

Title:

Tail-risk protection trading strategies

Abstract:

Starting from well-known empirical stylized facts of financial time series, we develop dynamic portfolio protection trading strategies based on econometric methods. As a criterion for riskiness, we consider the evolution of the value-at-risk spread from a GARCH model with normal innovations relative to a GARCH model with generalized innovations. These generalized innovations may for example follow a Student t , a generalized hyperbolic, an alpha-stable or a Generalized Pareto distribution (GPD). Our results indicate that the GPD distribution provides the strongest signals for avoiding tail risks. This is not surprising as the GPD distribution arises as a limit of tail behaviour in extreme value theory and therefore is especially suited to deal with tail risks. Out-of-sample backtests on 11 years of DAX futures data, indicate that the dynamic tail-risk protection strategy effectively reduces the tail risk while outperforming traditional portfolio protection strategies. The results are further validated by calculating the statistical significance of the results obtained using bootstrap methods. A number of robustness tests including application to other assets further underline the effectiveness of the strategy. Finally, by empirically testing for second-order stochastic dominance, we find that risk averse investors would be willing to pay a positive premium to move from a static buy-and-hold investment in the DAX future to the tail-risk protection strategy.