

Self-Organized Criticality and Stock Market Dynamics

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The Stock Market is a complex self-interacting system, characterized by intermittent behaviour. Periods of high activity alternate with periods of relative calm. In this seminar, the possibility that the market is in a self-organized critical state (SOC) is investigated empirically. A wavelet transform method is used in order to separate high activity periods, related to the avalanches found in sandpile models, from quiescent periods. A statistical analysis of the filtered data shows a power law behaviour in the avalanche size, duration and laminar times. However, the memory process, implied by the power law distribution revealed for the laminar times, is not consistent with classical conservative models for self-organized criticality. We argue that a "near-SOC" state or a time dependence in the driver, which may be chaotic, can explain this behaviour.

<http://au.arxiv.org/abs/cond-mat/0405257>