Abstract

Various innovations and alternative implementations of statistical models are applied to solve some of the key issues faced by finance academia and practitioners, with a focus on trading and risk management. The main issues to be addressed include sub-optimal design of pairs trading; the lack of formal treatments for performance evaluation on passive and active investment strategies; inadequate conditional covariance modeling to capture portfolio risk dynamically; and excessive constraints on tail risk construction.

To tackle the sub-optimal design of pairs trading, a new single-stage approach for cointegration is proposed. For performance evaluation, the concepts of equivalence testing and non-inferiority testing are innovatively applied to the evaluation of passive portfolio strategies. The asymptotic distributions of tracking error, information ratio and the difference between two information ratios, are derived which allow proper comparison of passive and active funds.

In portfolio risk modeling, a new framework is developed to estimate portfolio Value-at-Risk (VaR) using the Dynamic Conditional Covariance (DCC) model. Various advancements from random matrix theory are applied to de-noise the variance target within the DCC framework.

Finally, with increasing attention to measuring tail risk accurately for risk management purposes and its role as a new pricing factor in the asset pricing theory, a new and more concise construction of non-parametric tail risk is proposed by direct minimization of systematic excess expected shortfall.

on
Friday, January 3, 2020
11:00 a.m. – 12:00 p.m.
at
Room 301, Run Run Shaw Building

All interested are welcome