

High Crude Oil Prices and U.S. Shale Oil Output Expansion

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Crude oil prices have remained high this year, averaging \$108/barrel for the Brent futures and \$98/barrel for the West Texas Intermediate futures in the first 11 months of the year. The average Brent price has stayed above \$100/barrel for three years since 2011. High crude oil prices are significant for the following three reasons: (1) crude oil prices are the base for prices of oil as the largest primary energy source, (2) oil price changes affect the prices of other energy sources including natural gas in various ways depending on regional conditions (liquefied natural gas prices in Asia are directly linked to crude oil prices), and (3) crude oil price hikes impact the international economic power balance by passing economic costs onto oil consuming and importing countries and great economic benefits onto oil producing and exporting countries. Particularly for Japan that has increased its dependence on LNG and oil power generation due to a heavy nuclear generation loss after the March 2011 Great East Japan Earthquake, the past three years' high crude oil prices to which LNG prices are linked have brought about a heavy economic cost. Coupled with the yen's depreciation since late last year, high crude oil prices have substantially inflated fossil fuel import costs. As a result, Japan is expected to log a heavy trade deficit of 12 trillion yen for FY2013 ending next March.

Crude oil price hikes are thus a grave problem for the world economy and the Japanese economy. In this sense, factors behind the price hikes or fluctuations attract attention. This year has seen some geopolitical risk factors – (1) the tense Syrian situation, (2) international negotiations on Iran's nuclear program and (3) an oil production decline amid security deterioration in such countries as Libya – as well as some financial factors – (4) global monetary easing including continued U.S. quantitative easing, and excess liquidity, and (5) stock, real estate and commodity investment choices – and supply and demand factors – (6) economic conditions in the world including China, and fluctuations in resources demand, (7) oil production policies in Saudi Arabia and other major Middle Eastern oil producers, and (8) growing U.S. shale oil production. These factors have been complexly intertwined to cause crude oil price fluctuations. Crude oil prices will remain susceptible to developments regarding these factors in the future. Each factor is important and worthy of sufficient explanation. But this brief report focuses on the growing U.S. shale oil production and analyzes the factor from some different angles.

As is well known, the advancement and diffusion of technologies, such as horizontal drilling and hydraulic fracturing, have reduced shale oil production and development costs substantially, playing a key role in boosting shale oil output. Even after the decline, shale oil production and development costs (which differ considerably from region to region or from project

to project) are still far higher than conventional crude oil production and development costs in major Middle Eastern oil-producing countries. Nevertheless, high crude oil prices have allowed US shale oil output to expand by 2 million barrels per day over the past several years. This means that the shale oil production increase is an effect of high crude oil prices. If crude oil prices decline substantially, therefore, the shale oil production increase could be affected. Such development may work to reduce a global oil supply expansion.

At the same time, however, there are different views of the relationship between the shale oil production increase and crude oil prices. While global oil demand has expanded moderately over the past three years of high crude oil prices, non-U.S. oil supply excluding oil from the Organization of the Petroleum Exporting Countries has leveled off. The U.S. oil production expansion has thus played a great role in increasing global oil supply. This means that crude oil prices have remained high even despite the sharp production expansion in the United States. If the U.S. oil output expansion had been absent or smaller, the global oil supply-demand balance could have been tighter, with crude oil prices rising further. There may thus be a view that the U.S. shale oil output expansion has put a brake on crude oil price hikes through its impact on the global oil supply-demand balance. This view is combined with the abovementioned one to indicate that the shale oil production expansion has exerted influences on the upper and lower limits of crude oil prices.

We may have to pay attention to another point regarding the shale oil output expansion. The output expansion has impacted not only the absolute crude oil prices but also relative relations between crude oil prices. The gap between the two global benchmark prices, Brent and WTI, narrowed to around \$5/barrel in the first half of 2013 and expanded to more than \$15/barrel in the second half. Behind the gap are basic or characteristic differences between the two benchmark crude oil brands. Without being exported, the WTI is susceptible to U.S. domestic supply-demand factors. In contrast, the Brent comes under the direct impact of the international market. Behind the recent expansion in the gap, a decline in crude oil output in Libya has supported the Brent price and the U.S. crude oil inventory growth has exerted downward pressure on the WTI price. Another interesting point is that the Brent price's gap not only with the WTI but also with Louisiana Light Sweet among other major U.S. crude oil brands has grown more remarkable. Until the first half of this year, the LLS, which is exposed to competition from imported crude oil in the Gulf of Mexico, had been close to the Brent in price and had a gap of nearly \$10/barrel with the WTI. But the LLS has come closer to the WTI and widened its gap with the Brent. In the past, the local bottleneck factors (including pipeline bottleneck) regarding WTI transactions had exerted downward pressure on the WTI price alone. At present, however, U.S.-wide bottleneck factors might have begun to affect a wide range of U.S. crude oil brands. Behind this change has been the large increase in shale oil production and a U.S. ban on crude oil exports.

Behind the Brent-WTI price gap have been not only the abovementioned supply and demand factors but also financial transactions to benefit from the price gap. From a macro viewpoint, however, the U.S. shale oil output expansion as one supply and demand factor has been a more important factor. U.S. natural gas and liquefied petroleum gas prices have deviated far from those in other markets, attracting attention amid the shale revolution progress. The crude oil market is known as the most developed and liquid among international energy markets. Even on the crude oil market

with this characteristics, the shale revolution has exerted influences. The United States may be entering a unique and isolated situation from other part of the world under the shale revolution.

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