

Media Network Based Investors' Attention: A Powerful Predictor of Market Premium by Li Guo, Lin Peng, Yubo Tao, Jun Tu

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Main Idea

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- ▶ Two types of investor attention to Stock 1:
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- ▶ The non-shareholders may only be able to react to long signals (good news) rather than to short signals (bad news) due to short-sales constraint.
 -  The higher news co-occurrences are, the higher chance of overvaluation for connected stocks.
 -  NNTA should negatively predict future asset returns.

Comments

Ambitious project in an important and *growing* research area

1. Review of the NNTA construct
2. Review of main results - Time Series
3. Link to current theories

News Network Triggered Attention, NNTA

1: Count $\left\{ \begin{array}{l} \text{Occurrences (for } i), w_{ii,t} \\ \text{Co-occurrences (for } \{i, j\}), w_{ij,t} = w_{ji,t} \end{array} \right\}$ across all news

$$\begin{array}{c}
 \text{stock}_1 \\
 \text{stock}_2 \\
 \vdots \\
 \text{stock}_N
 \end{array}
 \begin{bmatrix}
 & \text{stock}_1 & \text{stock}_2 & \cdots & \text{stock}_N \\
 w_{11,t} & w_{12,t} & \cdots & w_{1N,t} \\
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- 2: Decentralize by the first stock $w_{ij,t}^* \equiv \frac{w_{ij,t}}{w_{ii,t}}$, $w_{ji,t}^* \equiv \frac{w_{ji,t}}{w_{jj,t}}$
- 3: Obtain the flow variable by taking the first difference

$$aw_{ij,t} = w_{ij,t}^* - w_{ij,t-1}^*, \quad aw_{ji,t} = w_{ji,t}^* - w_{ji,t-1}^*$$

- 4: Introduce weighting scheme

$$aw_{ij,t}^S = \text{Size}_{i,t} \times \text{Size}_{j,t} \times aw_{ij,t}, \quad aw_{ji,t}^S = \text{Size}_{i,t} \times \text{Size}_{j,t} \times aw_{ji,t}$$

- 5: $NNTA = \sum_{i=1}^N \sum_{j=1}^N aw_{ij,t}^S$

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⇒ Solution: count $w_{ij,t}$ conditional on same news tone versus different news tones

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(2) taking the first difference before Step 4 “weighting scheme” (to construct the composite index) is concerning because weights evolve over time as well, e.g.,

$$w_{1,t}(S_{1,t} - S_{1,t-1}) + w_{2,t}(S_{2,t} - S_{2,t-1}) \neq (w_{1,t}S_{1,t} + w_{2,t}S_{2,t}) - (w_{1,t-1}S_{1,t-1} + w_{2,t-1}S_{2,t-1})$$

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⇒ Solutions: construct a level variable (decentralization → weighting scheme → composite).

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The current method decentralizes co-occurrences of each pair $\{i, j\}$ with occurrences of i and j twice: $w_{ij,t}^* \equiv \frac{w_{j,t}}{w_{i,t}}$, $w_{ji,t}^* \equiv \frac{w_{i,t}}{w_{j,t}}$; then, when calculating the composite index, both decentralized co-occurrences are weighted by the same weight, e.g., $Size_{i,t} \times Size_{j,t}$.

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- Currently, if I hold a stock that has a low media attention, it co-occurs with a frequently-mentioned stocks, then the network-triggered attention gained towards the other stock is high. Vice versa.

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⇒ Solutions: $\frac{w_{j,t}}{w_{i,t}} |w_{ii,t} - w_{jj,t}|$

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⇒ Solutions: The idea that “the larger size the stock pair is the more weight the pair-generated network attention” is attractive.

However, it might make more sense to design the weighting scheme by $Size_{i,t} + Size_{j,t}$ rather than $Size_{i,t} \times Size_{j,t}$. This would have made a perfect analogy to the typical MCAP weighting scheme when obtaining the composite index.

I would also be interested in seeing the equally-weighted index.

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- ▶ However, the current construct does not highlight what part of the construct helps distinguish them.
- ▶ For instance, co-occurrences increase (or stocks/companies are mentioned together) ...
 - Because they similarly reflect and contribute to financial and/or risk variables that have been shown to have strong predictive power.
 - Because the overall sentiment or risk aversion is high and thus media fear and express anxiety by spelling out more firms that might be influenced or influencing.

Correlation w/ existing risk aversion indices

Inverse surplus consumption ratio, Campbell and Cochrane (1999)	5.66%
Sentiment index, Baker and Wurgler (2006)	-1.69%
Michigan sentiment index	-11.43%
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Correlation w/ existing uncertainty indices

Macro uncertainty index, Jurado, Ludvigson and Ng (2015)	22.41%
Economic policy uncertainty index, Baker, Bloom and David (2014)	21.08%
BEX uncertainty index, Bekaert, Engstrom and Xu (2017)	15.46%

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Correlation w/ VIX

VIX	18.39%
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Bold (italics): <5% (10%) significance

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 2. Link to the literature: Is your index confounding with other ERP components (captured in various indices in the literature)?
 3. What's completely missing: Is the predictive coefficient constant?

Thank You!