

A decision-theoretic foundation for two-parameter performance measures

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Abstract

In this paper we prove that partial-moments-based performance measures (e.g., Omega, Kappa, Upside-potential ratio, Sortino-Satchell ratio, Farinelli-Tibiletti ratio), value-at-risk-based performance measures (e.g., VaR ratio, CVaR ratio, Rachev ratio, Generalized Rachev ratio), and other admissible performance measures are a strictly increasing function in the Sharpe ratio. The theoretical basis of this result is the locations-scale- and two other plausible and mild conditions. Our result provides a decision-theoretic foundation for all these frequently used performance measures. Moreover, it explains the empirical finding that all these measures typically lead to very similar rankings.

Keywords: Asset management; Performance measurement; Sharpe ratio; Location and scale condition; Risk and reward measurement

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1. Introduction

The most popular two-parameter performance measure is the Sharpe ratio (see, e.g., Alexander and Baptista, 2010; Darolles and Gouriéroux, 2010; Ding et al., 2009; Eling and Faust, 2010; Szakmary et al., 2010; Serban, 2010). The least restrictive sufficient condition for expected utility to imply Sharpe ratio rankings is the location and scale (LS) property (see Sinn, 1983; Meyer, 1987). This property requires that the random returns from the investment funds in the choice set differ from one another only by location and scale parameters. Schuhmacher and Eling (2011) argue that the LS property is

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