PORTFOLIO MANAGEMENT BASED ON COMPLEX QUANTILE RISK MEASURES

Efim BRONSHTEIN, Ekaterina TULUPOVA
Russia, Ufa State Aviation Technical University
e-mail: bro-efim@yandex.ru, katya_tu@mail.ru

We offer to use the combined measures of financial risks which are convex combinations of known measures VaR [1], $CVaR$ [2] and their analogues for the right distribution tail area portfolio profitableness. For the estimation of efficiency offered measures is suggested double-step optimization procedure.

New combined risk measures [3] are constructed on quantile characteristics both left and right distribution tails area profitableness. We make comparative analysis of efficiency offered risk measures and find parameters of these measures giving the best results.

In our research two distance are picked out: long T and short subsequent (with some time lag) τ. We calculate risk measure of the portfolio's price as a random variable on the first interval (learning sample) and portfolio profitableness on the second (control) interval.

Experiment made on 8 set of Russian and American shares. Each set included 10 companies. Learning interval T was equaled to 2 years (2005-2006). As control interval we took week, month, quarter, half-year, year with various logs (in all 29 combinations). 1000 portfolios were generated for each set of share by Uichman-Hill's sensor [4]. These portfolios were generated according to the uniform law to within 0,01.

The highest efficiency is reached using measure

$$M(X:\alpha,\beta,k) = k \cdot VaR_{\alpha}^{+}(X) + (1-k) \cdot CVaR_{\beta}^{+}(X)$$

almost in all cases. High efficiency using parameters of weight right distribution tail area is unexpected phenomenon. Optimum portfolios were strongly or mean diversify more often in that case.

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KEYWORDS

Portfolio management, quantile risk measures, $VaR, CVaR$, profitableness.