Lombard Street Research

LSR View

Oil in the age of forward guidance

18 December 2017

Highlights

- 2018 a sweet spot year for both OPEC and US shale
- But the apparent 'ceasefire' is an unstable equilibrium
- Record hedging points to sustained US production increases
- US exports making the battle for market share more global
- Russia's cooperation has an expiration date
- Focus soon to shift from duration to the size of OPEC's cuts
- A clean exit from the Vienna deal looks unlikely
- OPEC behaving like a central bank conducting QE

LSR View

Big picture analysis of global economic issues

Oil in the age of forward guidance

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Summary

It is two years since we last published an LSR View on the oil market (*LSR View, 'The Global Oil Revolution', November 2015*). We have come a long way since then. Crude prices have made a strong recovery, doubling from the lows of early 2016. What is more, last year's change of guard at Saudi Arabia's oil ministry brought about a U-turn in OPEC's thinking on supply management. This spelled the end of the cartel's previous pump-at-will stance, which, by prioritising market share over pricing, was also indirectly aimed at putting the US shale industry through the wringer.

Vienna's output cut deal between OPEC and Russia ('OPEC+') marked an inflection point for global oversupply. It has been running for almost a year now. Against the backdrop of benign global growth, it has broadly succeeded in putting a floor under prices, despite US shale oil production levels continuing to rise in 2017. On the face of it, this looks like a 'win win' for all parties involved. Oil prices in the mid to high $50s confer credibility on OPEC's supply tactics; are good for the financial health of US shale companies; and are not as restrictive for consumers. But can this mutually beneficial arrangement be sustained?

An insight into what lies ahead requires a clear grasp of where we stand now. This LSR View delves deeper into the supply side of the oil market, focusing on the strategic interaction between the main producers: Saudi Arabia and the rest of OPEC; Russia; and the US shale industry. To understand these players' respective reaction functions, it is helpful to view things through the lens of game theory. This is primarily a 'game' between OPEC+ on the one hand and US tight oil producers on the other. But there is also another, perhaps equally important but frequently overlooked battle taking place on the sidelines between Saudi Arabia and Russia, which goes beyond economics and complicates the outlook for crude.

We regard the current apparent 'truce' between OPEC+ and US shale as an unstable equilibrium. US operators are currently in a sweet spot, but they running on borrowed time, not least as Russia's incentive to continue cooperating fully is likely to dwindle going into H2 2018. This complicates any plans Saudi Arabia may have to unwind the supply cuts. The rising prominence of US shale producers in the global oil market means that the cartel may find it hard to engineer a clean exit from the deal.

We also note how, in the process of implementing its strategy, OPEC's behaviour has come to resemble that of a central bank. There is a mandate (price stability); a target (market rebalancing, or bringing inventories back to their five-year average); a policy instrument akin to QE (output cuts); and an emphasis on managing market expectations. The advent of shale fracking technology has not only revolutionised the market's price-setting mechanism, it has triggered a sea change in OPEC's supply strategy that has brought oil into the age of forward guidance.

The road to Vienna

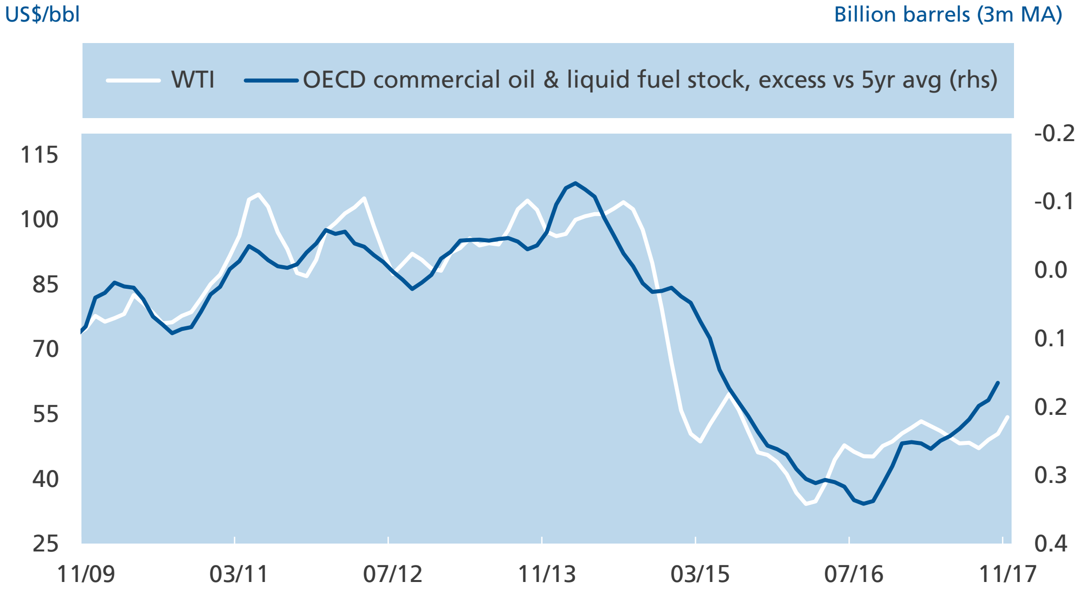
We start with a brief overview of how we got to where we are today. OPEC's move to restore stability in the oil market is rooted in Saudi Arabia's need to rebalance its economy away from a "dangerous addiction to oil". At the core of Crown Prince Mohammed bin Salman's reform programme is a successful Aramco IPO, proceeds from which will fund development of the non-oil sector as well as social spending.

During 2015 and the best part of 2016, OPEC's supply tactics were consistent with prioritising market share over profit – a strategy that saw global output surpass 100mbd for the first time. With global inventories building and the cartel failing to agree on production curbs, the prospect of sustained supply increases lingered over the market, capping any meaningful price rally.

A shift in strategy was overdue. With fiscal difficulties starting to bite, Riyadh could no longer afford to wait for US shale producers to go out of business. It had to take the first step. After all, the macro landscape had improved markedly; with a global synchronised economic recovery taking root, output cuts would have a better chance of proving effective. OPEC's Algiers meeting in September 2016 paved the way for final agreement two months later in Vienna, sealing the beginning of the end of 'flat out' oil production in January 2017. The timing was convenient, too, as by then most cartel members were operating at close to full capacity anyway.

OPEC's 2016 *volte face* marked a turning point for oil prices. But perhaps more importantly, it was also an implicit acknowledgement of the rise of the US shale sector as the world's swing producer.

Receding inventory glut putting a floor under oil prices



Source: EIA, Datastream, TS Lombard

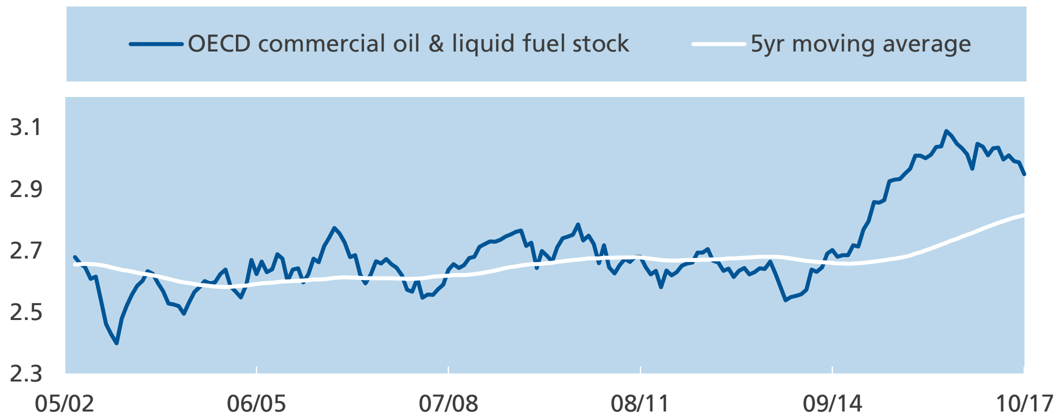
Game on

Following OPEC's strategic shift, it is instructive to view the global oil market's supply dynamics through the lens of game theory. The main game is between Saudi Arabia and its allies (the rest of OPEC, plus Russia) on the one hand and US tight oil producers on the other. It is akin to a multi-stage "prisoner's dilemma" – a situation where cooperation between the players leads to a mutually beneficial outcome, whereas acting in pursuit of self-interest ultimately leads to an inferior solution for both parties. In the case of OPEC+ vs US shale, the game involves supply decisions and their impact on the price of crude.

As in any such game, it is in the players' interest to establish a reputation for credibility. OPEC needed to convince the market that its plan was for real. To this end, the cartel had to secure cooperation from Russia, the largest non-OPEC producer. OPEC's relatively poor historical record on compliance also meant its members had to prove that this time was different. In essence, Riyadh had to break with its own past. Back in February, ex-oil minister Ali Al-Naimi's view was that "*there is no sense in wasting our time seeking production cuts*" and that "*the cartel will not cut production even if the price falls to $20/bbl*".

Even so, changing tack did not automatically guarantee success. With US shale capping the scope for significant gains, the path for crude prices was still primarily determined by demand and 'regulated' by supply. The best OPEC could hope for was a slow ratcheting up that allowed US tight oil producers to reach for the low-hanging fruit but fell short of encouraging a wave of new fracking.

Inventory overhang still OPEC's #1 concern
Billion barrels



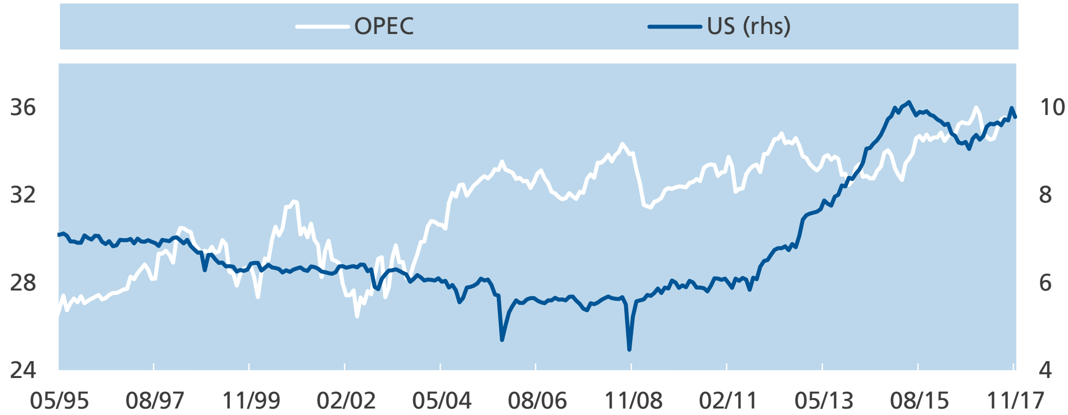
Source: EIA, Datastream, TS Lombard

Uphill road

OPEC's deal spurred a winter oil rally, yet evidence of US shale producers rushing to take advantage of higher prices soon stifled the market's newfound enthusiasm. Just like financial markets ran ahead of themselves with the Trump trade, hopes that the deal would result in a swift oil market rebalancing went too far. Earnings in Q1 2017 showed US shale production was back in full swing, with companies increasing their hedging of forward output while US crude oil inventories remained bloated, stuck above the 500mb mark.

This cast doubt on the effectiveness of OPEC's new strategy. Oil prices peaked in late February. Volatility crept back into the market, and the uptrend that had begun in the summer of 2016 was broken in April. OPEC+ agreed in May to extend the duration of its deal for another nine months to March 2018. But, following a respite in the run-up to the meeting, selling pressure resumed. By mid-June, oil prices had slid to the low $40s, a level last seen in September 2016, around the time that the cartel started signalling its intention to curtail output. Faced with the prospect of early defeat, OPEC had little choice but to stick to its guns. Indeed, the cartel made sure it hit its targets, even if this meant Saudi Arabia shouldering more than its fair share of the cuts.

OPEC vs shale
Crude output, mbd



Source: Datastream, TS Lombard

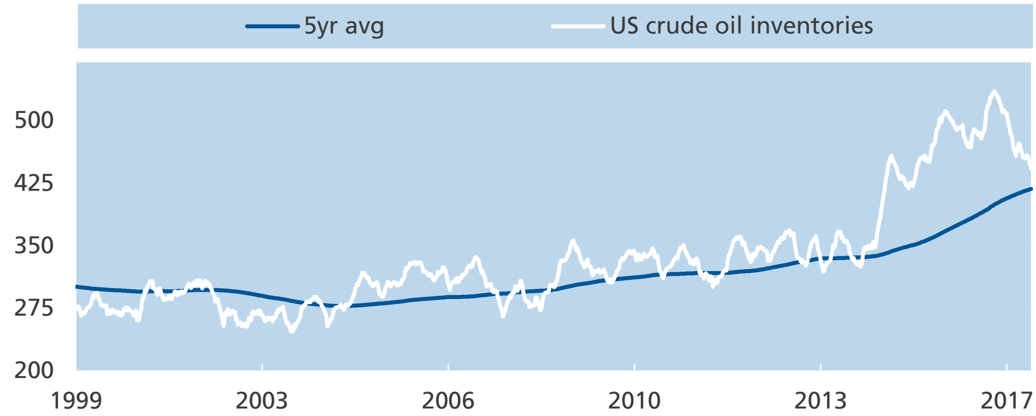
First blood

Then, over the summer, the tide started to turn. Driven by accelerating domestic consumption and strong exports, the US inventory drawdown gathered pace, underpinning progress on global rebalancing. OECD commercial stocks dropped under the 3bn barrel mark in September for the first time in almost two years. They now stand at their lowest level since July 2015, according to the IEA. The US shale sector also started to cool. The oil rig count began to show signs of peaking, pointing to slower growth in shale output.

The combination of a shrinking inventory overhang with evidence of exhaustion in US shale's supply response has gradually undermined the low-for-longer mantra. After all, with global inventories still well above OPEC's yardstick for price stability, the cartel can be counted on to stay the course for as far as the eye can see. What's more, unlike in 2014/15, this time deficient demand is not a problem.

This stronger fundamental backdrop has been made all the rosier by a confluence of temporary factors (weather, seasonality, unforeseen supply outages) and geopolitics. While recent domestic political developments in Saudi Arabia do not have direct implications for crude prices, they have introduced an uncertainty premium (ie, a risk of escalating tension in the broader Middle East) that serves to reinforce the market's bullish bias. The paring of speculative shorts over the summer has gradually given way to a build-up of long positions, as a tighter market has tipped the forward curve into backwardation, propelling WTI prices towards the upper end of the $50-60/bbl range.

US excess stock shrinking
Excluding Strategic Petroleum Reserve, million barrels



Source: DOE, Datastream, TS Lombard

The $60/bbl sweet spot

This represents a sweet spot for OPEC. It is no secret that the cartel pegged $60/bbl as an informal target in order to craft the Vienna deal. Oil at around $55-60/bbl is also regarded as a range that strikes a good compromise. It serves member countries' fiscal needs and incentivises investment, while allowing US shale companies to balance output growth and financial soundness without triggering a surge in production. There may be some uncertainty about the average breakeven costs of US shale producers and, by implication, their propensity to ramp up supply; but there is little doubt that a sustained run above $60/bbl would tempt them to revise up their 2018 spending plans. This is something OPEC would not want to see.

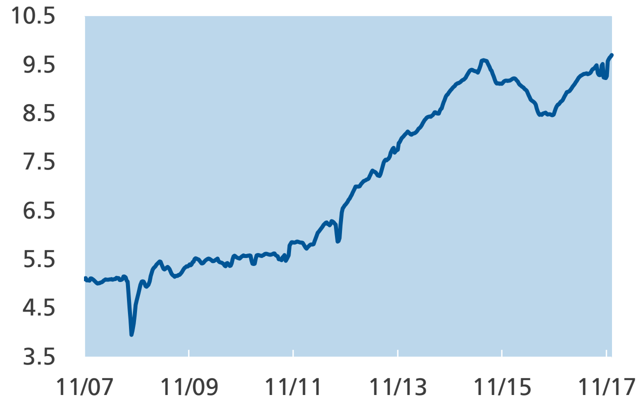
So far, this is working. OPEC has succeeded in putting a floor under oil prices; and tight oil producers have an opportunity to improve cash flow. As such, we appear to have reached a truce, or a cooperative equilibrium, in the battle between OPEC+ and US shale. But can it last?

Shale economics

This apparent ceasefire is inherently fragile; in game-theoretic terms, the equilibrium is unstable. To understand why, let's start by taking a closer look at the US shale oil industry.

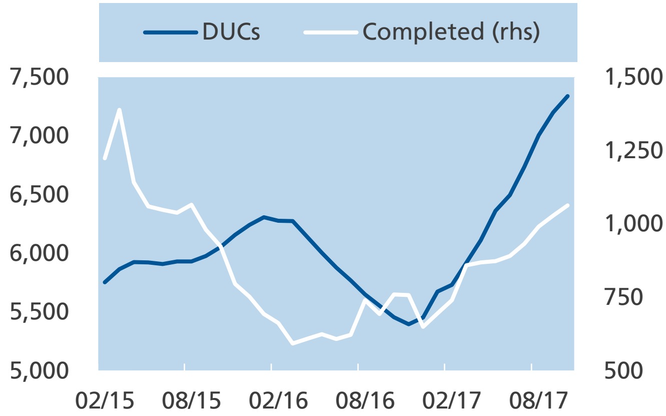
OPEC's tactical shift in 2016 spurred enthusiasm among US tight oil producers, and their investors, for a faster recovery in the oil market. Shale companies started 2017 by issuing aggressive spending and production guidance, bumping up their expectations for capex. After the first quarter, however, they started to feel the pressure from a combination of lower oil prices and rising operating costs. This led several companies to pare their capital budgets for the year and to plan on a reduced rig count. Since Q2 2017, major shale oil players have dialed down their drilling activity and become more vocal about the need for fiscal discipline. In other words, they seem to be veering away from what has until now been a 'growth at all costs' mindset to a more balanced approach that pays more attention to their financial health. Is this temporary, or does it represent a more profound change in US shale producers' reaction function?

US output heading to record highs
US crude oil production, mbd (4wk MA)



Source: EIA, Bloomberg, TS Lombard

Surge in uncompleted wells points to rising supply
Number of drilled uncompleted (DUC) vs completed wells

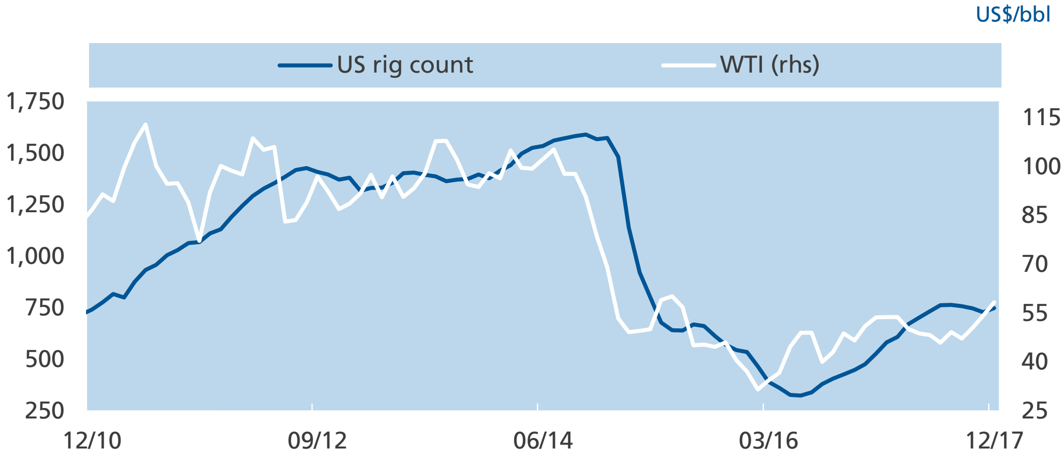


Source: Bloomberg, TS Lombard

Speed limits

To be sure, this apparent shift towards prudence during H2 2017 has not been a purely voluntary response to rising costs. It also reflects the operational speed limits facing the industry. Drilling activity is on the rise, even though the rig count has flattened out somewhat. Yet the availability of fracking equipment and crews needed to 'complete' the wells (ie, convert them into supply) is lagging behind demand, evident in the rising number of drilled uncompleted wells (DUCs). It will continue to do so until capacity comes back on stream, but this could be a year away.

US drilling activity responsive to oil price moves



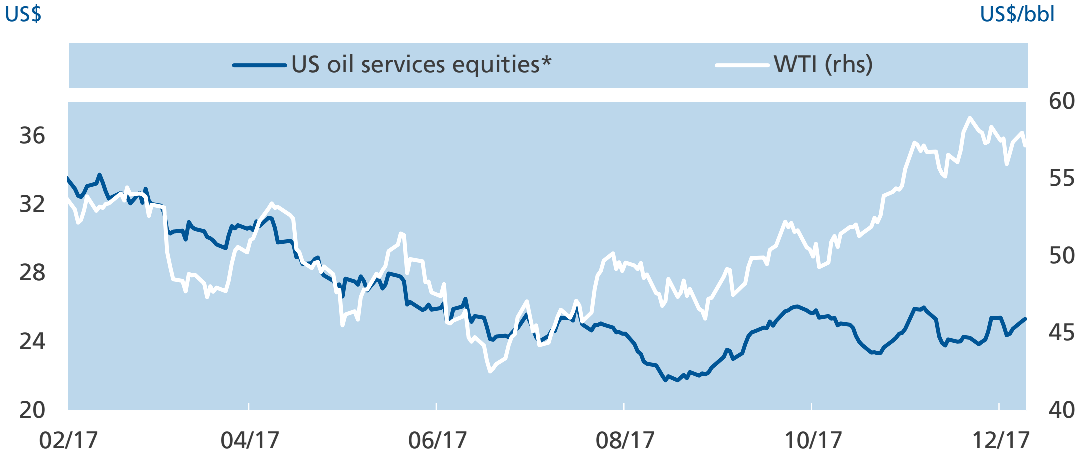
Source: Datastream, TS Lombard

Investors' balancing act

In addition, the 2014/15 downturn exposed US shale's vulnerability to sharp falls in oil prices. Investors now appear less relaxed about the industry's hitherto aggressive supply response. They worry that recovering prices will trigger a re-acceleration of production, which, as in the past, will cause a supply glut that pushes oil prices lower and squeezes margins.

Appetite for debt financing remains robust, but the equity market tells a slightly different story. Following a strong recovery in 2016, flows are showing signs of exhaustion, with new stock issuance from US oil & gas almost 50% lower than in 2016 and M&A activity tailing off in H2 2017. Moreover, energy sector share prices have lagged behind the latest gains in crude. It seems shale investors want to see a better balance between pursuit of growth and capital discipline. Just like OPEC needed to establish credibility on compliance, US shale companies need to show that they can deliver.

Energy stocks lagging behind the latest oil price rally



Source: Bloomberg, TS Lombard *VanEck Vectors Oil Services ETF

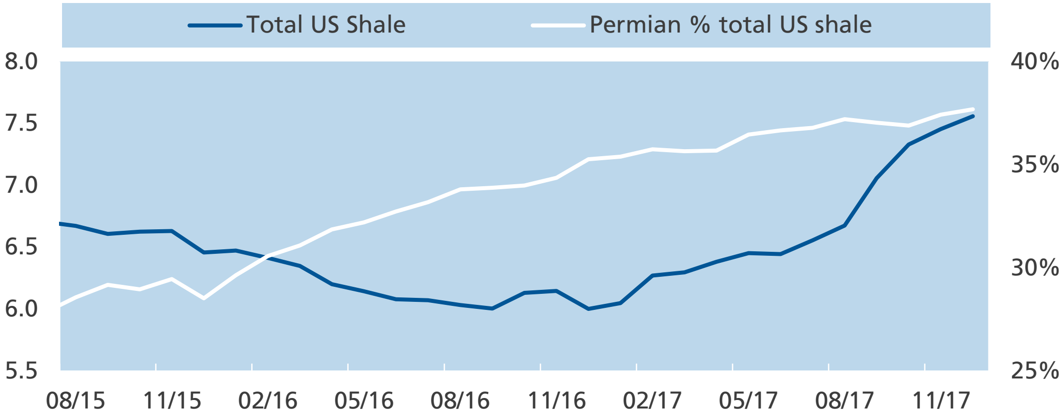
All about cash flow

Most independent shale producers are expected to keep burning cash until 2020. The industry is still transitioning out of the capital-intensive phase of the investment cycle, which requires substantial upfront expenditure on infrastructure/drilling. According to Rystad Energy, since 2010 the largest operators have invested $46bn a year on average – far more than they have earned. To fund this gap, they have relied on asset sales totalling $120bn between 2013 and Q2 2017. But they continue to rely primarily on external funding.

As with conventional oil, return on capital is disproportionately influenced by high early-life costs; the difference with shale is that investment can be adjusted up or down relatively rapidly, enabling producers to manage cash flow more efficiently. The capital-intensive nature of tight oil explains the tendency to keep drilling new wells in order to deliver the high growth rates sought by investors: the net present value of investment is not driven by near-term cash generation, but by drilling new wells. As such, it is sustained investment in future production growth that creates the most value.

In turn, a large inventory of economic undrilled wells allows operators to quickly recycle free cash flow from producing wells into new, lower-breakeven wells. Productivity has improved markedly since 2014, exerting a downward pull on breakeven prices (BEs). To a large extent, the improvement has come from high-grading (exploiting the best locations) and using the best available crews. Yet both these factors are exposed to diminishing returns; so productivity gains will inevitably slow, subject to the 'X' factor of technological innovation. Still, some operators have already achieved average BEs of below $40/bbl – mainly in the Permian basin, which accounts for around 60% of total sub-$50/bbl BEs.

Permian basin on the ascent
Oil production, mbd



Source: Rystad Energy, Bloomberg

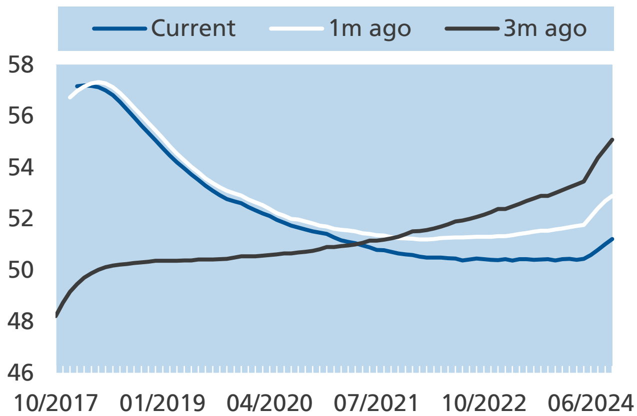
Hedging

Meanwhile, US producers have taken the opportunity to hedge forward production at attractive prices. The attitude of shale companies to hedging has been influenced by their experience of 2014/15, translating into a higher propensity to lock in prices. To a certain extent, this means they can both have their cake (continuing to raise output) and eat it (improving cash flow). With many producers pencilling in $50/bbl oil for their long-term growth targets, the recent price surge has presented a good opportunity to insure against the risk of a drop in prices.

According to data from Wood Mackenzie on the hedging programmes of the largest US upstream companies, tight oil producers ramped up their hedges during Q3 2017 by adding an annualised 900kbd – 1.5 times more than in the second quarter – at strike prices between $50 and $60. This corresponds to the hedging of about 22% of 2018 liquids production, compared with 17% in 2017.

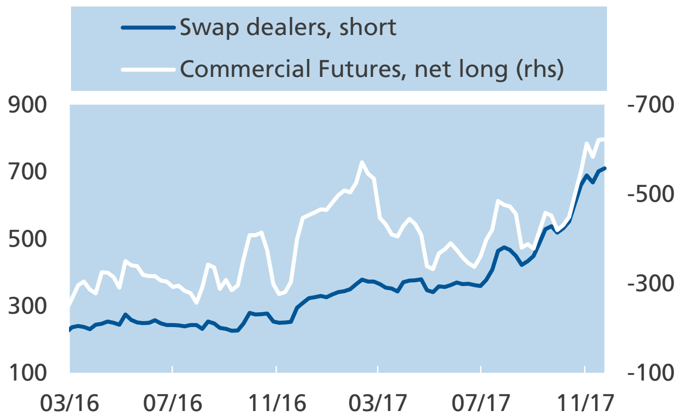
The WTI forward curve conveys the same message. Swap dealers' short positions in futures and options surged in the run-up to November's OPEC meeting, indicating strong hedging demand from US oil producers. The market is in backwardation, but prices have been rising only at the front part of the curve. Further out (beyond mid-2021), prices have dropped by as much as $3-4 to around $50/bbl over the last three

Backwardation is 'on'
WTI forward curve, US$/bbl



Source: Bloomberg, TS Lombard

US producers ramp up hedging
CFTC Nymex crude oil contracts ('000s)



Source: Bloomberg, TS Lombard

months. This suggests that there is still a good amount of producer hedging going on that is anchoring the long end.

Prudent timing

The combination of record DUCs and increased hedging activity suggests that, even as US shale producers veer away from 'growth at any cost', US crude supply will continue to increase and probably accelerate going into 2019. US drilling and well completion rates are picking up again, pointing to rising output ahead.

All this, of course, hinges on oil prices staying above producers' breakeven rates, thereby preserving the incentive to invest and keeping capital flowing in. Shale investors face a trade-off between near-term cash flow on the one hand and long-term cash flow and net present value on the other. Their message to US shale producers now seems to be 'less growth, more money'; in other words, a more prudent approach that involves a more balanced version of this trade-off.

But why now? It certainly helps that oil is back in the $55-60/bbl range. Yet the timing may also be suggesting that these price levels will come under threat over the course of 2018 as the solidity of OPEC's alliance is tested.

Oil diplomacy

The viability of Riyadh's strategy rests on maintaining compliance within the cartel as well as securing Russia's continued cooperation. Incentives are broadly aligned for the time being, but as the market moves towards rebalancing, Saudi Arabia's challenge to keep the alliance together will mount. The easy gains have arguably been pocketed; the solidity of the alliance is running on borrowed time.

'Marriage of convenience' between Riyadh and Moscow has an expiration date

From an economic perspective, Riyadh needs Russia to keep the deal credible. But also from a geopolitical standpoint, warming relations with Russia may be viewed as a play by the Crown Prince to hedge his own bets. US influence in the region is receding, and President Trump's foreign policy tactics are highly unpredictable. It is not just US tight oil producers that are hedging risk.

Russia agreed to join the production cuts back in 2016, despite previously having openly questioned the relevance of OPEC in the age of tight oil. Moscow is benefiting from a stable oil market, yet this is not just about economics. The Kremlin is trying to broaden its influence in the Middle East at a time when Western engagement has faltered. Cooperating with OPEC to support the oil price is therefore also expedient from the standpoint of President Putin's geopolitical aspirations.

However, Russia's incentive to continue playing along is likely to weaken after the spring presidential election and heading into H2 2018. The structure of Russia's taxation system is such that the central government reaps most of the financial benefit when crude prices rise above $40, whereas the country's oil producers need to maintain/increase output to justify investments in drilling and field development. This being the case, the higher the oil price level, the more acute the tension between government and oil-producing companies.

At the same time, if oil prices stay at current levels, the government will be able to balance its budget faster than originally planned. Moreover, higher proceeds from oil taxation translate into larger official ruble interventions in the domestic FX market, in accordance with the interim fiscal rules introduced at the start of the year. As a result, an average oil price of $50/bbl in 2018 would eliminate the federal budget's primary deficit, while at $55/bbl it would bring the budget into overall balance. In contrast, Riyadh needs an oil price of at least $60/bbl (and probably well above) in order to generate sufficient revenue to keep its social and political system afloat (see *Global Political Drivers, 'Fiscal rule to boost asset prices in 2018', 14 December 2017*).

Besides, Russia's track record suggests it is far from a reliable partner. In the past 20 years, Russia has been involved in three other OPEC deals and has failed to follow through on its commitments every time. In March 1999, Russia promised a 100mbd reduction, but output actually rose throughout the year and exports surged. In 2001, Russia restricted flows through its Transneft pipeline system, but again production rose and exports were shipped by other means. In 2008, while it made no formal pledge, Moscow promised to reduce output by 300mbd, but the government also implemented tax/tariff cuts that led to higher exports. Once the cost-benefit balance turns negative, history suggests that Moscow can be counted on to renege. It is hard to see why this time will be different.

What is more, it could be argued that, for the most part, Russia has so far essentially been a free rider in the current deal. Like the majority of those cutting output, Russia cranked up production to record highs in the months immediately before the agreement took effect. According to IEA data, monthly output volumes fell below 2016 levels for the first time in September. But, on an annual basis, Russian producers have not sacrificed market share in 2017, while still enjoying higher prices. Still, Saudi Arabia has little choice but to keep Russia on board. It is no coincidence that November's amended Declaration of Cooperation included a 'sweetener' clause, in the form of commitment to "consider further adjustment actions" at OPEC's next regular meeting in June.

US exports and OPEC's impossible trinity

OPEC's price stability target is not cast in stone, but it was born out of necessity. In the background, the cartel's members continue to face a trade-off between supporting oil prices, maintaining market share and securing enough oil revenue to meet their fiscal objectives. In a world where US shale is the oil market's swing producer, this has become an impossible trinity of sorts.

But this is not the only way that US producers are making their mark. The battle for market share is becoming more global, courtesy of surging US exports. US crude oil shipments have averaged around 1m bpd in 2017 – almost twice as much as in 2016 – as producers seek to capture higher international prices. Shipments to Asia and Europe have surged, helped by a wide Brent-WTI spread and facilitated by the construction of new pipelines and docks. US crude exports to China have hit a record, surpassing those to Canada by a wide margin. In contrast, with US and Russian producers increasing their presence, OPEC's market share in China is eroding.

For the time being, the main OPEC members' interests are aligned on sacrificing market share in pursuit of revenue and price stability. But as the rebalancing target comes into sight, intensifying completion from US exports will raise the bar for compliance even higher, complicating the cartel's exit strategy.

Exit musings

Extensions falling out of fashion

The market has so far focused on the duration of OPEC's initiative. Extensions have so far done the trick in preserving investor optimism. But with the Aramco IPO slated for 2018 and Russia's full cooperation far from certain after June, prolonging the deal yet again is not going to help OPEC much if progress on market rebalancing is slower than anticipated. This card has been played.

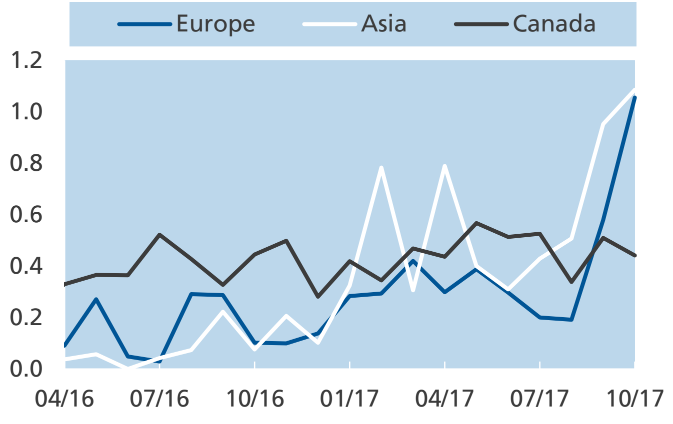
OPEC and IEA currently differ in their outlook for the global oil demand-supply balance in 2018. This translates into different trajectories towards 'price stability', ie the path inventories take to fall to their five-year average. OPEC is more optimistic on demand; it expects slightly more than 1.5mbd vs the IEA's 1.3mbd. But it is also less pessimistic on supply; the IEA sees non-OPEC output growing at 1.6mbd, whereas OPEC puts it at just 1mbd. As for inventories, the IEA's estimates suggest they will remain elevated next year – even though the rolling five-year average will continue to rise, narrowing the gap. The agency expects stocks to increase by 200kbd in H1 2018 and then to be drawn down by the same amount in H2, leaving OECD commercial stocks broadly unchanged.

The risk for OPEC is that, if the IEA is proved right, the cartel may need to do more. With a 'cuts for longer' option rendered progressively less effective, OPEC will probably have to up the ante, ie, deepen the cuts. The market, as in Q2 2017, will start calling for action.

But let's say that things stay roughly as they are in the foreseeable future, with Riyadh managing to keep the alliance intact; US shale producers sticking with a more balanced approach; global demand continuing to grow at a healthy rate; and the inventory glut receding. At the current pace of drawdowns, 'price stability' could be achieved around the end of H2 2018, precluding the need for further extensions.

Surging US exports

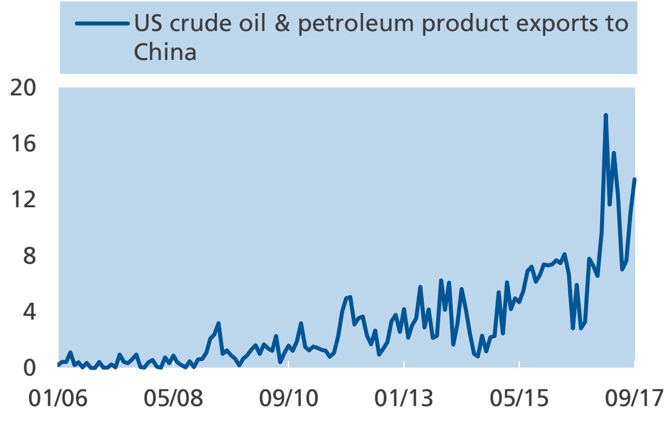
Oil exports, US$ bn



Source: Bloomberg, TS Lombard

Chinese connection

Million barrels



Source: Bloomberg, TS Lombard

Whatever the case, the market will start wondering sooner rather than later about the specifics of the exit. Russian Energy Minister Alexander Novak recently remarked "*it is clear that the process will not go on forever and that at some point it will come to an end… therefore we need to prepare ourselves for this. Today, we understand that we need to see this process to its conclusion*."

Taper the taper

What will an exit look like? OPEC would clearly like to avoid a sudden stop, ie, an abrupt end to the deal that would push the global oil market back into oversupply. It is perhaps too early for OPEC to go public with details on exit plans, but officials are already taking pains to stress the importance of gradualism. While Saudi Energy Minister Khalid al-Falih said it was premature to talk about winding down the cuts for at least for a couple of quarters, he also stressed that "*when we get to an exit, we are going to do it very gradually ... to make sure we don't shock the market*".

Consequently, the focal point for both OPEC and investors will shift before long from the duration of the cuts to their size. This will probably happen well ahead of the cartel's June meeting. We have always regarded OPEC's supply cuts as a defensive taper in the hope of stronger demand. Viewed in this light, at some point the cartel will need to 'taper its taper'.

'You can check out anytime you like, but you can never leave …'

Even if Riyadh were to pull off a smooth unwinding, it is hard to envisage a viable scenario in which the cartel abandons coordinated supply management altogether. Estimates of future US crude production vary, but there is little doubt that it is set to rise significantly. Al-Falih says that he does not "*spend time looking at… flows into financial investment instruments*", but maybe he should reconsider: large shifts in US producers' short futures positions tend to be a reliable predictor of future US output. Their recent substantial increase points to strong US crude production going into 2019. The rise of US shale to prominence means OPEC is going to need a safety net. While the deal, in its current form, has an expiration date, the cartel ultimately has little choice but to make an open-ended, longer-term commitment – ie, a readiness to respond to meaningful deviations from oil price stability in the future.

OPEC Secretary General Mohammad Barkindo recently admitted that OPEC+ needs a "*continuity strategy*" and "*will seek to develop their partnership beyond the rebalancing of the market*". His comments echoed remarks in May by Russian Energy Minister Novak, who said: "*It is necessary to work out new framework principles for continued steady cooperation between OPEC and non-OPEC even after the expiration of the Vienna agreements".*

Acting like a central bank

OPEC's behaviour has come to resemble the way major central banks conduct monetary policy in the era of quantitative easing. OPEC's supply cuts can be likened to QE, the specifics of which (duration, size) are closely watched by the market, with a view to achieving 'price stability' (rebalancing the oil market). The only difference is that in OPEC's case the toolbox is 'conventional': output quota decisions have always been the cartel's primary policy instrument. There is a well-defined target of whittling global inventories down to their five-year average. To reach that goal the cartel stands ready to do 'whatever it takes' – taking a page out of Mario Draghi's playbook. Unlike in the old days, it is also important for the cartel to have a clear communications strategy, including forward guidance. Managing supply is no longer enough; OPEC needs to manage market expectations, too.

Like many central banks, the cartel has also been emphasising the data-dependent nature of its decisions, not least as the US shale industry's reaction function is far from clear. It is no coincidence that OPEC's technical staff convened a week before November's ministerial meeting to examine the prospects for US shale production. In future, the cartel will need to try and overcome the informational asymmetries involved. This means monitoring developments in the Permian and other key basins, including the evolution of costs and productivity trends, in order to adjust its own production accordingly.

In short, OPEC's strategic shift in 2016 was an acknowledgement of US shale's dominance. But now the cartel needs to go a step further and adjust from acting as a leader in the global oil market to being a follower. Viewed in this light, Riyadh is in a similar position to the Bank of Japan. The BoJ's adoption of Yield Curve Control was, in essence, an act of abdicating responsibility for monetary policy and handing it to the Fed (see *LSR View, 'Yen weakness here to stay, November 2016*).

Looking ahead

Near term…
In the near term, the combination of a positive global growth outlook with sustained inventory drawdowns and buoyant risk sentiment should keep oil prices on the front foot, even as temporary tailwinds recede somewhat. Speculative positioning looks somewhat extended, rendering the market vulnerable to negative news and downside volatility. Moreover, while Vitol's recent decision to start offloading crude held for years in floating storage can be viewed as a bullish signal, it may also suggest that the return of backwardation has come too far too fast and is in for a pause.

On the demand side, this year's positive surprise appears to be more or less in the price, so the market would need to see evidence of a pick-up in global macro momentum to justify more optimism. These days, incremental oil demand growth comes primarily from emerging markets, notably India. Chinese consumption has recovered materially in 2017 but, with the economy set to shift down a gear in H1 2018, a re-acceleration seems unlikely.

As such, over the coming quarters oil prices should move closer to the middle of the $40-60 range as the mixture of factors that have marked H2 2017 dissolves. One caveat is the potential for an accelerated decline in Venezuela's crude production, which could send prices higher and make OPEC's life easier. What's more, at this juncture the big risk is a new bubble in financial markets, not a near-term bear market. Oil prices may well be a reflection of this prospect, held up by bullish sentiment in what remains a risk-on Goldilocks investment environment.

…and beyond
Further ahead, the IEA's forecast that US shale output will approach 12m bpd over the coming decade is a stark reminder of the structural supply-driven headwinds facing oil – over and above the longer-term challenges from renewable energy, electric vehicles,

etc. At the same time, underinvestment in new conventional projects points to elevated risk of a supply shortfall in the 2020s. The IEA estimates that investment of around $16trn will be needed to meet fossil fuel demand by 2040. According to Aramco CEO Amin Nasser, exploration and development capex of around $1trn has been either deferred or cancelled in recent years.

The bigger point, however, is that the attractiveness of energy investment is ultimately governed by the underlying economics. Unlike with shale, investors no longer view fossil fuel development as offering attractive returns. Instead, they can see the disruptive impact that rapid technological change can have on 'big oil'. Ultimately, it all boils down to costs. For example, technological advances have driven natural gas prices down to levels much lower than those assumed by large oil companies when they invested heavily in LNG facilities over the last decade. This offers a glance into the future of the oil industry. The automotive sector's shift toward electric vehicles is a game-changer; it is not a matter of 'if', but of 'how fast' – not least as China is heading in this direction. The impact of the transition to clean energy on the oil industry and its financial backers could be substantial. Within the confines of the oil market, sustained efficiency improvements will continue to exert a downward pull on the market-clearing price and could progressively cause the forward curve to flatten around that equilibrium.

In sum, 2018 looks to be a sweet spot year for both OPEC and US producers. 2019 is shaping up to be a year of transition, characterised by sustained increases in US crude output and exports and a new chapter in OPEC's supply guidance. Further ahead, the outlook for oil prices hinges primarily on how fast US production rises. With tight oil companies set to start eking out profits come 2020, US supply seems more likely to surprise to the upside than otherwise, anchoring oil around $50/bbl. As underinvestment in conventional oil projects bites, we could get a 'J curve' spike in oil prices which then fades as the structural decline in fossil fuel demand takes hold.

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