

A Robust Sharpe Ratio

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Abstract

Sharpe ratio is one of the widely used measures in the financial literature to compare two or more investment strategies. Since it is a ratio of the excess expected return of a portfolio to its standard deviation of returns, it is not robust against the presence of outliers. In this paper we propose a modification of the Sharpe ratio which is based on robust measures of location and scale. We investigate the properties of this proposed ratio under six alternative return distributions. It is seen that the modified Sharpe ratio performs better than the original Sharpe ratio in the presence of outliers. A real life stock market return data set is analyzed and the comparative performances of the two ratios are studied. The results indicate that modified Sharpe ratio may be a better measure for comparing different investment strategies. When downside risk is the only concern of the investors a modification of the Sharpe ratio known as Sortino ratio is often used. It is shown that the Sortino ratio is not robust and we propose a modified version of the same which is robust.

Keywords and phrases

Cauchy distribution, Mixture normal distribution, Lognormal distribution Outliers
Stock market returns.