

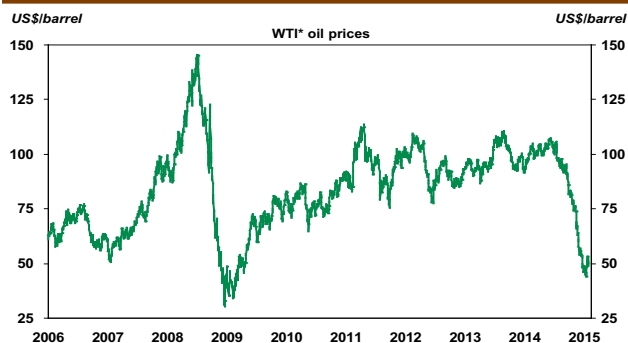
Where will oil prices go now? Three major trends are possible in a complex environment

The drop in oil prices since mid-summer of last year has been spectacular. The price of West Texas Intermediate (WTI) oil went from more than US\$105/barrel to just under US\$45 in six months. Although prices have gone up a bit since February started, they are still very depressed, particularly when we consider that the global economy is not doing so badly. Generally, this is good news for energy consumers, but the results could be more mixed for oil exporting nations like Canada. There is therefore reason to wonder about the future trajectory of crude prices. After reviewing the factors behind the oil correction, this *Economic Viewpoint* shows that oil prices are very likely to come back to around US\$80/barrel in the next two years. That said, a variety of paths could take us there, and volatility could remain high.

OVERVIEW OF THE COLLAPSE BY OIL PRICES

For the global economy, the plunge taken by oil prices (graph 1) is the most striking phenomenon of the last six months. This correction came as a total surprise to analysts and the financial markets, which had been expecting prices to stay close to US\$100/barrel.

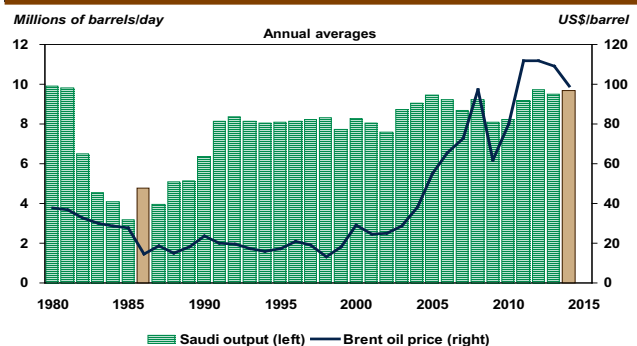
Graph 1 – Steep drop by oil prices



* West Texas Intermediate.
Sources: Datastream and Desjardins, Economic Studies

Unlike prior episodes, oil's current correction is not easy to explain. In 2008–2009, for example, the price collapse was closely tied to the financial crisis that plunged the world economy into recession. In 1986, the plunge was directly caused by Saudi Arabia's decision to flood the market by pumping up its crude output (graph 2). Most commentators

Graph 2 – Unlike the 1986 episode, oil prices did not fall because of a surge in Saudi output



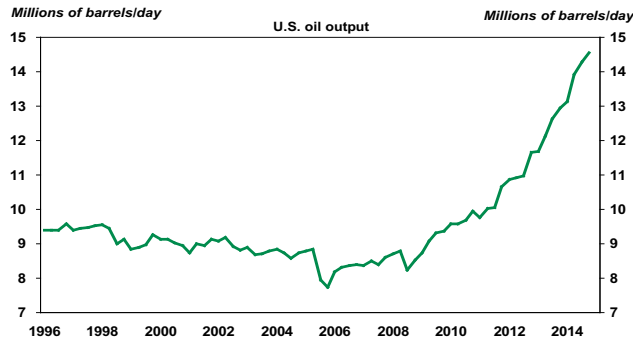
Sources: Bloomberg, Datastream and Desjardins, Economic Studies

explain the current drop in prices by the surge in non-conventional production in the United States and a Saudi “plot,” but the reality is somewhat more complex.

ABUNDANT SUPPLY

The spectacular rise of U.S. oil production associated with shale oil extraction is contributing to the current price weakness. The phenomenon did not start in mid-2014, however: the recent uptrend began in 2008 and hit a very impressive pace as of 2012 (graph 3 on page 2). The rise, in addition to solid growth in Canadian oil sand production, gives the global oil market some substantial leeway. Output growth is thus much less dependent on the Organization of the Petroleum Exporting Countries (OPEC). Nonetheless,

Graph 3 – U.S. crude output has jumped in recent years

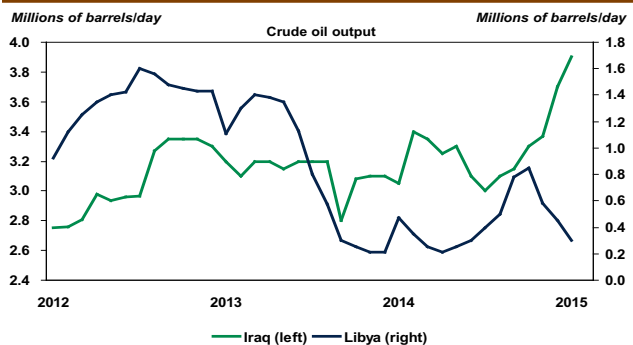


Sources: Energy Information Administration and Desjardins, Economic Studies

although North American output delivered surprising growth last year, it was not the primary trigger for the price correction.

The supply-side surprise mainly came from some OPEC nations. After Muammar Kadhafi fell from power, chaos overtook Libya, making oil production plunge. However, Libya managed to substantially increase its crude exports last summer. That unexpected inflow into an already very well supplied global market created a surplus and touched off the oil price slide. Despite the conflict with the Islamic State, Iraqi output also shot up, expanding the surplus supply and even offsetting the year-end pullback in Libyan output (graph 4).

Graph 4 – 2014 was marked by a temporary spike in Libyan output and strong growth in Iraq



Sources: Bloomberg and Desjardins, Economic Studies

DISAPPOINTING DEMAND

The surplus in the global oil market was magnified by oil demand growth that was much slower than forecast. At the end of 2013, the International Energy Agency (IEA) expected global oil demand to advance by about 1.2 mbd (million barrels a day) in 2014. With weaker-than-anticipated global growth, the IEA now estimates that demand only rose

0.7 mbd in 2014. This is due to larger demand pullbacks in advanced economies of Europe and Asia, and relatively soft growth in emerging markets, particularly China.

SAUDI ARABIA SAT ON ITS HANDS, TURNING THE CORRECTION INTO A COLLAPSE

The combination of the strong uptrend in North American output, surprise surge in Libyan and Iraqi exports, and weak demand led to a surplus in the global oil market of about 1.0 mbd in mid-2014, putting downside pressure on prices.

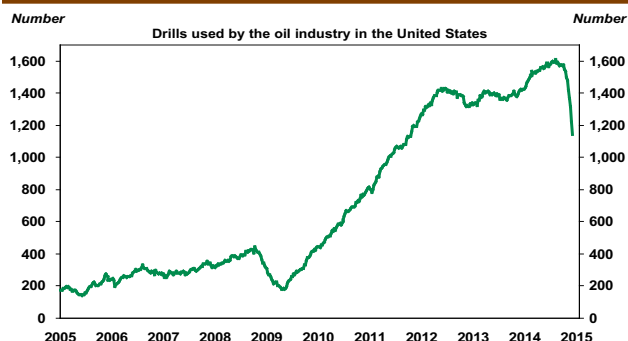
We have seen deficits and surpluses of this magnitude in recent years that have not prompted lasting movements by prices. Why? Because Saudi Arabia quickly adjusted its output to balance the market. The recent slide has been so brutal because Saudi Arabia suddenly changed its strategy. Rather than aiming for a balanced global market and a price of around US\$100/barrel, Saudi leaders opted to tolerate much lower prices in order to protect their market share. This change in stance was confirmed at the end of November, when OPEC decided to keep its quotas unchanged despite the surplus in the global oil market. That's when the oil price correction turned into a true shakeout.

FREE OIL MARKET = VIOLENT PRICE ADJUSTMENTS

With the Saudis no longer wanting to referee the global oil market, supply and demand must now be balanced via normal market mechanisms, that is, by finding a price that allows supply and demand to be in equilibrium. The problem with oil is that supply and demand are fairly price insensitive over the short term. In economic terms, they are said to be inelastic. On the demand side, for example, sharp price movements will not immediately change drivers' behaviour, as drivers often have to use their vehicles for essential reasons. Tumbling gas prices already seems to have boosted the popularity of gas guzzlers in the United States, but it will take several quarters for this to have any noteworthy effect on the U.S. auto fleet and demand for gas.

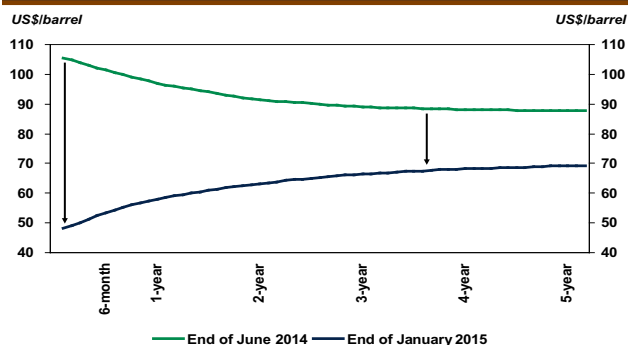
On the supply side, the price correction has already affected investment in the development of new oil production capacity (graph 5 on page 3). In the bulk of cases, however, producers will not shut down wells that have already been built since, once the capital expenditure has been borne, these wells will remain profitable as long as prices stay above their marginal production costs. Moreover, some very oil dependent nations could be tempted to maximize output to curb the slide of their revenues.

The combination of supply and demand that are very inelastic over the short term explains why it takes very big

Graph 5 – The oil industry is starting to slow operations

Sources: Baker Hugues and Desjardins, Economic Studies

price movements to rebalance the oil market, among other things to prompt speculators to hoard oil and sell it at a later date. It is therefore unsurprising that oil futures prices have not come down nearly as much as spot prices (graph 6), as this supports this type of speculation. If OPEC does not try to grab the reins of the oil market again, we can expect high price volatility as of now, akin to what is seen for other commodities with inelastic supply and demand (like natural gas and cereals).

Graph 6 – Oil price futures dropped much less than spot prices

Sources: Bloomberg and Desjardins, Economic Studies

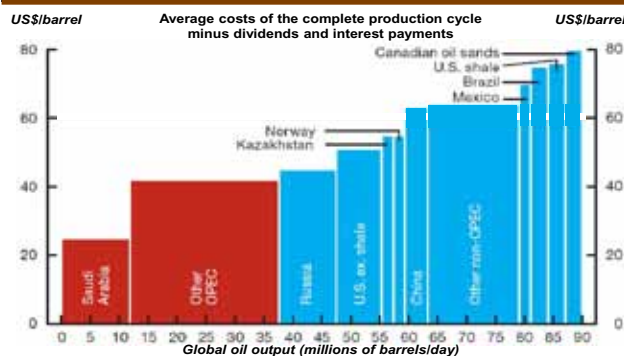
UNCERTAIN MEDIUM-RANGE SUPPLY OUTLOOK

Given the oil supply's inelasticity, we can expect global crude output to increase quite a bit again this year. The IEA expects non-OPEC output to rise 0.8 mbd in 2015, much of it coming from the United States and Canada. Note, however, that the forecast increase is less than half of 2014's. This reflects the gradual impacts that the drop in investment and drilling will have on production, particularly in the second half of 2015.

Overall, OPEC output should be fairly stable in 2015. The chaos in Libya does not point to a lasting rise in that

country's output. Iraqi output could go up somewhat further, but the risks of incidents affecting production there are very high. With most OPEC nations already producing at close to capacity, only a surge in Iranian or Saudi production could create a new supply shock. For Iran, this implies, however, that sanctions related to its nuclear program would be lifted, which seems unlikely. For Saudi Arabia, a major surge in output would also be surprising, unless prices come up substantially. All in all, we therefore estimate that global oil output should rise by just under 1.0 mbd this year.

However, the medium-term impacts on oil supply could be substantial if prices stay where they are for too long. Most of the fields outside OPEC and Russia aren't profitable at less than US\$50/barrel (graph 7). Consequently, the major oil companies have already announced rationalization measures or major cuts to investment this year and this trend will persist until prices have risen convincingly.

Graph 7 – Oil prices have fallen enough to curb the development of new output capacity

Sources: Bank of Canada and Energy Aspects

Given that shale oil fields tend to be depleted quickly, new drilling is essential to increase or even just maintain U.S. oil production. This feature of shale oil could make the supply react more quickly to the tumble by oil prices than we have seen in the past. According to the Bank of Canada, the break-even point for the major shale oil sites is between US\$40 and US\$80 a barrel¹ and producers will want to be assured of a much higher price before investing. The break-even points for new Canadian oil sands projects are even higher, at between US\$60 and US\$100 a barrel. Unlike what we have seen in recent years, if oil prices stay below US\$50/barrel for an extended period, the situation could thus trigger a substantial decline in North American output over the medium term.

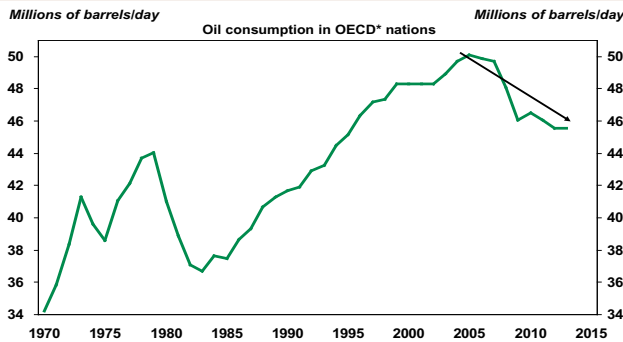
¹Speech by Bank of Canada Deputy Governor, Timothy Lane, January 13, 2015, www.bankofcanada.ca/2015/01/drilling-down-understanding-oil-prices/.

A BETTER ECONOMIC SITUATION IN ADVANCED NATIONS

Demand will play a critical role in price movements. Here, we can be more optimistic for 2015, as the United States will maintain a solid pace for economic growth, and the situations in Japan and the euro zone should improve somewhat. Specifically, Japan will no longer have to feel the backlash from an increase in the sales tax, especially as the government has announced a new support plan. This measure is in addition to the Bank of Japan’s (BoJ) efforts—the BoJ recently expanded its monetary policy measures and steepened the yen’s slide. In the euro zone, the European Central Bank finally decided to buy sovereign bonds to increase monetary stimulus, which should keep the currency and interest rates low. This won’t solve all of the zone’s problems, but will still help it move in the right direction.

Stronger economic growth does not guarantee stronger oil demand, however. Over the last several years, oil consumption in advanced nations has been trending down (graph 8). Of course, the 2008–2009 crisis was accompanied by a steep decline in oil consumption, but the ground lost was never subsequently recouped despite the economic recovery. That being said, a better economic context and low oil prices will help curb the slide by oil demand in advanced nations and could even stabilize it. The IEA expects OECD nations’ oil consumption to remain steady in 2015, at 45.6 mbd.

Graph 8 – In advanced nations, oil consumption has been declining since the 2005 peak

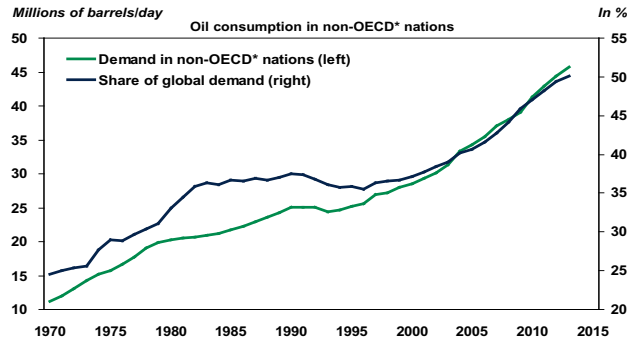


* Organisation for Economic Co-operation and Development. Sources: British Petroleum and Desjardins, Economic Studies

THE CONTRIBUTION FROM EMERGING NATIONS WILL BE MORE CRITICAL

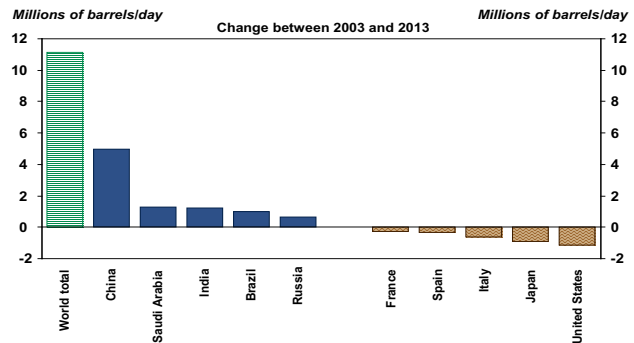
Unlike the trend in advanced nations, oil consumption is up sharply in emerging nations, now accounting for just over half of global demand (graph 9). China alone accounts for 12%, with the country ranking second behind the United States, at 20%. China stands out more for the change in demand, as the increase in its oil consumption over the

Graph 9 – In emerging nations, oil consumption is growing quickly



* Organisation for Economic Co-operation and Development. Sources: British Petroleum and Desjardins, Economic Studies

Graph 10 – The five biggest increases and five biggest declines in oil demand



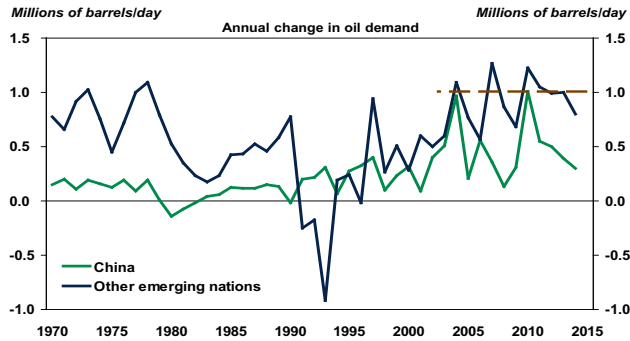
Sources: British Petroleum and Desjardins, Economic Studies

last 10 years represented about 45% of the global change (graph 10). Here, the United States is dead last, with its consumption down over 1.0 mbd since 2003.

China’s economic growth is now flirting with the 7% mark rather than 10%; this could justify some doubt about future oil demand. Chinese demand could rise 30% slower than it did on average over the last 10 years if we assume the rate as proportional to the rate of economic growth. Over the last few years, the trend for global oil consumption showed an annual increase of about 0.5 mbd in China. It might therefore only go up 0.3 mbd in the coming years, about the growth seen in 2014.

The other emerging nations should still offset China’s weaker economic growth. Our projections put overall growth by the emerging economies at 4.4% for 2015 and 4.9% for 2016. This is much faster than the 4.1% estimated to date for 2014. In the end, this should allow the other emerging nations to add about 1.0 mbd per year to global consumption. The increase would be in line with the average in recent years, but higher than the increase recorded in 2014 (graph 11 on page 5).

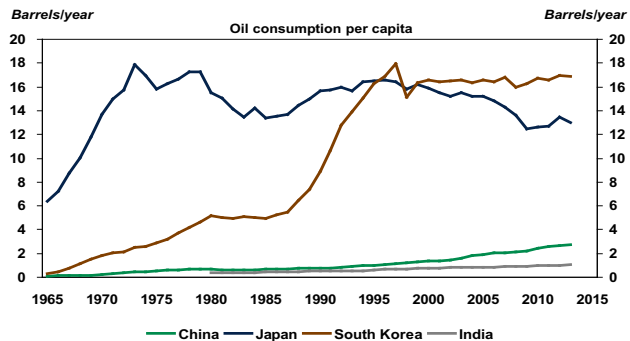
Graph 11 – Growth by oil consumption will be sustained in the other emerging nations



Sources: British Petroleum, International Energy Agency and Desjardins, Economic Studies

Relying on economic growth, however, risks underestimating oil demand in emerging nations, especially over the longer run. Reaching a more advanced stage of development and the emergence of a middle class that is acquiring the transportation habits of advanced nations usually come with a major surge in oil demand. In comparison, China is still far from seeing the boom in demand recorded in Japan in the 1970s, and Korea in the 1990s (graph 12). A five-barrel-a-day increase in consumption per capita over 10 years would be a much bigger increase than seen in the last 10 years. More specifically, this would be an average annual increase of 1.86 mbd for China alone.² Although this forecast seems unlikely in the near term, it remains credible over a 10-year horizon, especially as this assumption only reflects a fraction of the advance recorded in Japan and Korea. Environmental constraints make overly optimistic scenarios for China less likely.

Graph 12 – Inhabitants from emerging nations are still not consuming nearly as much as those from advanced nations



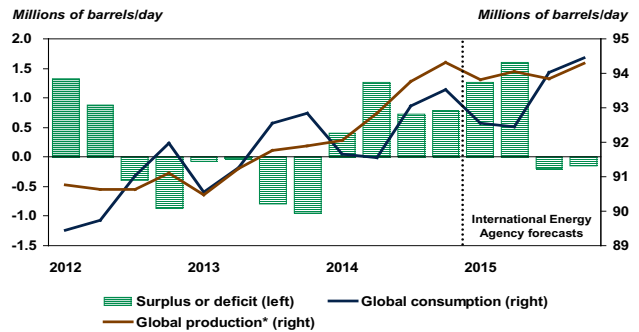
Sources: British Petroleum, International Monetary Fund, Energy Information Administration and Desjardins, Economic Studies

² Calculation: Population of 1.36 billion x 0.5 barrel more per year = 680 million barrels per year or 1.86 million barrels a day.

THE OIL SURPLUS SHOULD DISSIPATE OVER THE NEXT FEW QUARTERS

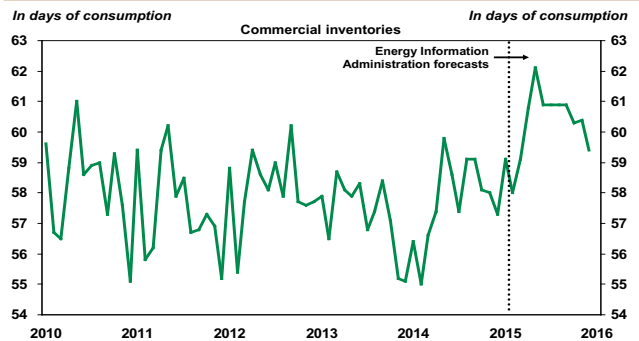
We therefore expect global oil production to rise by just under 1.0 mbd in 2015, with demand rising a little more, that is, 1.3 mbd. This should help reduce the 0.8 mbd (approximate) surplus seen in the global market last year. The IEA's quarterly forecasts, which are consistent with our annual expectations, suggest that a substantial surplus in the first half of the year will give way to a market that is close to equilibrium at the end of 2015 (graph 13). We can, however, expect global crude inventories to rise in the coming months (graph 14), which should help keep prices relatively low for a while longer.

Graph 13 – After expanding in early 2015, surplus oil supply will dissipate in the second half



* Assuming that production by the Organization of the Petroleum Exporting Countries (OPEC) remains stable at 30 million barrels/day.
Sources: International Energy Agency and Desjardins, Economic Studies

Graph 14 – In OECD* countries, petroleum product inventories will rise in the coming months



* Organisation for Economic Co-operation and Development.
Sources: Energy Information Administration and Desjardins, Economic Studies

The situation could change more substantially as of 2016 if prices stay at levels that discourage the development of new production capacity. The surge in North American output should therefore give way to near stagnation as of next year if oil prices stay around US\$50/barrel. Since global demand could easily advance 1.5 mbd per year in the context of more robust economic growth and very low prices for petroleum products, global supply would become very dependent on OPEC, as happened in the early 2000s. The fears of an oil shortage could quickly come back to

haunt the global economy. Recently, this scenario prompted OPEC’s Secretary General to say that an overly low price that discouraged investment paved the way for oil at US\$200/barrel.

An upswing by oil prices could help get the global market to equilibrium and keep it there. If demand growth is modest, a return to around US\$70/barrel could be enough over the medium range to support shale oil production. Given more robust demand, it would take a surge to around US\$90/barrel to encourage rapid development of costlier fields such as the oil sands.

THE DOLLAR EFFECT

The strong U.S. dollar could limit oil prices’ upside potential. The U.S. dollar is up more than 10% since July against all global currencies (graph 15). Outside the United States, a barrel that costs US\$90 would cost the same as a barrel at US\$100 six months ago. Obviously, the relationship between the equilibrium price and the exchange rate is more complex. Among other things, the United States consumes a lot of oil and is not directly affected by exchange rate movements. Nonetheless, the equilibrium price could be slightly lower due to the greenback’s rise. The U.S. dollar is expected to stay strong in the coming quarters.

Graph 15 – The U.S. dollar has shot up since last summer



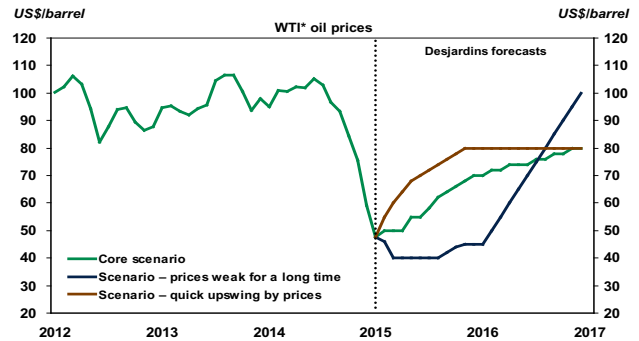
* Index calculated based on a broad basket of currencies, and trade weighted. Sources: Datastream and Desjardins, Economic Studies

PRICE INCREASES IN SIGHT: IT’S ALL ABOUT THE PACE

In short, the current weak oil prices do not seem sustainable over the long term. It would take a major demand shock to keep them this low, such as another global economic recession, or a rapid increase in supply, something that is unlikely at the current prices. An analysis of supply and demand trends argues for an equilibrium price range of US\$70 to US\$90 for one barrel of WTI. Such a range would provide for adequate production capacity development, in line with projections for demand. That said, the upswing will not necessarily occur quickly, and volatility could remain high.

We can see three scenarios for a rise by crude prices (graph 16). This first scenario would involve a gradual rise starting around mid-2015, powered by signs of improving global economic growth. Investment in production capacity would slow moderately, which would be enough to avoid maintaining an oil surplus without having too big an impact on supply over the medium range. This seems the most likely scenario, given our economic outlook.

Graph 16 – Scenarios considered for oil prices



* West Texas Intermediate. Sources: Datastream and Desjardins, Economic Studies

In the second scenario, oil prices would remain low for an extended period and could even drop to fresh lows. OPEC’s new attitude and more persistent weakness in the global economy would maintain an oil surplus for longer, despite the initial slowing of oil production. The expected increase in oil inventories in the short term could also generate more downward pressure on prices. However, if prices were to remain low for a long time, this would result in an even sharper decline in investment in new production capacity. After several quarters of underinvestment, fears of shortages would resurface, powering a sharp rise by oil prices. Prices would probably go above the equilibrium range, then come down later once production capacity is deemed adequate to meet demand.

Lastly, the markets could be more reactive to good economic news or signs that supply is adjusting to low oil prices. Prices would start to rise earlier, and would rise more quickly than in the first scenario. However, the risks of overvaluation would be lower than in the other two scenarios, given that the slowdown of oil sector investment would be more limited.

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