EXCHANGE RATE ECONOMICS – LECTURE 2
THE MICRO APPROACH TO EXCHANGE RATES

2. Overview of Theoretical Models

***auction markets**

best price defined by submitted orders

auctioneer collects orders & sets price

orders batched & simultaneously executed at single market-clearing price

***dealership markets**

best price defined by dealer quotes

price quotes precede orders

sequential trade of individual orders

***desirable FX theory**

decentralized dealers

risk-averse actively manage positions

interbank vs. customer trades

RATIONAL-EXPECTATIONS AUCTION MODEL
(Grossman & Stiglitz, *AER*, 1980)

***insights**

price clears markets and conveys info.

***players**

1 informed trader (risk averse, perfect competitor)
1 uninformed trader (" " ")

***information**

informed receives signal of final payoff of risky asset
uninformed only sees current market-clearing price

***protocol**

single trading period
batch clearing (all trades at single price)
known pricing rule allows uninformed to infer informed's signal from market price

THE KYLE MODEL: AN AUCTIONEER
(Kyle, *Econometrica*, 1985)

Now introduce an explicit auctioneer or marketmaker to rational expectations model

- **sets prices**
- **sees order flow and takes positions**

***insights**

- **marketmakers count order flow not fundamentals**
- **marketmakers cannot differentiate informed vs. uninformed orders**
- **informed traders exploit latter**
- **liquidity (market depth) affects strategic behavior**

***players**

- **1 risk-neutral marketmaker**
- **1 risk-neutral informed trader**
- **many uninformed, non-strategic traders**

***information**

- **informed sees payoff value of risky asset**
- **informed does not observe uninformed orders**
- **marketmaker sees total orders, not components**

***protocol**

single trading period
batch clearing, all trades at single price
marketmaker prices to earn zero expected profit

SINGLE DEALER SEQUENTIAL TRADE MODEL (Glosten & Milgrom, *JFE*, 1985)

Now specify a single dealer whose prices are conditioned on order flow and who is a counterparty to all trades with randomly selected traders

***insights**

spreads quoted to equate loss expected to informed with gains from uninformed
dealer learns from sequential arrival of individual orders (price discovery)

***players**

1 risk-neutral dealer
many informed risk-neutral non-strategic traders
many uninformed non-strategic traders

***information**

informed know if payoff on risky asset is high or low
dealer knows uncond. prob. of payoff
dealer knows prob. that next trader is informed
dealer sees sequence of incoming orders

***protocol**

sequential trading, 1 trade per period
dealer one side of all trades
potential trader randomly selected from pool each period
dealer quotes bid & offer to potential trader
bid & offer set so expected profit equals zero

MULTIPLE DEALERSHIP SIMULTANEOUS TRADE MODEL

(Evans & Lyons, *JPE*, 2002)

Now have interdealer trades involving simultaneous-move games. Now have inventory shocks from incoming orders and get "hot potato" phenomenon. Earlier models had no undesired inventory as dealers are either risk neutral (single dealer and Kyle models) or trades are conditioned on the market-clearing price (R.E. auction model).

***insights**

- **dealer inventories & customer order flow are sources of private info.**
- **dealer speculation affected by former**
- **private info. & strategic dealer behavior reduce info. revealed by price**

***players**

- **a continuum of risk-averse, non-strategic customers**
- **n risk-averse and strategic dealers**

***information**

each dealer receives a private signal of payoff value of risky asset
all dealers receive a common signal of payoff value of risky asset
each dealer receives customer orders
after trading, dealers observe signal of interdealer order flow

***protocol**

dealer quoting is simultaneous, independent, & required
quotes are available to all dealers
quotes are single price at which any amount may be bought or sold

trading is simultaneous & independent
can trade with multiple partners

Reference: Lyons, ***The Microstructure of the Foreign Exchange Market,"*** **MIT Press, 2001. Selected chapters on website*:*** www.haas.berkeley.edu/~lyons