

For favour of posting

DEPARTMENT OF STATISTICS AND ACTUARIAL SCIENCE
THE UNIVERSITY OF HONG KONG

Seminar

Professor HUANG Dawei

Bell Labs Research China

will give a talk

entitled

HIGH AND LOW ON THE FINANCIAL MARKET CORRELATION, PREDICTION AND APPLICATIONS

Abstract

High and Low values of stocks, commodities, exchanging rates as well as market indices are available in most financial data sets, in addition to Open and Close values. However, usually only the Close value is used for academic study. Usually the asset return is defined by the ratio (or log ratio) of two Close prices between a certain time period. Studies show such defined asset return lacks linear correlation. So some economists believe that the financial time series follows random walk or Brownian Motion model. A breakthrough was achieved by ARCH/GARCH models in which the squares of residuals are assumed linearly correlated. It is successfully used for modeling asset return. Thus, although financial time series may not be linearly correlated, its nonlinear transform could be. This means that the underlying process follows a martingale model.

In this talk, we define the ratio of High over Open as HoO while Low over Open as LoO. Both HoO and LoO, as the nonlinear functionals of continuous financial time series in certain period, have much significant autocorrelation than the asset return defined by Close. They also are correlated to some technical indicators, such as MA, MACD, RSI and RSV, which are transforms of the original financial time series. Finally, the joint distributions of HoO and LoO show they are closely related too. Real examples include SP500 and HangShen indexes, gold and silver price, Euro and Australian dollar to US dollar exchange rates, as well as some stock prices.

However, the correlation of financial time series varies as the market fluctuates, so stationary assumption is not applicable here. We use an "Estimation via Classification strategy" to solve this problem. Following my previous talk, Principal Purity Trees are applied to classify the data belonging to which group in the joint distribution of HoO and LoO. Then they are predicted by the mean of that group.

Two applications of this study are investigated. Firstly, following Markowitz's portfolio theory, we can work out the action price, weighted between High and Low predictions, in balance of expected return and risk. Secondly, using High and Low instead of Close, we can evaluate the Extreme Value at Risk (EVaR) which reflects the extreme price movements more directly than the usual VaR. The EVaR are the higher and lower bounds of VaR respectively.

In summary, we believe that High and Low values reveal the correlation of financial time series, they can be predicted to certain extent, and are useful in practice.

on

Friday, March 28, 2014

11:00 a.m. – 12:00 noon

at

**Room 524, Meng Wah Complex
(behind the Chong Yuet Ming Amenities Centre)**

Visitors Please Note that the University has limited parking space. If you are driving please call the Department at 2859 2466 for parking arrangement.

All interested are welcome