

# Discussion:

## Commodity Price Shocks: Order within Chaos?

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# What this paper is about

- ▶ Break down commodity price fluctuations into permanent and transitory components
- ▶ Across commodities, assess importance of each, and document cycles
- ▶ Permanent component more important for agricultural, less for energy

# Main comments

Very good paper ; methodology and results very well documented.

- ▶ **Main 1 : Economics.** The statistical analysis is very good. But I suggest integrating more economics to help interpret the findings, and also to formulate testable research hypotheses.
  - ▶ E.g., what is the economics behind permanent/transitory components ?
  - ▶ Which economic predictions would be consistent with specific cycles being more/less important for each commodity.
  - ▶ Exploit theory, e.g. (in)elastic demand/supply, etc.

- ▶ **Main 2 : Statistical tests.** Conduct within- and between-group statistical tests to validate differences/similarities in commodities.
- ▶ Indeed, Tables 3-5 suggest similarities within, but different between, commodity groups. Are they significant ?

- ▶ **Main 3 : Robustness.** A useful robustness check might be to use discrete wavelet transforms to decompose each commodity's time series variation into orthogonal additive components, each linked to a specific timescale (e.g., 1-2 years, 2-4 years, 4-8 years, etc.) (e.g., Gençay, Selçuk & Whitcher 2002). Then each timescale can explain a % of variation.
- ▶ Another useful check would be to conduct Out-of-Sample forecasts to validate model accuracy. End the "In-sample" e.g. in 2016 (for model estimation) and conduct OOS for 2017-2020.

## Other comments and suggestions

1. The paper's introduction mentions commodity prices and terms of trade shocks. It is not clear whether trade shocks (e.g., capital inflows) affects commodity prices or vice versa.
2. Discuss relative importance of demand vs supply forces for each commodity.
3. Add more economic motivation for choosing frequencies 0-2, 2-8, and 8-20 years.
4. It was not clear whether  $ST$  is the same  $\epsilon$  epsilon error term, or whether it includes nonzero mean variation plus  $\epsilon$
5. Results show the  $ST$  component is small, but if the sample frequency were daily (such as commodity futures prices), it would probably be greater.

6. There is a literature (e.g. Schwartz 1997) that models prices using several latent risk factors, each of which is a stochastic process (either gBm or OU), could you relate the permanent/transitory to such models?
7. Run some tests for stochastic trends vs deterministic trends, because economic story is different.
8. Gather other economic data on variables related to commodity prices to provide stronger evidence for some of the interpretations.
9. Might policy implications of the results for commodity-currency countries (or emerging economies with important export crops) be affected by whether commodity prices are defined in US dollars or US dollar index (basket)?
10. What do the authors mean by nonlinearities? Usually this means models such as Tong (1983) or Teräsvirta (1994), or chaos (Brock & Dechert 1991). I suggest clarifying.