

# 國立中山大學應用數學系

## 學術演講

- 講者：Professor Ying Chen  
Department of Statistics & Applied Probability,  
National University of Singapore
- 講題：Forecasting Limit Order Book Liquidity  
Supply-Demand Curves with Functional  
AutoRegressive Dynamics
- 時間：2016/6/3（星期五）11:10 ~ 12:00
- 地點：理學院四樓理 SC 4009-1 室
- 茶會：10:30 於理 SC 4010 室（系辦公室）

### 摘要

Limit order book mechanism is used widely in the financial world to facilitate trade. By being able to understand the limit order book dynamics, one can have many practical advantages, such as getting clearer insights to best react in given market situation and deriving optimal execution strategies. The bid and ask sides of the market have close relationship. Public or private information can cause investors to switch from one side of the market to the other, while market-wide events can result in similar changes to the supply and demand of both sides of the limit order book. We propose a Vector Functional AutoRegressive (VFAR) model to predict the joint evolution of two series of liquidity curves on bid and ask sides. We develop B-spline sieve estimators and the asymptotic consistency. We find there is a strong predictability in liquidity curves in the limit order book for 9 stocks in NASDAQ market. The VFAR model gives high  $R^2$  values for in-sample estimation and produces low mean absolute percentage error for out-of-sample forecast experiments. This is a joint work with Wee Song Chua and Wolfgang Karl Haerdle.

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