Parameter uncertainty in filtered Value-at-Risk models

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Abstract

We use a Bayesian approach to quantify parameter uncertainty in Value-at-Risk (VaR) models which rely on exponentially weighted moving average (EWMA) processes to estimate conditional volatilities. These models are widely used in the industry and, in particular, are often at the base of the methodologies that many central counterparties use to estimate their margin requirements. We empirically assess the impact of parameter uncertainty in the choice of the EWMA decay factor using daily returns of four products covering FX, equity, commodities and fixed income. Our results show that incorporating uncertainty around the estimation of the decay factor in the EWMA process can produce materially different risk estimates, and we identify situations where these estimates are less reliable. By investigating the sensitivity of parameter uncertainty to the data sample, we uncover some risks that are associated with the use of filtered VaR specifications.

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