

What Should be Taken into Consideration when Forecasting Oil Implied Volatility Index?

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Oil price volatility has triggered the attention of investors, portfolio managers and policy makers last decades. Most of the studies that focus on oil volatility forecasting use realized volatility as a volatility measure. In this study, we aim to develop a forecasting methodology on the most informative volatility measure, namely the oil volatility index (OVX), which is also looking-forward by nature, for the crude oil market.

This is the first study that develops HAR modeling frameworks by investigating the added value of other markets' IV indices (e.g. foreign exchange and commodity markets) in forecasting OVX. Moreover, since the long memory feature is prerequisite for the use of the HAR model, the investigation of the long memory as well as the incorporation of the dynamic model averaging (DMA) estimation technique make the contribution of the paper significant for both academics and investors.

The results show that the inclusion of the VXD in the modeling framework is considered of major significance and enhances the predictive ability of the models implemented on short- and mid-run forecasting horizons. This is in line with the literature that finds a strong relationship of oil price volatility and stock markets. More specifically, from this finding, we draw the conclusion that the implied volatility reflecting the future uncertainty of the largest companies' stocks prices is highly significant for generating accurate OVX forecasts. For longer horizons, the Energy Sector ETF Volatility Index (VXXLE) appears to have predictive information on OVX, which is explained by the fact that both focus on energy related uncertainty. Furthermore, it is observed that the various DMA models belong to the set of the best models, especially for short- and mid-run forecasting horizons, contrary to the simple HAR models that belong to the set of the best models at mid- and long-run forecasting horizons.

From the results of the paper, we suggest that academics and forecasters should take into account the strong existence of long memory in the time series of IV indices, which also justifies the use of the HAR model. Moreover, relying on the findings of this study, the IV indices from other asset classes offer incrementally higher forecasting accuracy of crude oil volatility, which is a useful outcome for future research.

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