

# Short term herd behavior in the stock market intraday transactions

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## Abstract

Stock markets and their behavior is the purpose of many works introduced in the past century. In this talk we will present a model that encapsulates the behavior of stock markets, demonstrating the effect of the individual tendency to follow a group and the effect of the individual reaction to available information. Using these factors several key short term features of the stock market were demonstrated, in addition to more intricate long term behaviors. Furthermore, the presented model can be used to distinguish between the unique randomness of financial markets and other types of random behaviors and to evaluate different market phenomena in terms of their source and significance.

**Keyword:** econophysics, market herd behavior, Epps effect, stock market modeling

Most theoretical models of stock markets suggest that market features are generally the result of an efficient market, where agents react to new information. However, the relatively low rate in which new information flows into the markets cannot explain their highly fluctuating behavior. Recent advances in financial research indicate the importance of human financial interactions and the tendencies of individual investors to be influenced by a group, which might result in market herd behavior.

In this talk, a model that encapsulates the behavior of stock markets is presented. We incorporate in the model two important generic features, demonstrating the effect of the tendency to follow a group and the effect of the reaction to available information. Based on those features the model was able to capture several key short time behaviors of the market: The lagged autocorrelation in the return for short times, the Epps effect (see Figure1), the dynamics of correlation matrix eigenvalues, the transition to daily time scale and the fluctuative nature of the daily return. In addition, longer time scale complex behaviors were also described by the model, such as the dominance of the index as demonstrated through partial correlation and the synchronized high correlation bursts between stocks.

The obtained results indicate the important role of human interactions and herding in generating different stock market phenomena.

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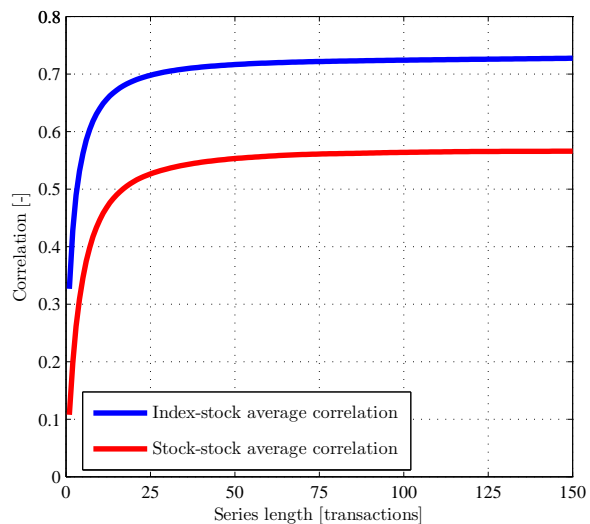


Figure1: The Epps effect in the modeled stock market - the dependence of the average correlation between the stocks and the index (blue) and between a given stock to the rest of the stocks (red) on the window size.