Information Flow Between Spot and Futures Market
- The Role of Algorithmic Traders

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Summary

To establish the direction of information flow between future and spot market:

- single stocks (160), intra-day data (1 min and 5 min interval), order imbalance instead of prices

Key findings:

- temporal relationship between single stock future and spot market (futures market lead by a minute);
- information flow is primarily established through non-algorithmic traders;
- high-frequency algorithmic traders are not informed;
Suggestion: Methodology

Basic idea: To establish lead-lag relationship

1 Why order imbalances instead of returns? Some argument/theoretical underpinning will be nice.
   - I would suggest that if you have the data, do the analysis using returns and robustness checks using order imbalance.
   - If you still decide to use the proxy variable, then a subsection must be added to justify/establish its relevance.

2 Deviation from time-series analysis must be discussed in greater detail;

3 “In an ideal frictionless environment, price movements across markets should be contemporaneously correlated and not cross-correlated. A situation where one market assimilates information faster compared to the other gives rise to a lead-lag relationship between price movements.”
   - Cross-correlation is the first step for establishing lead-lag relationship;
   - I would suggest the author to explain/justify the use of panel data techniques used in the analysis.
My concerns: Methodology

Basic idea: To establish lead-lag relationship

1. Current specification: \( R_{it} - R_{mt} = a + \sum_{k=0}^{5} b_k CM_{OIB_i, t-k} + \delta_i + e_{it} \)

\[
R_{it} - R_{mt} = a + \sum_{k=0}^{5} b_k CM_{OIB_i, t-k} + \sum_{k=0}^{5} c_k FUT_{OIB_i, t-k} + \delta_i + e_{it}
\]

2. My suggestion will be: \( R_{it} = a + \sum_{k=0}^{n} b_k CM_{OIB_i, t-k} + \delta_i + e_{it} \)

\[
R_{it} = a + \sum_{k=0}^{n} c_k FUT_{OIB_i, t-k} + \delta_i + e_{it}
\]

3. For intra-day returns (1 min, 5 min), my guess is that \( R_{mt} \) will not matter.

4. Autocorrelation and multicollinearity is a serious concern here. Why not consider \( OIB \) in difference?

5. Why only 5 lags are considered? Lags can be estimated endogenously.

6. The 1 min and 5 min interval are all exogenous. Can this be estimated endogenously? Can we find a time-varying estimate for this lead-lag relationship?
Suggestions
Why futures lead the cash market?

1. Market restrictions: Short-sale constraints in the cash market
   - Futures prices are symmetric in reflecting private good news and bad news.
   - The lead-lag relation would not be the same under bearish and bullish markets, and futures prices should lead the cash index to a greater degree under bad news.
   - My suggestion: This must be tested.

2. Transaction cost perspective: Futures market is less costly for traders to utilize than the cash market;
   - So when it becomes more/less costly for traders to exploit the information in the cash market, the lead-lag relation must change;
   - If the time period of study contains any such action, incorporating that will add value to the paper.
Econometric specification:

\[ CM_{OIB_{it}} = r_{ft} + \sum_{k=1}^{n} CM_{OIB_{i,t-k}} + \delta_i + \epsilon_{it} \]

\[ \Delta CM_{OIB_{it}} = r_{ft} + \delta_i + \epsilon_{it} \]
Some additional remarks

- **Liquidity concerns:** High non-trading probability is of concern. Some statistics on this must be reported;
- **Since it takes some time to start trading,** may be some robustness checks while excluding first 30 minutes will give more authenticity to your results.
Questions!

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