

WHY HAVE OIL PRICES COLLAPSED?

The interaction between oil price, oil supply, and oil demand is notoriously eccentric.

None of the three can be relied upon to respond smoothly to changes in the other two. Demand is inelastic: price rises make little difference to motorists' habit of using their cars. Supply is inelastic: long lead times and giant investment costs mean both that new supply can be slow in arriving, and uneconomic supply can be slow to be shut off.

Meanwhile prices respond not to reality, but to perceptions of reality: they rise because there might be a shortage of oil, not because there actually is one. And they fall only when perceptions change.

1.1. Supply-demand factors

Arguably, then, the drop in benchmark Brent crude prices from a peak of some \$114/bbl in July this year to below \$70/bbl today was well overdue.

Demand

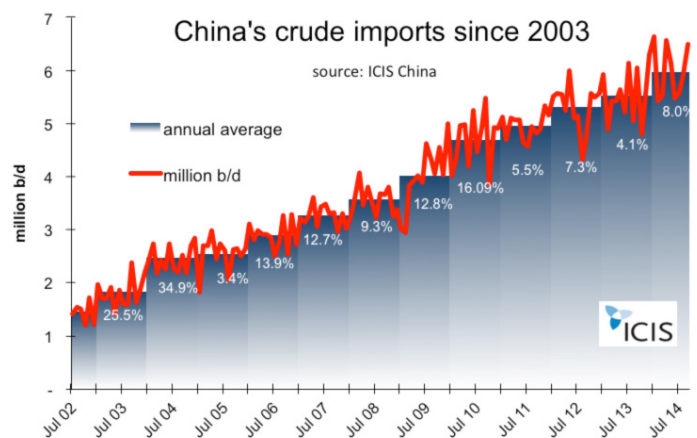
Oil demand in the western world and Japan has been stagnant or falling since the financial crisis of 2009 kicked in. Not only is economic growth flat, but technological advance and the switch to alternative fuels steadily eroding oil demand, in particular demand for automotive fuel in the West.

To that picture has been added growing stagnation in Asia, and most significantly a slowdown in Chinese growth, that has seen the annual rise in oil imports to China fall below 10% every year for the past four years. The notion that demand growth in China is not an inexorable straight line has come as something of a shock to forecasters who had built an ever-rising oil price into their predictions. For in effect that ever-rising price was predicated on ever-rising Chinese growth.

China

Indeed, the roots of the 2014 price crash lie arguably in the massive reduction in import growth in China shown in the chart below for 2011, when import growth fell from 16.09% in 2010 to just 5.5%.

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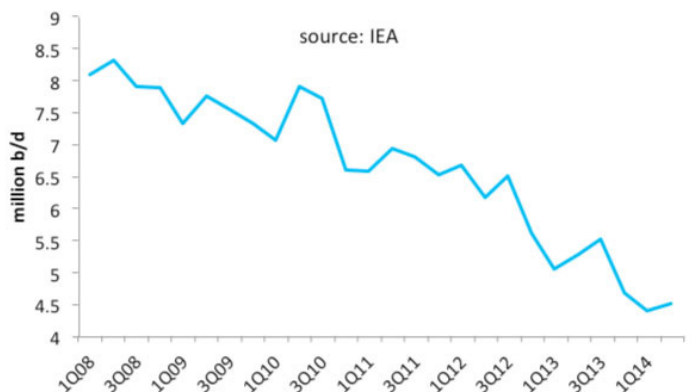


Chinese crude imports, too, tell only half the story. Thus for instance, while imports for 2014 year-to-date are up 8%, actual Chinese demand for 2014 is forecast by ICIS China to be only 1.1% higher than in 2013. The balance of the imports are either being re-exported as products, or are contributing to China's aggressive strategic stockpile programme.

Supply

At the same time, crude oil supply has been building steadily with growth from Canada's oil sands and since the start of the US fracking boom.

N American crude imports since 2008

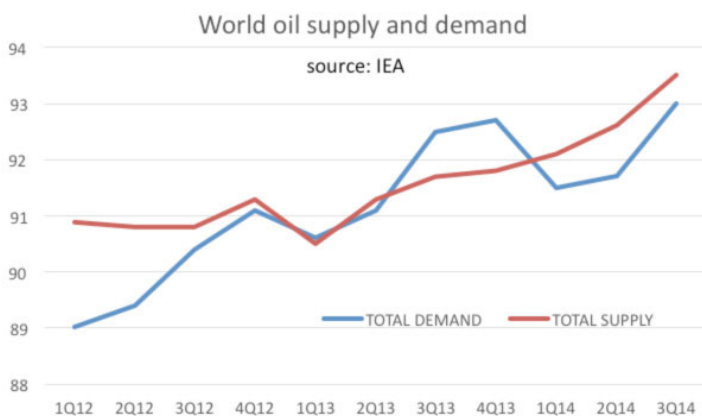


Nothing perhaps indicates this more clearly than the collapse in North American crude oil imports over the past six years, shown in the chart below. As “light tight” shale oil has boomed, US and Canadian imports of crudes have essentially halved.

Oversupply first became seriously evident in 2012, and was only partially corrected in 2013, as the chart below shows.

Meanwhile over the past four years, according to IEA data, the world has built oil stocks by a net total of 90.4 million bbl, almost a day’s supply. 2011 saw a net drawdown in stocks of 146 million bbl. Stocks built in 2012 by 73 million bbl. 2013 again saw a modest drawdown of 19.2 million.

But in the first three quarters of 2014 alone, stocks grew by an apparent 182.6 million bbl. In particular, a stockbuild of over 100 million bbl in the course of the summer appears to have tipped oil markets into full bear mode.



1.2. Macro-economic origins of the price crash

Oil supply and demand alone, however, cannot account for a near 30% drop in the price of crude in just a few months.

Other macro-economic factors are at play. These include:

- The effects of a likely end to quantitative easing on the value of the US\$, which has surged against other currencies over the same period oil has fallen. Since crude oil is priced in dollars, a higher dollar translates to a lower oil price.

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- More general concerns about the stability of the Chinese economy.
- An imbalance in price ratios between oil and natural gas. Historically, as a rough-and-ready measure, oil in \$/bbl was typically around 9-12 times the price of natural gas in \$/mmbtu. Since the late 2000s, however, this ratio have moved a long way, with crude fetching at times 30-40 times the price of gas. Since the two are so clearly intertwined in the energy mix, it has been predictable for some years that one or other might have to give. Indeed, the imbalance in this ratio has for some years been a driver of China’s investment in natural gas-powered vehicles. Plans to convert the world’s shipping fleet to natural gas over the next 10 years have the potential to weigh heavily on the economics of oil.

1.3. Departure of the banks

In the early part of the century, gripped by “Peak Oil” convictions, it was the common assumption of speculative investors that oil prices could only ever go up.

This conviction fuelled the “full carry contango” which caused the oil price bubble of 2007-8: a situation in which stored oil paid for itself by driving prices ever higher for as long as it was kept off the market.

Since 2010, however, there has been a sea-change in international banks’ and hedge funds appetite for commodities markets, and early 2014 saw large-scale departures from commodities trading of major financial players.

It may be argued that the presence of the banks in the oil market artificially sustained prices at levels not warranted by supply-demand fundamentals, because of their tendency to buy at the far end of the forward curve, sustaining an atmosphere of speculative shortage where none in fact existed. Banks priced in a shortage risk between 2003 and 2008 which turned out not to exist, in effect.

1.4. Political considerations

There has been widespread speculation about possible political origins for the oil price crash.

OPEC

One US-led conspiratorial school of thought holds, for instance, that prices are falling because Saudi Arabia is attempting to win back lost US markets that have been swamped with shale oil.

This is a “through the looking-glass” argument which ignores the fact that it was rising shale production that induced a state of market over-supply in the first place. It is also five years too late for the Middle East to react to competing sources of supply. If producers have cut their prices in recent weeks, therefore, it is because they need to remain competitive with the global crude oil spot market.

Nevertheless, now that the price crash is here, OPEC’s richer producers may not be averse to tolerating a period of low oil prices in the hopes of discouraging further widespread shale developments around the globe. OPEC’s non-event meeting on November 27th, at which the producers’ group took no action, confirms this view, and also took some \$6/bbl off the price of crude in a single day.

OPEC members are wary of the logic that suggests that a 5% production cut may yield a 10% jump in the price. History has taught OPEC that whenever it cuts its output, other non-OPEC producers simply fill the gap. Indeed the 1970s-80s OPEC strategy of pushing up prices by restricting supply is directly responsible for the development of most of the world’s competing oil resources today. OPEC’s high prices paid for the North Sea, and ultimately for the development of deepwater technology.

Thus, a production cut might simply reduce much-needed revenues to countries like Iran and Venezuela, without substantially reversing the current price drop.

Other political factors

Encouraging the drop may also be an assortment of other political factors.

Strategically, it is evident that lower oil prices inflict economic pain on oil producer Russia – something western governments are not averse to seeing, given their ongoing attempts to force Moscow to end its intervention in Ukraine.

Arab Middle East producers may be prepared to go along with a period of lower prices for similar reasons:

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cheap oil weakens both Iran and the Russian-supported Assad régime in Syria.

Iran’s role in the region, indeed, is a pivotal factor in determining what happens next. It is possible to argue that, until the summer of 2014, global crude prices were carrying an “Iran risk premium” of \$5-10/bbl, predicated on the stand-off between Tehran and much of the international community over its nuclear ambitions.

The arrival on the scene of the radical Sunni IS/ISIL group in Syria and Iraq, however, suddenly converted Shia Iran into a potentially useful ally for the West in the region, and the rapprochement with Iran has been evident in the tone of recent nuclear talks, even if the deadline for a resolution has been pushed into next year. Thus, although Middle East tensions may be running high, and IS/ISIL threatens the stability of Iraq, its creation would ironically appear to have eased pressure on oil prices.

Meanwhile, of course, low oil prices also provide economic stimulus to oil-dependent economies, both in the West and in Asia, cutting the cost of industrial output and of trade, and providing politicians with convenient falls in inflation rates which they can then attribute to their recession-busting policies.

Saudi Arabia and its like-minded neighbours may calculate that in the long term, it is better to assist the resumption of growth in China, Japan, and Europe by allowing prices to drift for now, than to seek short-term budgetary gain and compound the difficulties of their remaining export markets.

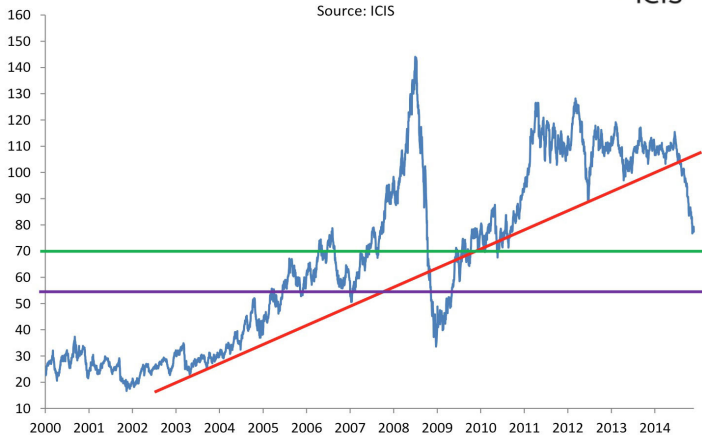
2. HOW FAR CAN OIL FALL?

2.1. The technicals

Technical analysts of the oil price have been scratching their heads for a couple of months, pointing out that no real support level exists in the current marketplace. They note that the collapse of the price has broken decisively through an astonishingly long-term uptrend that dates back to 2002 (red line on chart), interrupted hitherto only by the 2007-8 oil price bubble.

Dated BFOE crude technicals?

Source: ICIS



Ideas about natural technical “floors” for the price are thus centered on two somewhat tenuous chart levels: the apparent floor established in 2010-2011 at \$70/bbl (green line on chart), after the bubble burst, and a much lower floor (purple line) dating back to 2006 at around \$54/bbl.

2.2. The marginal cost debate

Debate is also focused around price levels which might (or might not) cause a percentage of world oil production to become uneconomic: a situation which, rationally speaking, ought to cause that production to drop out of the world’s supply mix, rectifying the apparent current oversupply.

Arguments about these marginal cost levels are complex and difficult to resolve since:

- Marginal cost for shale oil production is an untested unknown
- The potential loss of biofuels from the mix, if as seems likely most are uneconomic below \$70/bbl, may or may not have an impact on prices.
- History shows that factors other than short-term profitability play a large part in determining whether or not oil companies “shut in” unprofitable production.

Many analysts argue that the \$70/bbl floor is the most likely scenario, and this has been the default view of oil-producing nations like Saudi Arabia for some time (a number of OPEC countries, indeed, have been formulating national budgets on an assumption of \$70/bbl oil for some years).

Lower prices cannot be ruled out, however, particularly in the light of recent studies suggesting the marginal cost

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of fracked oil may be substantially lower than assumed.

The lesson of \$5/bbl oil from 1986 should also not be forgotten: that is, that it cannot be assumed that producers with high marginal costs will cease producing oil simply because they are losing money. Given the choice between producing at a loss (and servicing long-term capital costs at least) and producing nothing at all, many high-cost producers may continue to pump, even if \$54/bbl send them into the red.

2.3. How long will low oil prices last?

On paper there is nothing to prevent oil prices from settling down at around \$70/bbl (or lower) for a period of several years.

If China’s economic difficulties persist to 2017, it is hard to see where large-scale oil demand growth could come from in the world in the years to 2020. Investments already made in the development of natural gas, renewables and alternative energy vehicles are still filtering through the system, posing further challenges to oil’s position as the must-have transportation fuel.

The medium-term switch to LNG as the primary fuel for the world’s cargo shipping fleet will exacerbate this situation, potentially creating the “mother of all fuel oil lakes” by 2025, and necessitating some exceedingly expensive refining investment.

But although demand is unlikely to push oil prices back up, potential supply disruptions could still do it.

The longer-term consequences of low oil prices for the Middle East, North and West Africa, and parts of Latin America are unpredictable. Starved of oil revenue, some governments in these regions may face a tough time holding onto power.

Political upheaval in the Persian Gulf – of the kind seen in Libya, Egypt or Syria in recent years – would without doubt push oil prices back over \$100/bbl, or higher, in a very short space of time. Countries to watch would include Iran, Iraq, Yemen, and even perhaps Saudi Arabia, as the IS/ISIL struggle plays itself out.

Similar economic-political considerations apply to Nigeria, Angola, Venezuela, and potentially even to Russia.

Effective action to cut production by OPEC, as discussed above, is meanwhile unlikely, but should not be altogether ruled out, particularly if the cartel's poorer nations can persuade themselves that reduced output will bring actual economic gain in the form of a price spike.

If prices continue to slide past \$70, then such action could be taken as early as the second quarter of 2015, boosting prices, if not back over \$100/bbl, at least into the \$80s.

3. THE IMPACT ON CHEMICALS

Lower crude prices have exacerbated the bearish sentiment on global chemical markets in 2014 with the impact most notable in Asia.

Spot petrochemical prices on Asia markets reacted almost immediately to the falling price of crude and that of the primary petrochemical feedstock naphtha from after mid year.

Approximately 55% of global ethylene production is based on naphtha and heavier liquids, although regionally feedstock slates are very different and in certain parts of the world the cracking of ethane, other natural gas liquids (NGLs) and liquefied petroleum gas (LPG) has become more prevalent.

Naphtha and other liquids cracking produces a broad range of olefins and aromatics streams used throughout the industry and each of these is impacted directly by movements in the oil price.

Chemicals demand growth is expected to slow this year to around 4.0% from earlier higher estimates as global economic and industrial growth diminishes. Forecasts of future growth have been lowered by some commentators because of the difficult global economic outlook.

Towards the end of 2014, buyers became cautious and understandably unwilling to build inventory in the falling oil price environment. Data show that chemical prices closely track oil with a time lag of a few weeks. Some products, such as benzene, react swiftly to oil price movements, while others take time.

The ICIS petrochemical Index (IPEX) which represents the price movements of 12 key petrochemicals fell 3.8% in October, reflecting much lower petrochemical spot and contract prices in northeast Asia.

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The index will begin to reflect the impact of lower crude prices on petrochemicals in the contracts agreed for November and December in the other major producing regions – the US and Europe.

The Asia sub-index was down 5.9%, reflecting steep falls in olefins prices, particularly butadiene, as well as lower-priced aromatics.

Asia markets reacted over the course of the month to weaker supply/demand fundamentals for the aromatics and lower naphtha prices on the back of weakening crude oil.

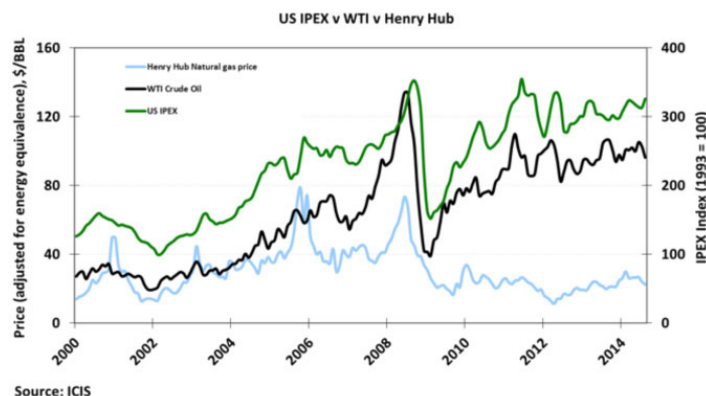
Northeast Asia naphtha prices began falling at the end of August, dropping sharply through September and most of October.

Chemicals trade tends to be weak in December; the weakness of chemicals indicators is a reflection of this as well as of current low inventory levels.

Chemicals producers and consumers have run down inventory in the face of cost, price and demand uncertainty. Feedstocks and energy typically represent more than 90% of the cost of running a typical industry liquids cracker.

However, while cracker variable costs depend almost entirely on the cost of feedstock and energy, typical petrochemical prices, including those for cracker products, correlate closely with the price of crude oil.

Even in the US, where gas cracking predominates, petrochemical prices generally correlate closely to WTI crude. There is essentially no correlation with Henry Hub



gas prices, which can be used as a proxy for ethane cracker feedstock prices.

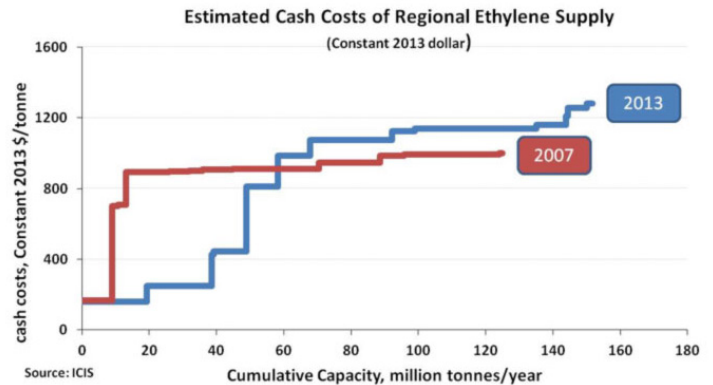
The falling crude price, while leading to lower petrochemical product prices in all regions, will also, however, benefit chemical producers cracking naphtha and heavier liquids from the refinery.

It should also work to narrow the significant relative cost advantage enjoyed in recent years for those producers cracking ethane from shale in the US.

The chart shows the ethylene cost curve for 2013 and 2007, two very different years for the industry but ones in which the difference in the average oil price was more than \$20/bbl. In 2007, the average price for Brent crude oil was \$81/bbl.

As crude and ultimately naphtha prices fall so do costs for the typical liquids cracking complex and the cost curve flattens. The two chart lines also reflect at the lower cost end, the increased ethylene capacity in the US running on low cost ethane from shale.

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