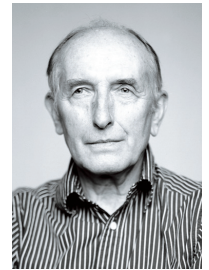


# Low Oil Prices: Their Economic, Geopolitical & Environmental Impact



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Low has become the most common, but almost always undefined, adjective that has been attached to crude oil prices since they began their most recent decline in August 2014. But what is a low oil price? Obviously, one that is below some past level — but is that level calculated by taking an average price during the last month, the last year or the last decade? And how much below a given level must it be? Would 25% be enough or must the price fall by at least 33% or 50%? There are no generally accepted rules but the latest decline has gone well past the 50% mark: by the end of 2015 the three most commonly used prices — OPEC basket, West Texas Intermediate (WTI) and UK Brent — were all more than 60% below their June 2014 highs.

At the same time, it is worth noting that when compared in constant (inflation-adjusted) monies, crude oil prices at the end of 2015 were higher than they were during 13 out of the preceding 25 years (1991-2015) and, except for 12 years (1974-1985) when they were affected by the two rounds of OPEC-driven price hikes (1973-1974 and 1979-1981), they were also higher than anytime during the entire 20th century! (Chart 1).

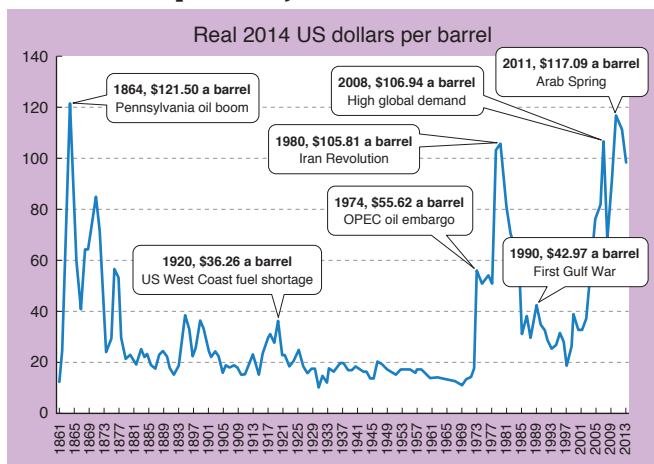
Definition of low oil prices can be approached from an entirely different perspective: price could be defined as low once it falls below a level required to make a profit. But that, too, offers no general guidance: a producer may be still making a profit when selling oil at \$20/barrel but the returns would be insufficient to finance continuing development that is needed to ensure long-term

extraction. Moreover, oil companies operate in a wide range of physical settings and with different fixed and variable costs: in 2015 some producers could sustain long-term profitability of their operations only when oil was at least \$80/barrel, others could do well at half that rate, and some Middle Eastern oilfields have even lower production costs, but selling oil for \$20/barrel would be, in the long run, unacceptable even for Saudi Arabia.

## Length of Low-price Periods & Its Unpredictability

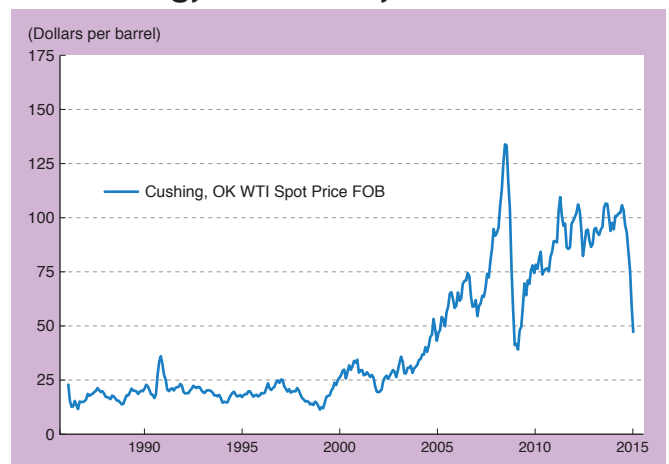
Two fundamental reminders should come first when we think about the impact of low oil prices: all consequences are critically dependent on the duration of such spells — but to forecast their onset and their length remains elusive. The last protracted period of low oil prices followed a sharp spike caused by Saddam Hussein's invasion of Kuwait in August 1990: soon afterwards the price rose 2.5 times compared to its June 1990 low but by February 1991 it was back to below \$20/barrel (the Gulf War was over by the end of February) and during the rest of the 1990s prices of WTI oil fluctuated only mildly, staying mostly between \$18-22/barrel. The most recent price decline began in August 2014 and by the year's end WTI had lost nearly half of its value compared to its June 2014 peak. At the time of this writing (January 2016) we have thus had more than a year of prices that have been at least 48% and as much as 74% lower than the June 2014 highs (Chart 2).

CHART 1  
**Crude oil prices, 1861-2014**



Source: British Petroleum. 2015. BP Statistical Review of World Energy 2015

CHART 2  
**West Texas Intermediate spot oil price at Cushing, Oklahoma, 1985-2015**



Source: US Energy Information Administration

Unfortunately, the compulsion to forecast has not gone away and during 2015 you could see claims that oil prices will stay low for many years to come (even going to less than \$20/barrel) as well as predictions that Saudi Arabia will soon win its battle with the American oil industry that now relies heavily on hydraulic fracturing and that crude oil prices will rise significantly before the end of 2016. The only thing that all of these forecasts have in common is that they will be wrong — and will be so even if they get the price and timing just right. This seemingly contradictory conclusion is easily explained.

Suppose that in June 2005, when the WTI was close to \$60/barrel, I would have correctly forecast that 10 years later the price would be also near \$60/barrel. But would I (would anybody) have forecast in June 2005 all those enormous shifts that led to the 2015 price and that have reshuffled the global economy? They included the worst postwar economic downturn of 2008 and 2009 (when oil prices collapsed from the peak of about \$140/barrel in June 2008 to less than \$40/barrel by the year's end) and China's emergence as the world's second-largest importer of crude oil, followed a few years later by a sharp slowdown of the country's economic growth. And nobody in 2005 envisioned the rapid impact of a new, unprecedented way of crude oil (and natural gas) extraction: in that year hydraulic fracturing of American shales was producing about 0.35 million barrels per day (Mbd); a decade later it was extracting 4.6 Mbd, or equivalent to about 45% of the total Saudi crude oil output.

### **Economic Winners & Losers: Dubious Categories**

The impossibility of getting the entire setting right (even if one were lucky enough to hit on a right price) has been the main reason for my decades-long refusal to engage in forecasting — and I have been also questioning all of those simplistic designations of winners and losers created by low or high oil prices. That has been always a dubious categorization and it has become even more so in the early 21st-century economy as gains and losses are increasingly commingled and as it gets more difficult to establish net benefits for a particular nation, region and the world.

Every oil consumer would appear to be a winner because low crude oil prices should translate not only into lower costs of direct consumption of refined oil products (fuel oil for heating, gasoline, kerosene and diesel oil for transportation) but also into lower costs of manufactures and food (a matter of considerable importance for Japan where food imports make up about 60% of the total consumption). Worldwide savings due to cheaper oil look impressive: selling about 4.2 billion tonnes of annual global crude oil output at about \$50/barrel (the mean price for the OPEC basket of crude oils in 2015) rather than at \$96/barrel (the mean for 2014) adds up to savings of about \$1.4 trillion; for comparison, only 13 of the world's nearly 200 nations had a larger GDP in 2014.

But in relative terms the sum is much less impressive: when using the International Monetary Fund (IMF) data it is the equivalent of just 1.8% of the world's economic product. And while the countries that are heavily (or entirely) dependent on importing crude oil have been the greatest beneficiaries, this windfall has not changed their economic fortunes. Taking, again, the difference between average OPEC basket prices for 2015 and 2014 and assuming that their 2015

purchases remained at the 2014 level, China would have saved more than \$90 billion on its crude imports, and Japan about \$52 billion. These savings would amount to less than 5% of China's and less than 7% of Japan's total merchandise imports in 2014. Incomplete import data show that the actual 2015 savings will be larger in China as the country stockpiled oil at a rate nearly 10% higher than in 2014. In contrast, in 2014 Japanese crude oil imports were the lowest for the previous 26 years and in 2015 they declined further, reducing the overall savings from lower prices.

But in neither instance have these savings been large enough to make any difference to overall economic trajectories. Low oil prices could not alter China's continuing economic slowdown and they had no effect on excessive spending on construction, huge overcapacities in the steel and cement industries, unsustainable accumulation of company debt and high government subsidies. And Japanese savings on oil imports in 2015 are too small to affect the country's fundamental challenges, above all its now near-chronic economic stagnation, weakening of the manufacturing sector and decline of agricultural production. Moreover, persistent lower oil prices would further strengthen the Japanese economy's undesirable tendency toward deflation.

While consumer savings have not resulted in any fundamental changes, lower crude oil prices have already created problems. Most notably, oil-producing countries have had \$1.4 trillion less to tax, and the oil-and-gas industry has reduced its capacity to employ people and to invest in developing untapped resources. The effect on major oil-producing countries has already negated any consumer benefits from cheaper oil. In Canada's oil-rich Alberta, the unemployment rate rose by 55% between July 2014 and November 2015 and the province has a large budget deficit. In the United States, the total count of oil- and gas-drilling rigs declined from nearly 1,900 in July 2014 to 737 in December 2015, a 60% drop, and the industry lost about 200,000 jobs.

Most importantly, oil companies are deferring or completely cancelling their capital expenditures: in 2014 they increased by about 16% but they were expected to fall by 20% in 2015. Wood Mackenzie (a consultancy group) estimated in 2015 that the financing of new projects worth \$1.5 trillion is at risk if low prices were to persist in 2016 as most of the contemplated new projects would not be economical with oil at less than \$50/barrel. This matters a great deal as reliable global oil supply depends on constant addition of new capacities because the world's oilfields are being depleted at an annual rate averaging slightly more than 5%.

### **Geopolitical Consequences: Wishful Thinking & Realities**

Will the recent spell of low oil prices weaken the importance of the Middle East? Saudi Arabia, the world's largest crude oil exporter, has been already the largest immediate loser: the Saudi budget deficit is expected to reach 20% of GDP in 2015 as government revenues come some \$80 billion below the 2014 intake. And will low oil prices help to destabilize Russia? Russia derives about 70% of its foreign earnings from the sales of crude oil and natural gas, and having its profits more than halved was an important factor in its GDP decline in 2015. And yet neither Saudi Arabia nor Russia are willing to

Photo 1: AFP=JJI



Drilling rig producing crude oil by hydraulic fracturing in the Bakken Shale formation of North Dakota.

Photo 2: Petroleum Association of Japan



East Asian economies are particularly dependent on imports of Middle Eastern crude oil by giant tankers.

reduce their extraction in order to raise the price because they fear a loss of their market share to higher-cost producers who will benefit from increased prices. Saudi Arabia in particular — with its substantial reserves (nearly one-sixth of the global total), with its deep-set loathing of *shi'i* Iran and with its worries about insurgent Yemen on its southern border — is unlikely to make any production cuts especially as they would directly benefit Iran.

Many comments cite IMF and other analyses that show oil prices needed for individual OPEC countries to balance their 2015 budgets: the estimates range from \$67 to \$78/barrel for Kuwait, around \$105/barrel for Saudi Arabia and about \$130/barrel for Iran. This is a curious way for commentators in the US or Japan to gauge a nation's economic predicament: when was the last time their own countries had budgets in the black? The US had its last budget surplus in 2001 and it had deficits in 58 out of the 70 postwar years, while Japan had its last government budget surplus in 1992 and its government debt/GDP ratio is the world's highest. True, Middle Eastern oil producers are highly dependent on oil revenues but they have been also extraordinarily wasteful and can trim their spending. Moreover, many of them have substantial reserves and will be able to cope with years of low oil prices (Saudi Arabia had about \$650 billion in September 2015 and an AA credit rating).

And, as the Iranian experience shows, determined non-democratic governments can defy the odds of their long-term survival: in four years' time it will be four decades since the fundamentalist mullahs took control of Iran and they have kept it despite various degrees of economic sanctions put in place by the US and international community in 1979, 1984 and 2006, and despite chronic shortages of investment and technical modernization that have restricted sales of Iranian oil. Their rule will not collapse just because of another drop in oil prices. Similarly, low oil prices will not topple Vladimir Putin's rule of Russia. The country has more than \$350 billion in foreign reserves, most of Europe depends on its natural gas exports, and with its annexation of Crimea, support of the rebels in eastern Ukraine, more aggressive attitude when dealing with NATO countries and entry into the Syrian civil war, Russia has not exactly behaved as a chastened or soon-to-be-destitute nation.

Even if low oil prices were to persist for some time, their lasting impacts should not be exaggerated, and wishful thinking should not

displace the recognition of some fundamental realities. Many commentators see the latest oil price decline as the beginning of OPEC's end in general, and of the importance of Middle Eastern oil in particular. This is not the first time we have heard premature obituaries for OPEC and this time the arguments have been based largely on the success of US hydraulic fracturing that has made the country, once again, the world's largest crude oil producer and hence in much less need of imports. Some American analysts have even claimed that shale oil extraction has essentially severed the linkage between the chronic geopolitical turmoil in the Middle East and the price of crude oil and equities (*Photo 1*).

But a fulsome recognition of the technical and managerial success achieved by US oil producers does not change the following facts. First, the US shale oil extraction of close to 5 Mbpd represents only 5% of the global crude oil demand in 2015 and even if oil prices were higher, annual shale oil output is not expected to rise substantially above its 2015 rate. Even with the lifting of the ban on the exports of American crude oil, shale oil sales cannot displace the significant share of oil imports to the EU and Asia.

Second, even during the time of its peak oil imports the US relied always primarily on Canada, Venezuela and Mexico, while Middle Eastern oil supplies were always vastly more important for Europe and Asia, and will remain so for decades to come. Third, the Middle East remains the region with the largest reserves of conventional crude oil: in 2015 it held about 48% of the global total, compared to less than 3% in the US, just over 1% in China and a mere 0.3% in India. Inevitably, these two large Asian economies, as well as all other populous Asian nations (Indonesia, Pakistan, Bangladesh, Japan), will continue to rely on the region (*Photo 2*).

Just a few years of inadequate capital expenditures in the global oil industry will suffice to turn a small global oil surplus to a small looming oil shortfall — and oil prices over-react precisely to such signals. Much as a relatively small surplus can depress the price, the mere prospect of a small deficit can send it soaring and countries and consumers enjoying cheap crude oil today will pay for their temporary relief tomorrow.

## Environmental Implications

Yet another perspective is possible: to see low oil prices as harbingers of a wider and fundamental shift away from fossil fuels and toward renewables. Declining demand (or at least the declining growth rate of additional demand) could be seen as a more important reason for the recent price drop than is any excess extraction, and the trend clearly points toward further weakening of oil demand as the global economy embarks on mass-scale decarbonisation aimed at keeping global warming to an average of no more than 2°C. But such an interpretation would be yet another kind of wishful thinking.

The overwhelming majority of recent renewable energy gains have been due to electricity generation by photovoltaic cells and wind turbines, not due to displacement of refined oil products by biofuels. Compared to the rapid growth of solar and wind-driven electricity generation — global increases in their annual generation were, respectively, 186-fold and 24-fold between 2000 and 2014 — production of biofuels has remained a subdued affair. Worldwide production of modern biofuels has expanded by less than eight times since the year 2000, two-thirds of it coming from only two countries (ethanol from corn in the US and from sugar cane in Brazil); most nations have no domestic production capacities, and the aggregate output of plant-based ethanol and biodiesel is equivalent to less than 2% of the world's 2015 consumption of refined oil products.

There are simply no near-term substitutes to the delivery of more than 3.5 billion tonnes of gasoline, kerosene, diesel fuel and fuel oil that are required annually in global transportation. This market is not going to collapse anytime soon, and if the past is any guide then a prolonged period of low oil prices could postpone the adoption of more efficient vehicles. In 1981, with oil prices at an historic high, demand for small, efficient vehicles soared; just five years later, as the high prices collapsed, the first SUVs were introduced in the US but their widespread adoption could not have happened without the subsequent 15 years of low and stable oil prices. Of course, the shift could have been counteracted by appropriate legislation, but the US abandoned the upgrading of corporate average fuel economy standards in 1985 and returned to it only a quarter century later!

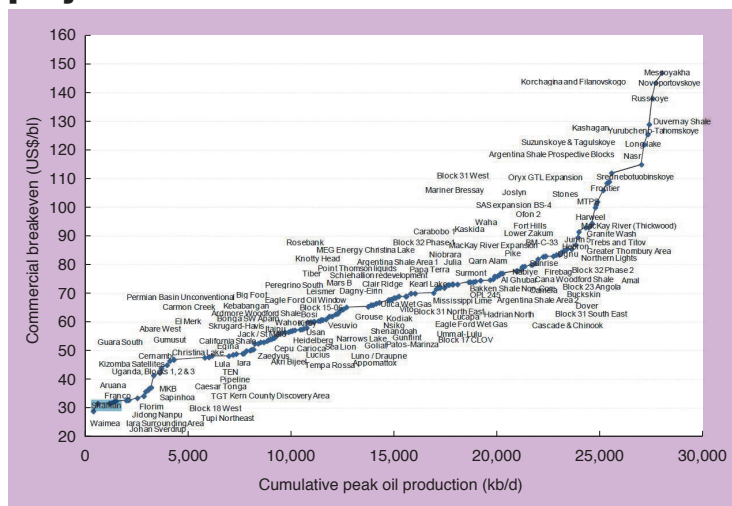
Another longer period of low oil prices may not have the same effect in low-income countries that are now in the early stages of automobilization, but it could encourage more rapid acquisition of new vehicles and, even in rich economies, it could postpone mass adoption of hybrid vehicles and electric cars. This would have unfortunate environmental implications, above all in Asia and in Africa. Most megacities in low-income and rapidly modernizing economies (be it Beijing or New Delhi, Cairo or Jakarta) suffer from heavy, near-chronic air pollution and a longer period of low oil prices could make these burdens temporarily worse, particularly in China (now the world's largest passenger car market) and India.

### Netting the Impacts: Can It Be Done?

Low, or relatively low, oil prices may last for an extended period of time, particularly if the overextended and deeply indebted affluent

CHART 3

## Commercial breakeven for the top 360 oil projects



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economies with aging (and some even declining) populations stagnate, and if China, the most important demand driver of the past generation, experiences a further economic slowdown. But an eventual return to higher prices is inevitable, as is the re-assertion of the critical role of OPEC's Middle Eastern producers. Their breakeven costs are well below \$25/barrel, far lower than anywhere else, and they have most of the world's oil reserves: that is a powerful combination in a world that requires more than 4 billion tonnes of crude oil a year, whose oil reserves are being depleted at an annual rate surpassing 5%, that has no ready substitutes for refined liquid fuels in transportation, and whose new oil projects have breakeven costs mostly well above \$60/barrel (Chart 3).

As we are experiencing another spell of low oil prices we must be aware that, much like high prices, they bring their own commingled advantages and problems. Moreover, given the necessity of different metrics for a range of desirable and undesirable consequences that may result from a prolonged period of low prices (how do we find a common denominator for reduced import dependence and worsened air pollution?), it may be impossible to conclude if a family, a nation or the world are, in the long run, better off with oil at \$50/barrel rather than at \$80/barrel.

But this reality is not unique: in modern societies dependent on complex technical, financial and social arrangements that also bring a wide range of undesirable side-effects and (often unintended) consequences it is often impossible to get a clear net appraisal of overall impacts. What is to be preferred: low or high oil prices? Setting aside the obvious extremes (say <\$10/barrel and >\$150/barrel), the only honest answer is: it depends... followed by a list of pros and cons.

J.S.

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