

Propositions

accompanying

Identifying and Predicting Financial Earthquakes using Hawkes Processes

by

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1. While financial crashes can be triggered by exogeneous factors, instability or tension in financial markets grows endogeneously. The history of the occurrences of extreme price movements in financial markets and the size of these movements, are predictors for respectively the size and the timing of future extreme price movements. (Chapter 2)
2. Commonly used and well-known volatility models only capture a part of the information around extreme price movements. Models describing the non-continuous behaviour, are needed to identify and predict extreme price movements more accurately. (Chapter 2 and 4)
3. Specification testing of Hawkes models is of importance to determine which model could, and should, be used to identify and predict financial crashes. Lagrange Multiplier tests are to be preferred, as specifications are tested adequately within a decent timeframe. (Chapter 3)
4. Financial markets are dependent in case of extreme price movements. When modeling and predicting financial crashes, one should consider these dependencies. (Chapter 3 and 4)
5. Non-affine models should be preferred above affine models modeling asset returns, as these models are more flexible and better capable of modeling the tails of the heavy-tailed asset return distribution, while remaining equally parsimonious. (Chapter 5)
6. When predicting extremes, sufficient information from the past is needed to foresee extremes in the future. That is, series of past extremes have to be of proper size when estimating models utilized for prediction of extremes.
7. Estimation techniques should include as much of the available information (when accurate) as possible, such that models are estimated as accurately as possible.
8. Researchers frequently face the trade-off whether or not to idealize the world to make model estimation feasible. Machine learning techniques that approximate ideal estimation deserve more attention as they make the estimation of more realistic models feasible.
9. There will always be gaps in the academic literature. There remains so much to discover. The contribution of a beginning researcher does not need to be large to bring up new ideas.
10. A part of the academic literature should be useful for practitioners.
11. Leren is investeren in jezelf. Ad Gresnigt, van alle tijden