Making Markowitz’s Portfolio Optimization Theory Practically Useful

Huixia Liu
Department of Statistics
National University of Singapore, Singapore

Abstract

The traditional estimated return for the Markowitz mean-variance optimization has been demonstrated to be seriously departed from its theoretic value. We prove that this phenomenon is natural and the estimated optimal return is always larger than its theoretic parameter. Thereafter, we develop new bootstrap estimators for the optimal return and its asset allocation and prove that these bootstrap estimates are consistent with their counterpart parameters. Our simulation confirms the consistency; implying the essence of the portfolio analysis problem could be adequately captured by our proposed estimates. This greatly enhances the Markowitz mean-variance optimization procedure to be practically useful.