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**Interest rate change and Omori dynamics in the Stock Market**

ALEXANDER PETERSEN, FENGZHONG WANG, Boston University, SHLOMO HAVLIN, Bar-Ilan University, H. EUGENE STANLEY, Boston University — I present the behavior of U.S. markets on the day of U.S. Federal Open Market Commission (FOMC) meetings from the perspective of Statistical Physics. The announcement of key U.S. Federal Reserve rate changes causes a small financial shock, where the dynamics before and after the announcement can be described by an Omori law. We find that markets respond sharply to the news in a complex way reminiscent of physical earthquakes described by the Omori law, which describes the power-law relaxation of aftershocks following a singular perturbation. We find Omori laws in both the volatility of the price (also known as the absolute returns) and the volume traded, using 1-minute resolution financial time series. These results suggest that the perturbative response of the stock market is the same for both financial news and financial crises. The intraday response can be measured by the Omori power-law exponent  $\Omega$ , which has opposite sign before and after the announcement. We estimate the magnitude of news by relating  $\Omega$  to the behavior of the U. S. Treasury Bill before and after FOMC announcements.

Alexander Petersen  
Boston University

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