

Detecting structural breaks in financial volatility within GARCH-type framework

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ABSTRACT

Structural breaks (abrupt changes) in volatility of financial time series can substantially deform an underlying, “static” model employed for empirical research. This translates into poorer statistical inference and negatively affects the applicational aspects of time series analysis. Therefore, providing reliable tools for detecting such volatility “change points” is challenging and very relevant task, greatly influencing the modeling and forecasting methodology. Focusing mainly upon the GARCH-type modeling framework, we will recall the celebrated ICSS algorithm proposed by [Inclan and Tiao \(1994\)](#), next we will show its further amendments by [Sansó et al. \(2004\)](#) and nonparametric alternative approach known as NPCPM model in [Ross \(2012\)](#). Accounting for structural breaks leads to considerable reduction of volatility persistence in the models used by various researchers in financial econometrics, which is shown in papers of e.g. [Covarrubias et al. \(2006\)](#), [Kang et al. \(2009\)](#). Rapidly growing leverage of financial markets, together with unprecedented multi-trillion monetary experiments (since 2008) pave the way for yet more turbulent regime switches in financial volatility in not-too-distant future, which makes the structural break detection still more vital and crucial both in understanding asset returns dynamics and more efficient risk management.