Kappa: A Generalized Downside Risk-Adjusted Performance Measure

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The Sortino Ratio and the more recently developed Omega statistic are conceptually related "downside" risk-adjusted return measures, but appear distinct mathematically. We show that each of these measures is a special case of Kappa, a generalized risk-adjusted performance measure. A single parameter of Kappa determines whether the Sortino Ratio, Omega, or another risk-adjusted return measure is generated.

Using shape estimation functions for investment return distributions, we show that values for the first four moments of a return distribution are sufficient in many cases to enable a robust estimation of Kappa: it is not necessary to know the individual data points in the distribution. This further parameterization of the Kappa calculation enables efficient risk-adjusted return measurements and comparisons among a broad range of investment alternatives, even in the absence of detailed returns data. We examine return rankings of hedge fund indices under several variations of Kappa, and the extent to which these are affected by higher moments of the return distribution.

The Sortino Ratio and Omega

The Sortino Ratio and the more recently-specified Omega statistic, as defined by Shadwick and Keating [2002], can be used as alternatives to the Sharpe ratio in measuring risk-adjusted return. Unlike Sharpe, neither assumes a normal return distribution, and each focuses on the *likelihood* of