The long-term memory dynamics of crude oil import payment pressure

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Abstract:

Because the dollar is the primary settlement currency in the international crude oil trade, the combined fluctuation of crude oil prices and exchange rate has a significant impact on crude oil transactions. Therefore, we took China as the empirical research object and proposed an index to respectively quantify the impacts on importing crude oil from five markets: Russia, Dubai, Oman, WTI, and Brent. Furthermore, we applied the R/S approach, sliding window and the complex network theory to detect the long-term memory characteristics of the payment pressure index, the evolution characteristics and mechanism of the time-varying memory, respectively. In our research, we found that (1) the overall fluctuation trend of the five import payment pressure indices are similar but local gaps exist; (2) the five indices all have strong positive long-term memories, that their future fluctuations might maintain the past trends. However, the acyclic cycles of their long-term memories are different; (3) the five time-varying memory series have different abilities to estimate reveasl of the import payment pressure index fluctuation tendency; (4) the global network topological characteristics demonstrate the fluctuation mechanism of the five time-varying memory series, and the community analysis provided references for monitoring the fluctuations of the original series.