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Econometrical analysis of the sample efficient frontier

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Abstract

The efficient frontier is a parabola in the mean-variance space which is uniquely determined by three characteristics. Assuming that the portfolio asset returns are independent and multivariate normally distributed, we derive tests and confidence sets for all possible arrangements of these characteristics. Note that all of our results are based on the exact distributions for a finite sample size. Moreover, we determine a confidence region of the whole efficient frontier in the mean-variance space. It is shown that this set is bordered by five parabolas.

Keywords:

asset allocation | efficient frontier | portfolio analysis | mean-variance portfolio | parameter uncertainty | interval estimation

JEL Classification :

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