

STANFORD UNIVERSITY
DEPARTMENT OF STATISTICS
STATISTICS AND FINANCIAL MATH SEMINAR

4:15 p.m., Tuesday, July 22, 2007
Sequoia Hall Room 200
(Cookies at 3:45 in 1st Floor Lounge)

Haipeng Xing
Department of Applied Maths & Stat
State Univ of New York at Stony Brook

Mean-variance portfolio optimization when means and covariances are unknown

Markowitz's celebrated mean-variance portfolio optimization theory assumes that the means and covariances of the underlying asset returns are known. In practice, they are unknown and have to be estimated from historical data. Plugging them into the efficient frontier that assumes known parameters leads to the so-called "Markowitz enigma", which states that portfolio with the "plug-in" efficient frontier can behave badly and be counter-intuitive. We first review different approaches and explain why they fall short of their goal. We then describe a new approach with ideas from stochastic adaptive control and bootstrap resampling. Applications of the new approach to simulated and real data are also given.