



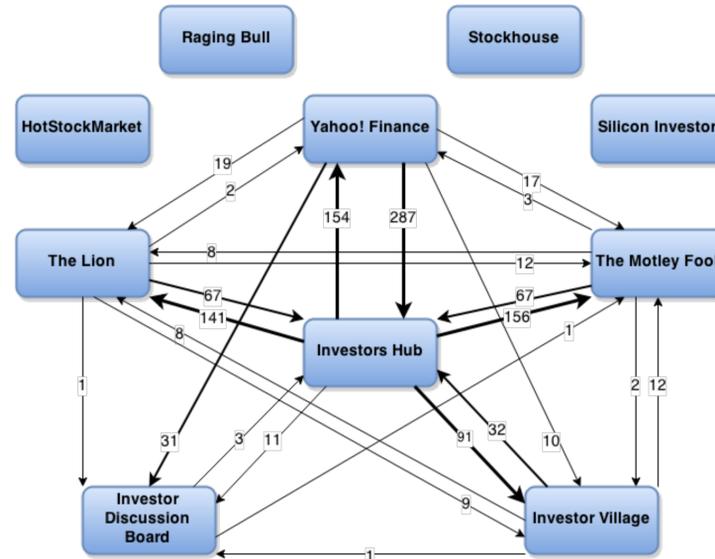
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Stock Information Diffusion Between Discussion Boards

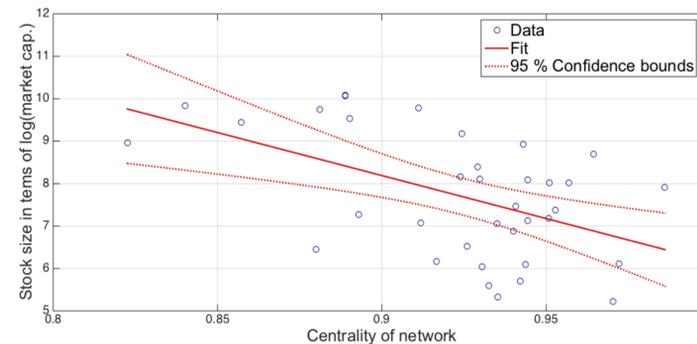
Conclusion:

Market capitalization of a stock has been shown to be inversely correlated with the network centrality measure from our developed information diffusion model. This confirms the hypothesis that smaller stocks have more central information networks.

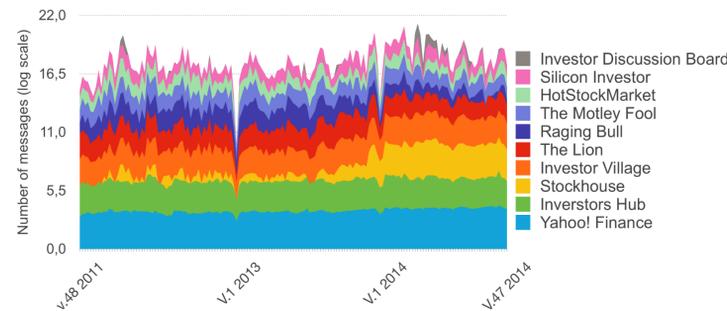
Moreover the result motivates further research on the novel area to discover more implications of the centrality measure. Our data can serve as a firm ground for future research to find these implications.



Visualization of the information diffusion network for the Facebook stock



Logarithm of stock market capitalization plotted against network centrality. A statistically significant linear regression is included.



Logarithm of the weekly amount of messages over three years in a stacked plot for the boards.

Goal:

Develop models that describe information diffusion between different stock discussion boards. Validate the model through relating properties of the model to actual stock data.

Methods:

Messages relating to 500 stocks were collected from ten discussion boards during a three year period.

Two diffusion models were developed. The first model is based upon the diffusion of keywords and the second one upon the diffusion of positive and negative discussions.

From the diffusion models, standard theory of weighted networks are used to estimate a stock's information network centrality.

Results:

Approximately one million messages collected from the discussion boards.

Two diffusion network models for each of the 500 stocks.

Negative correlation between the centrality of networks and market capitalization of stocks.

Background:

Diffusion of information about a stock can be described as a weighted network of interconnected peers. Research carried out by Walden et al.¹ on Empirical Investor Networks supports the idea that there are valuable insights to be gained from knowing the structure of the diffusion networks.

Online discussion boards comprises one part of the stock information networks. To our knowledge no extensive research has been carried out to try to model these networks for online discussion boards.

[1] Johan Walden, Han N. Ozsoylev, M. Deniz Yavuz and Recep Bildik. 2014. Investor Networks in the Stock Market. The Review of Financial Studies 27:1323-1366.

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