

Living in an era where market fundamentals determine crude oil price

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Executive summary

There is a long-standing debate on which are the fundamental drivers of crude oil price. The main question concerns on which factors, market fundamentals, economic, (geo)political or other prevail on the formation of crude oil price. The dominant role of OPEC has been identified in previous decades. However, over the last years, the sharp penetration of shale oil producers, sharp decreases of crude oil prices, significant losses in balance sheets of OPEC members challenge the dominant role of OPEC and their potential to affect the crude oil prices. There is an extended literature review on oil prices and their main drivers. Many researchers conclude that oil price can be explained by economic and market fundamentals, while the shale oil revolution raised attention in the literature, as it proved to be a game changer. Many researchers suggest that oil prices are inflated or deflated asymmetrically to market conditions by increased speculation. Other studies focus on quantifying the influence of political and geopolitical factors.

This paper aims at quantifying the impact of the fundamental drivers of crude oil price, over the period 2008-2017 using monthly data. This period, with sharp fluctuations of crude oil prices, has not been examined thoroughly in the literature. We apply regression analysis to examine the crude oil price drivers, concluding that crude oil price follows mostly market fundamentals, such as consumption, OPEC production, shale production and days ahead consumption for OECD stocks. In our analysis we used the Huber White method (Huber, 1967; White, 1980) for heteroscedasticity and the conditional least squares estimation for ARMA. Results unveil the importance of both demand and supply factors to affect price. We also find evidence on the considerable impact of S&P crude oil index, as a “paper oil” market indicator. We do not find evidence from indicators measuring political instability, such as the number of terrorists attacks on oil producing countries, but as well the VIX volatility index, which -besides a market instability index- could also be perceived as an index incorporating political instability. The impact of political factors is not evident in our analysis, possibly because we do not consider related dummy variables. Moreover, the paper applies bivariate VAR and GARCH analysis to examine crude oil price volatility, not finding strong volatility transmission with the examined market indices, namely the S&P crude oil and the VIX indices.

The impact of OPEC production is much higher than that of shale oil, which have proved to be a game changer but vulnerable, being the marginal producer. The enhanced role of OPEC to affect crude oil price, incorporates its enhanced institutional capability to cooperate with non-OPEC producers, such as the Russian Federation. On the other hand, we find no evidence of political influence, possibly because we do not consider related dummy variables. We expect that these market conditions will continue to prevail as long as global crude oil demand, driven by global economic activity growth, could be met by an oversupply of crude oil, provided by several competitive crude oil suppliers.

Keywords: oil price; shale oil; OPEC; market fundamentals; volatility

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