Market Microstructure & Trading
SYLLABUS

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OBJECTIVES:

This course will introduce the main concepts of market microstructure, operation, design of exchanges and trading mechanisms for financial instruments. There will be emphasis on topics such as market design, auction mechanisms for limit order markets, optimal trading strategies, mechanisms of how information is impounded in prices, mechanisms to improve the information aggregation process, avoidance of market failures, sequential trade models, inventory control and empirical study of dealer inventories, market impact, transaction costs, market fragmentation, and models of informed and strategic trading. These concepts and issues will be mainly studied within the context of securities and derivatives markets (capital markets), but the trading of other financial assets including money markets, currency markets and commodity markets will also be touched upon.

The course covers institutional features of traditional exchanges and over-the-counter (OTC) markets, extending to current alternative trading systems (ATSs), including transparent and opaque systems such as dark pools. We will study how transaction costs, inventory risk and information asymmetry affect liquidity provision and asset prices in transparent and opaque markets, theoretically and empirically. There will be emphasis on understanding the trading environment in high-frequency trading such as transaction cost management, market impact, technical and statistical trading techniques, and trading algorithms in such high-frequency settings.

SUGGESTED BOOKS:


Optional Reading:

(a) What is Market Microstructure about? (Hasbrouck: Chapter 1)
   i. Investigation of the economic forces affecting trades, quotes and prices.

(b) Trading mechanisms, (Hasbrouck: Chapter 2)
   i. U.S. equity market (Hasbrouck: Appendix)
   ii. Liquidity fragmentation, Lehalle and Burgot (2009).

(c) Sources for Short-run Price Deviation from Fundamentals? Competitive Liquidity Suppliers Models
   i. A simple implicit measure of effective bid-ask spread in an efficient market, Roll (1984)’s model (Hasbrouck: Chapter 3)
   ii. Order data, quote data (Hasbrouck: Chapter 14)
   iv. Asymmetric information, O’Hara’s sequential model (Hasbrouck: Chapter 5, O’Hara: Chapter 3.4)
   v. Bid, ask and transaction prices in a specialist market with heterogeneously informed traders, Glosten and Milgrom (1985) (O’Hara: Chapter 3.3)
   vi. PIN model (Hasbrouck: Chapter 6)
   ix. Sources of Information Advantage in the Foreign Exchange Market, Bjonnes et al. (2012).

(d) Inventory Costs
   i. Market microstructure, Garman (1976)’s model (O’Hara: Chapter 2.1)
   ii. The supply of dealer services in securities markets, Stoll (1978)’s model (O’Hara: Chapter 2.2)
   iii. Optimal dealer pricing under transactions and return uncertainty, Ho and Stoll (1981) model (O’Hara: Chapter 2.3)
iv. Empirical studies:
   A. The trades of market makers, Hasbrouck and Sofianos (1993).
   B. Dealers and their inventories, (Hasbrouck: Chapter 11).
   C. Does algorithmic trading improve liquidity, Hendershott et al. (2011).

(e) Transitory versus Permanent Component in Price Formation
   i. VAR approach, Hasbrouck (1993).

(f) Sources for Short-run Price Deviation from Fundamentals? Strategic Liquidity Suppliers Models
   i. Continuous auction model, Kyle (1985), (O’Hara: Chapter 4)
   ii. Liquidity and asset prices, Amihud et al. (2005).
   iii. Optimal trade execution and price manipulation in order books with time-varying liquidity, Fruth et al. (2014).
   v. Forecasting prices from level-I quotes in the presence of hidden liquidity, Avellaneda et al. (2011).
   vii. Order splitting (Hasbrouck: Chapter 15)
   x. High frequency trading and price discovery, Brogaard et al. (2014).

(g) Market Design
   i. Call versus Continuous
      B. Information acceleration close to opening, Biais et al. (1999).
   ii. Transparency
      A. Transparency helps, Boehmer et al. (2005).
      D. Should we be afraid of the dark? Dark trading and market quality, Foley and Puninš (2016).
   iii. Tick Size
      A. Less tick size leads to more competitive behavior, Bessembinder (2003).
D. Less tick size leads to less market depth, Goldstein and A. Kavajecz (2000),
   Jones and Lipson (2001).
F. Manual vs. High Frequency Traders in the Interbank FX Market, Role of Tick
   Size, Mahmoodzadeh and Gençay (2017).
G. White noise jumps and adverse selection in FX market, Tseng et al. (2016).
iv. Limit Order Markets
   B. Competition between markets, Parlour and Seppi (2003).
(h) Order Flow
(i) Trading speed
   i. A dynamic limit order market with fast and slow traders, Hoffmann (2014).
   iv. High frequency market making: implications for liquidity, Aït-Sahalia and Sağlam
      (2017a)
(j) Flash Crash
   i. The Flash Crash: high-frequency trading in an electronic market, Kirilenko et al.
      (2017)
   ii. The Flash Crash: a new deconstruction, Aldrich et al. (2017)
(k) Selected Topics
   i. Multiple Securities and Multiple Prices, Hasbrouck (2001), (Hasbrouck: Chapter
      10)
   ii. Realized Volatility: two-scale realized volatility estimator, Zhang et al. (2005)

Grading:

- Grading will be based on a written exam which will take place on Thursday, February 15,
  2018.
References


