Title:

Estimation of expected shortfall using a quantile function model

Author:

Dr Yuzhi Cai
Department of Accounting and Finance
School of Management
Swansea University
Swansea SA1 8EN
UK

Tel: +44 1792 606865

Email: y.cai@swansea.ac.uk

Key words: Expected shortfall, quantile function, threshold GARCH, tail shape, financial returns

Abstract

Distributions of financial returns defined by GARCH models often focus on the overall features e.g. location, scale, skewness and kurtosis of the distribution. When using such GARCH models for ES estimations, detailed information about the tails such as tail shape of the distribution cannot be dealt with, leading to possible biased ES estimates. We propose a quantile function threshold GARCH model to overcome some of the limitations of existing models. The model allows us to use the information including the skewness and tail shape of the distribution and the structure changes in the volatility of financial returns to obtain ES estimates. Our results show that the proposed model outperforms the benchmark models, confirming that tail shape of the distribution also plays an important role in ES estimation.