

Can Expected Shortfall and Value-at-Risk be used to Statically Hedge Options?

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Abstract:

Value-at-risk (VaR) and Expected Shortfall (ES) have been widely used in risk management. It is well-known that utility optimization using a VaR constraint can lead to perverse investment decisions. Risk measures that control the first moment of losses (such as ES) have been proposed to overcome these problems. However, we have identified a new phenomena that leads to unexpected results for one-period option hedging using ES or VaR. Both ES and VaR can give rise to discontinuous hedging behavior that can lead investors to take extremely high-risk positions even when apparently minimizing the risk measures. We show that this behavior is generic for risk measures that only consider losses exceeding a given quantile.

This work was supported by CityU grant 7001752-730.