数学与系统科学研究院

计算数学所学术报告

报告人：**Prof. Yongmin Zhang**

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报告题目：

Portfolio selection in Heston's stochastic volatility model using a contingent claim

邀请人： 石钟慈 院士

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下午 **15:30-16:30**

报告地点： 科技综合楼三层

311 报告厅

Abstract：

Previous research has shown that in a continuous-time financial market, the price of the risky asset with two sources of uncertainty follows a Heston stochastic volatility model in which its excess return (over the risk free asset) during a given period is a function of its long-run expected nominal return plus a risk premium dependent on the correlation between two sources of risk. Under such conditions, since there is one risky asset being traded with two sources of uncertainty, the market is incomplete and no unique solution exists. In this paper, however, we show that when an investor's attitude to risk is specified, a unique Martingale measure can be determined. First, following Romano and Touzi, we show how to complete the market using a European option. Having completed the market, we then follow Karatzas et al making this created asset uninteresting to investors, to achieve a unique, closed-form solution for the portfolio strategy.

We further investigate how the rate of change (adjustment speed) of weight on the risky asset depends on model parameters such as long run mean price volatility and volatility of price volatility. We find expected weight adjustment speed is slower when the long run mean volatility increases and both expectation and variance of adjustment speed increase with volatility of volatility. We also study the time-dependent path of mean and variance of the weight on the risky asset using numerical simulations. We find both mean and variance of time dependent weight decrease with increasing long run mean volatility and increase with volatility of volatility. Our results are robust with agreement from two simulation methods. Convergence tests are conducted for various number of simulation paths and time step sizes.

简介：

Yongmin Zhang, Chair Professor in Finance at University of Nottingham Ningbo China and Director of Centre for Global Finance and International Finance Research Centre. He obtained his Ph.D. from University of Chicago in 1997. After his graduation, he worked as a research scientist at Research Foundation of State University of New York. From 2001 to 2007, he was a Ph.D. supervisor at State University of New York at Stony Brook and a principle investigator for U.S. Department of Energy research projects. From 2007 to 2011, he has worked as a lead research analyst at J. P. Morgan, a risk management consultant at Wells Fargo, a Ph.D. supervisor in financial mathematics at Xi'an Jiaotong – Liverpool University, the academic director for Qinlan Program of Jiangsu Province. Since 2012, he has been a leader for "Global Finance Management" which is one of key disciplines in universities in Zhejiang Province.

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