

David Bates: "Stock Market Crash Risk, 1926 - 2006."

Abstract

This paper applies the Bates (*RFS*, 2006) methodology to the problem of estimating and filtering time-changed Lévy processes, using daily data on stock market excess returns over 1926-2006. In contrast to density-based filtration approaches, the methodology recursively updates the associated conditional characteristic functions of the latent variables. The paper examines how well time-changed Lévy specifications capture stochastic volatility, the "leverage" effect, and the substantial outliers occasionally observed in stock market returns. I also find that the daily autocorrelation of stock market excess returns varies substantially over time, necessitating an additional latent variable when analyzing historical data on stock market returns. The paper also explores the implications of alternative Lévy specifications for prices and implicit volatilities of stock index options.