Financialization and Commodity Market Serial Dependece

Zhi Da, Ke Tang, and Yubo Tao

Discussed by: Qifei Zhu
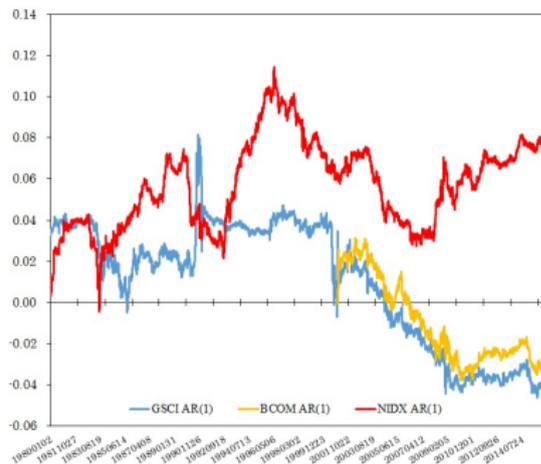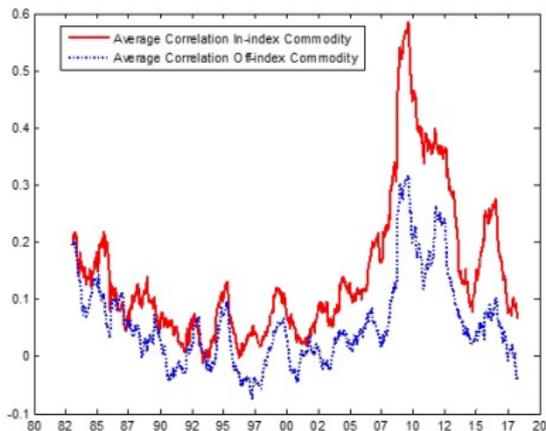Nanyang Technological University

ABFER 2019

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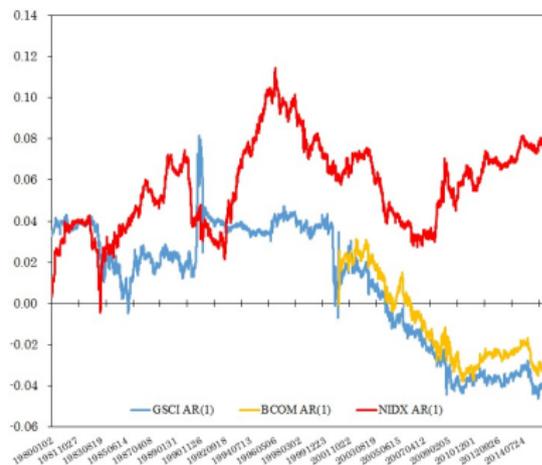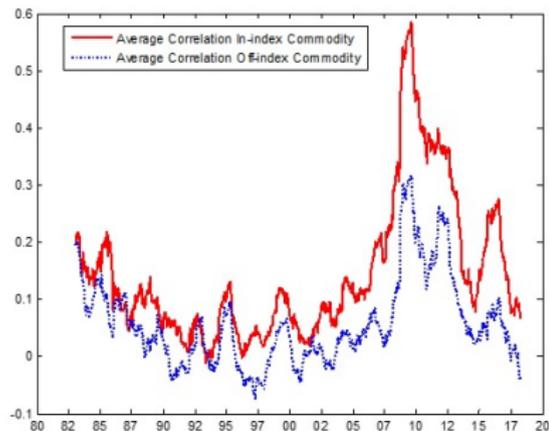
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- Goal: establish causal relation between 1 and 2/3.

What does this paper do (and find)?

1. News-based sentiment of *other* indexed commodities is positively (negatively) associated with contemporaneous (subsequent) return of commodities in the index.
   - Impact stronger during periods of high index trading.

2. Negative autocorrelation is more pronounced during periods of high index trading.
   - Exploit the difference in commodities' weights in two indices (GSCI BCOM).

Spillover effect of sentiment on commodity returns

Cross-predictability of news sentiment:

$$r_{it} = \beta_0 + \beta_1 Cnn.Sentiment_{it} + \theta X_{it-1} + \epsilon_{it}$$

Variables	Panel A: Contemporaneous		Panel B: Predictive	
	Indexed	Non-indexed	Indexed	Non-indexed
Cnn. Sentiment	0.0605***	0.0507***		
	(21.47)	(13.21)		
L.Cnn. Sentiment			-0.0052*	-0.0015
			(-1.86)	(-0.41)
L.Return	-0.0121*	0.0722***	-0.0116	0.0721***
	(-1.69)	(7.61)	(-1.60)	(7.53)
L.Basis	0.0039	0.0055	0.0037	0.0048
	(0.61)	(0.40)	(0.58)	(0.35)
L.Illiquidity	1.58e-05***	1.08e-07	1.56e-05***	1.11e-07
	(2.66)	(1.23)	(2.59)	(1.30)
L.ΔOil ImVol	0.0001***	1.06e-05	0.0001***	2.32e-05
	(4.06)	(0.23)	(4.12)	(0.49)
Intercept	-0.0006*	0.0004	0.0010**	0.0004
	(-1.64)	(0.88)	(2.41)	(0.87)
Sector Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
# of Obs.	38,165	19,312	38,149	19,305
# of Individuals	16	8	16	8
Overall R-squared	1.50%	1.69%	0.29%	0.71%

- News or sentiment?

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- What about news sentiment of Commodity i itself?
    - Should be a horse race between *OwnSentiment* and *Cnn.Sentiment*.
    - Sentiments are likely to positively correlated across commodities.

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- Time-series variations vs. cross-sectional variations.

- Statistical inference: current version uses Newey-West with 4 lags
  - Likely insufficient to capture time-series dependence.
  - Does not account for cross-sectional dependence.

- Consider using VAR for a co-integrated processes of returns, *Cnn.Sentiment*, and *OwnSentiment*?
  - News momentum (Li, Jiang, and Wang 2019)

Index exposure and return autocorrelation

Following Baltussen, Bekkum, and Da (2019):

$$(r_{i,t} r_{it-1})/2\sigma_i^2 = \beta_0 + \beta_1 Abn.Indexing_{t-1} + \theta X_{i,t-1} + \epsilon_{it}$$

Variables	Full Sample		Exclude Financial Crisis	
	Indexed	Non-indexed	Indexed	Non-indexed
L.Abn. Index Exposure	-6.2068***	-1.3423	-3.3102	1.7347
	(-2.80)	(-0.44)	(-1.57)	(0.80)
L.Serial Dependence	-0.0175	-0.1116**	0.0075	-0.0951
	(-0.74)	(-2.13)	(0.30)	(-1.42)
L.Basis	-0.1601	2.3330**	-0.2555	1.8398**
	(-0.33)	(2.14)	(-0.48)	(2.31)
L.Illiquidity	-0.0016**	-5.96e-06*	-4.09e-04	-6.63e-06*
	(-2.13)	(-1.71)	(-0.81)	(-1.79)
L.ΔOil ImVol	-0.0072**	7.22e-04	2.89e-03	0.0053*
	(-2.42)	(0.25)	(1.39)	(1.90)
Intercept	0.2251*	0.0063	0.2827***	0.0135
	(1.87)	(0.09)	(8.57)	(0.35)
Individual Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
# of Obs.	34,789	17,513	29,674	14,785
# of Individuals	16	8	16	8
Overall R-squared	0.34%	1.51%	0.20%	1.29%

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- Risk adjustment.
- Why AR(1)? More formally select lag structure.
- Investment horizons.

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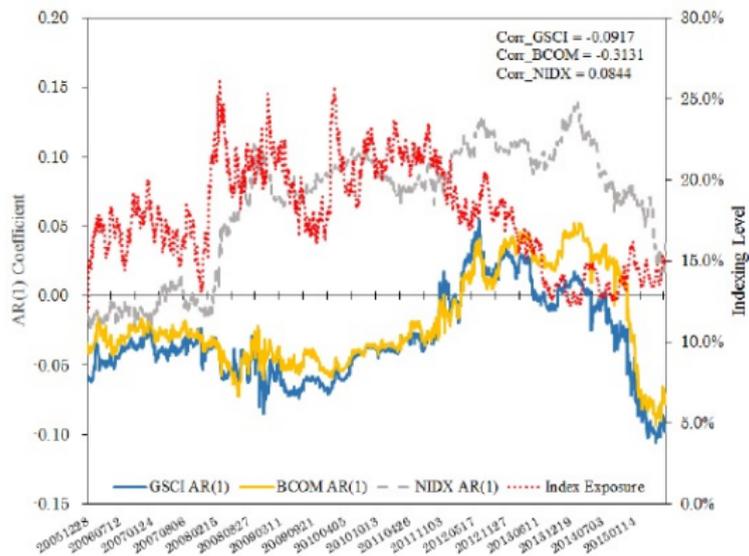
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- Why is it defined in changes rather than levels?
  - Depend on institutions' trading horizon.

GSCI/BCOM portfolio returns

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- The writing could be clearer to avoid confusion:

$$R_t^{GSCI} = \sum_{j=1}^{N} \bar{\omega}_{jt}^{GSCI} r_{jt}$$

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- The way ETF indexing defined may induce mechanical relation:

$$Abn. \ ETF \ Indexing_t^j = \frac{SHO_t^i * NAV_t^i - SHO_{t-1}^i * NAV_{t-1}^i}{MarketCap_t^i}$$

- Difference on differences?

$$Relative \ ETF \ Indexing_t^i = Abn. \ ETF \ Indexing_t^j - Abn. \ ETF \ Indexing_{t-1}^j$$

- Liquidity and market efficiency (Chordia, Roll, Subrahmanyam 2008).
  - How is the liquidity of commodities?
  - Did the financialization increase or decrease commodity liquidity?
- Alternative measure for market efficiency
  - For example, variance ratio tests.

Comment 1: real effects of commodity financialization?

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- Brogaard, Ringgenberg, and Sovich (2019) shows that firms relying on index commodities make worse production decisions after the financialization, potentially because of distorted signals.
- This paper shows one particular source of non-informative trading: spillover from other commodities in the index.
- Could we examine how fundamental shocks to one commodity (e.g., oil & gas) affect real decisions of another commodity's (e.g. Coffee) producers?
- Do returns of such types of firms become more correlated?

Comment 2: bright side of commodity financialization.

- Convenience for broader investors to allocate assets in commodities.
- Increase risk-bearing capital; Lower risk premium
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- Convenience for broader investors to allocate assets in commodities.
- Increase risk-bearing capital; Lower risk premium
  - The return autocorrelation started off positive and large!
- One puzzle: why negative autocorrelation at index level?
  - Plot average autocorrelation of individual commodities vs. autocorrelation of commodity index.

- Very interesting paper on the cross- and auto-correlation of commodity returns in relation to financialization.
- Look forward to future iterations!