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# Nonlinear Relationship between Crude Oil Price and Net Futures Positions: A Dynamic Conditional Distribution Approach

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## Abstract

This study examines the dynamic relationship between crude oil prices and net futures positions using a dynamic conditional density that can take account of time-varying bimodality. The shape of conditional density is modeled directly by specifying functional coefficients. We find that when the crude oil price is on the rise (decline), speculators tend to take long (short) positions to make profits and hedgers tend to take short (long) positions to cover the risk in the physical market. On the other hand, speculators have a positive effect on the price whereas hedgers have a negative effect. Therefore, when the price is on the rise (decline), speculators tend to push it up (pull it down) while hedgers tend to pull it down (push it up). This effect becomes stronger in the recent period. Moreover, the sharp increase of the crude oil price can be explained by speculating and hedging behavior through conditional higher-order moments.

**JEL code:** Q41; C22; G12

**Keywords:** Crude oil price; Net futures position; Generalized normal distribution; Nonlinear model; Bimodal distribution

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