead Cow, shale formation, potentially one of the most prolific on earth but with “all sorts of expropriation concerns, infrastructure issues, technology issues,” Gilje notes. “That project will take years.”

Impact on global markets

One thing about shale oil production, though, is that while it is much quicker to put up, it also taps out much faster than traditional oil wells. “These wells decline much faster than standard oil fields due to fracking,” Gilje says. “If you drill a well today, depending on where it is, it would not be unreasonable to see 50% less production in a year.” Compare that to a 5% to 10% decline for Alaskan oil fields.

But because shale oil wells can be set up relatively quickly, the industry can react to market forces more rapidly than traditional oil. If oil prices are high, shale oil can be ramped up quickly to take advantage of them, and vice versa. The result could be a smoothing out of oil price volatility. “The likelihood of significant, persistent price spikes that we’ve historically seen [is] probably lower now because of this new stabilizing force in the market,” Gilje says.

To be sure, lower crude oil prices have translated to declining gasoline prices for consumers, to below \$2 a gallon in many cities, Gilje says. That in turn has helped drive consumer confidence in January to an 11-year high, according to the University of Michigan’s widely watched consumer sentiment index. “Certainly, it’s going to be a positive for anything where discretionary spending is important,” Gilje says, noting that sales of SUVs and trucks have also ticked up as gasoline prices have fallen.

But the benefits of cheaper oil have not yet been enough to offset economic drags elsewhere. “Even with the sharp oil price decline—a net positive for global growth—the world economic outlook is still subdued, weighed down by underlying weakness elsewhere,” the IMF said in its Jan. 20 World Economic Outlook report. Last week, the World Bank also cut its global GDP forecast for 2015 and 2016 to 3% and 3.3% from 3.4% and 3.5%, respectively, due to an economic slowdown in the eurozone, Japan, Brazil, Russia, and China. It said that the immediate impact of lower crude oil prices added 0.1 percentage points to GDP.

“If the oil price dropped because of high supply and a weak Opec, that would be unambiguously good news for oil-importing countries,” notes Arthur van Benthem, Wharton professor of business economics and public policy. “But right now, the low oil price is also just a signal that the economies of these oil importers are fairly weak.”

The exception is the U.S., whose economy is chugging along nicely. Van Benthem suggests that Americans will gain more from lower gasoline prices than what the oil producers will lose, eventually resulting in a positive impact to the U.S. stock market. However, a persistent oil bust would be rough for Texas and North Dakota. “It may not be pretty in the upstream oil sector for a while,” van Benthem notes, referring to exploration and production.

Since the start of the year, U.S. equities have come under pressure as investors fretted over how low oil can go and worried about the health of the global economy. The Dow has lost 2.4% thus far this year, as has the S&P 500, while the Nasdaq declined 2.5%. Investors sought safety in U.S. Treasuries, driving prices up and yields down to below 2% on the benchmark 10-year note.

One downside to lower oil prices and low demand for energy in general is that investments in renewable energy look less attractive, van Benthem says. “But there is also a great opportunity to seize right now that would help the environment and government budgets,” he adds. “With low oil prices, it should be politically easier to cut wasteful subsidies on fossil fuels that are pervasive in many developing countries, especially in those countries that import oil.”

Van Benthem notes that globally, fossil fuels are subsidized six times more than renewables, citing data from the IEA. “That is probably the least-known policy that harms the environment the most,” he says. “I would be thrilled if countries started cutting back on these subsidies as soon as possible.”

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