A report on “Extreme Dependence Between Crude Oil and Stock Markets in Asia-Pacific Regions: Evidence from Quantile Regression”

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Summary:
In this paper, the authors address the following questions: (i) does the crude oil price affect the Asia-Pacific stock markets under consideration, (ii) is there any symmetric or asymmetric dependence of the Asia-Pacific equity markets on crude oil price changes, and, (iii) has the dependence structure changed since the onset of the recent global financial crisis.

Using quantile regression, the authors find that Asia-Pacific stock market returns exhibit positive lower-tail dependence with crude oil price changes and that this relation is strengthened during and after episodes of financial distress.

Comments to the authors:
My main comments and questions are as follows:

1. The model in Equation (7) must be specified more precisely. Specifically, it is completely unclear whether you try to study contemporaneous correlation or dependence with lagged crude oil price changes. At least the explanatory variables should thus get a time index in subscript, as conventional in the time-series context.

2. Based on the regression results for a set of quantiles and graphical representation of the quantile-specific correlation, you argue that asymmetric response is found. It would be nice, when you could underpin this argument based on a formal statistical test, see e.g. Bera, Galvao & Wang (2014).

3. You could provide the reader with a brief explanation of the terms structure and degree of dependence.

4. You should elaborate on the bootstrap approach that is employed to construct the confidence interval in Figure 1.

5. In Figure 1, a zero-line would help the reader to detect (statistically) significant correlation. Moreover, the quantile-specific coefficient on oil is denoted by $\beta(\tau)$ in Equation (7) but in Figure 1 you always refer to ‘taus’.

6. Can you provide a reference for your statement that “volatility of crude oil prices has a greater impact on Asian economies than the economies of developed countries” (p. 1).

7. If you explicitly state that quantile regression is advantageous over other approaches such as copula estimation you should briefly elaborate in which sense it is better. Else, your statement appears (scientifically) unfounded. To put it another way, what makes quantile regression more flexible than, for instance, copula approaches?

8. I suggest to rewrite Equation (1) as: $r_{i,t} = 100 \times (\log(P_{i,t}) - \log(P_{i,t-1}))$ where $i$ refers to either Oil or a specific stock market.
9. Parameter estimation for very extreme quantiles (such as the 1% or 99%) is often rather imprecise since only few observations are available. In Figure 1 this becomes apparent by widened confidence bands at the extreme lower and upper tail. Therefore you could think about focusing on a different subset of quantiles (e.g. 5%–15%, 50%, 85%–95% quantiles).

10. The readability of tables can be improved by avoiding vertical (cell) borders.

11. I suggest to replace “geopolitical events” by “economic and geopolitical events” in paragraph 2 on page 2.

12. The literature review (Section 2) should be more concise by focusing on studies investigation the link between crude oil and stock markets. In particular, the reference to Silva et al. (2014) who employ a copula approach to study the relationship between the equity and the CDS market is superfluous in my view.

13. You argue that using returns “reduces the impact of the exchange rate” on the (estimated) link between the two markets (p. 4). I understand that both the exchange rate and crude oil prices can change between period $t-1$ and $t$. Can you elaborate on this?

Literature, other than cited in the paper: