Large changes on small scales: Exogeneous versus endogeneous

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In our paper we present real-data analysis of large intraday price changes on the NYSE which occur within 15 minutes. The goals of our study are to test intraday market efficiency and to examine the post-event evolution of volatility, trading volume and the bid-ask spread. We find a significant overreaction in case of both price decreases and increases. Thus we find the interesting aspect that there may be significant behavioral trading on the real market within the market day. Whether there is room for an arbitrage possibility is although not yet clear, further research has to follow which should take into account all details of the market including transaction costs.

Another interesting aspect is that previous model simulations show [1] that large intraday price changes are most likely due to some external effect. We find that volatility, volume, and the bid-ask spread increase significantly at the event, after which they decline following a power-law up to at least 1000 trading minutes. Comparing the speed of decay of excess volatility, volume, and spread after large intraday price changes with that due to normal fluctuations (endogeneous changes) on the market yield interesting results as well. The decay of endogeneous fluctuations which can be measured using the autocorrelation function of the above quantities is much faster than that of exogeneous ones.

[1] A.G. Zawadowski, R. Karádi, J. Kertész *Price drops, fluctuations, and correlation in a multi-agent model of stock markets, Physica A 316 (2002) 403-412*