Risk measure in practice, how to choose it, how to test it

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Abstract:

Risk measure has become a fundamental tool to compute the solvency of financial institutions. Therefore, it has caused many controversies regarding the choice of the best measure to use in practice. Expected Shortfall (ES) has been widely accepted as a risk measure that is conceptually superior to Value-at-Risk (VaR). Recently, however, ES has been criticized on issues relating to backtesting, as it has been found not to be elicitable, which means that backtesting for ES is less straightforward than, e.g., backtesting for VaR. Expectile has been suggested as potentially a better alternative to ES and VaR, but its underlying concept is less intuitive. We revisit commonly accepted desirable properties of risk measures like coherence, comonotonic additivity, robustness and elicitability. We introduce the concept of conditional elicitability, which is a property satisfied by ES. We check VaR, ES and Expectiles with regard to whether or not they enjoy these properties. We also consider the impact of these risk measures on capital allocation, an important issue in risk management and practical applications. Finally, we address the issue of backtesting ES. We propose an empirical approach that consists in replacing ES by a set of a small number of quantiles. Based on this idea, we develop a new backtest for ES, as handy as for VaR.

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