

Information Diffusion in Equity Markets

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The Takeaway

The path of information transfer from one security to the next is a priced factor in equity returns.

Data Set

NYSE TAQ Data from 1996 through 2013

Must be matched to the OptionMetrics database

One second observations downsampled to hourly frequency using time weighted averages

Methodology

Estimate Network Structure

- bnlean package
- Hill climbing algorithm with random restarts
- Rolling 100 trading day window

Rank Network Nodes

- Calculate various measures of centrality using igraph
- Form decile portfolios from each measure using prior day's rank
- Form arbitrage portfolio using deciles 1 and 10
- Test daily decile portfolio returns

Data Mining

Characteristics

- Returns
- Variance of Returns
- Skewness of Returns
- Kurtosis of Returns (forthcoming)
- Volume Synchronized Probability of Informed Trading (VPIN)

Overfitting

- $10 \text{ deciles} \times 5 \text{ characteristics} \times 6 \text{ network measures} = 300 \text{ tests}$
- Need Theory!!!!!!!

Show me the money!

Lots of things work in backtesting but what will work tomorrow?

What seems to be true:

- Returns and VPIN work (maybe)
- Variance and Skewness do not work

Thank You

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