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An another viewpoint to estimate Value-at-Risk based on backtesting with overlapping data

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Abstract

According to the "backtesting-based correction" mentioned in the Lazar et al. (2019), which is obtained basically by try and error, we try to develop some corresponding theoretical results to modify the Value-at-Risk(VaR). In addition, we investigate the theoretical results by simulation studies and empirical studies. By simulation studies, through the comparison, also shows that the feasibility of the backtesting-based modification in the VaR. In practice, the backtesting-based modification of the VaR will face some difficulties, ex. use downward or upward modification before calculating VaR, so we propose a modification based on backtesting with overlapping data, and at the same time, the results of the backtest can be obtained more efficiently. The empirical analysis also shows that this modification has a greater pass ratio of backtesting on VaR than the correction without the overlapping data. And we will further calculate the theoretical results of higher-order moment VaR to compare whether it can be more effective on the basis of higher-order moment correction and use the theoretical results to establish some criteria to screen asset in order to build better portfolios in the future.

Keywords : Value-at-Risk(VaR), Backtesting

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