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Active Portfolio Risk in Practice

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Abstract

It is very common that an equity fund is measured against a specified benchmark. To ensure that such a portfolio does not deviate too much from its benchmark, statistical risk measures such as Tracking Error and Value at Risk (VaR) can be applied to the corresponding active portfolio, i.e. the combination of a long position in the portfolio and a short position in the benchmark portfolio. The main purpose of this paper is to study the market risk of active portfolios containing equities. In particular, we wish to investigate how small errors in historical data may affect the VaR calculation. Following an index with a tracker portfolio is never exact. This paper investigates by means of both calculation and simulation (a) what values are at risk compared to the index if different kinds of errors occur, such as missing data, time lags or small random errors, and (b) different modeling choices for the estimation of the Value at Risk (VaR). In the simulations, we use the variance-covariance method for calculating the VaR. The most surprising result of the simulations is that simple linear interpolation gives at least as good results as using the Brownian Bridge approach, no matter what σ is used to calculate the Brownian Bridge. The dominating factor in calculating the VaR is the variance of the index time series. Simulations and calculations have shown that the effects of missing data and time lags are roughly proportional to the prevailing volatility.

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