EXCHANGE RATE ECONOMICS – LECTURE 3
ASYMMETRIC INFORMATION AND ORDER FLOW

1. Portfolio Shifts Model and the Role of Order Flow

Portfolio shifts by public cause exchange rate change

- **not common knowledge when they occur**
- **large enough that market clearing requires exchange rate to change**

There are T periods & 2 assets: riskless & fx with stochastic payoff F

$$F = \sum_{t=1}^{T} r_t$$ **where innovations are iid** $\sim N(0, \Sigma_r)$

- r_t **observed before trading each period (public info.)**

Decentralized market with N **dealers** i **and continuum of non-dealer customers**

- **all have identical neg. exponential util. defined over wealth at** T

3 trading rounds each day t

TRADING ROUND 1

a) observe r_t at beginning of period

b) all dealers simultaneously & independently quote a scalar price P_{i1}

at which any amount may be bought or sold

c) customer orders c_{i1} at P_{i1}

$c_{i1} < 0$ is customer sale (dealer buy)

$c_{i1} \sim N(0, \Sigma_{c1})$ for each of N orders

orders are indep. across dealers

orders are distributed indep. of public info. r_t

these are the portfolio shifts that are not publicly observable

TRADING ROUND 2

a) each dealer simultaneously & indep. quotes a scalar price to other dealers P_{i2}

at which any amount may be bought & sold

interdealer quotes observable & available to all dealers

b) dealers trade on other's quotes

at any given P, orders evenly split across any dealers quoting that P

$\Delta x = \sum_{i=1}^{N} T_{i2}$ **is net interdealer order flow**

interdealer trade transparent to all dealers (no noise)

TRADING ROUND 3

a) dealers quote scalar price P_{i3}

P_{i3} conditioned on interdealer order flow (dealers know amount public must absorb)

any amount may be traded

observable & available to public at large

public absorbs dealer unwanted inventory

each dealer ends day with 0 net position

b) public trades at P_{i3}

$$c_3 = \gamma(E[P_{3,t+1} \mid \Omega_3] - P_{3,t})$$

so public's total demand is function of expected return

γ captures agg. risk-bearing capacity of public

EQUILIBRIUM

Dealer's problem is:

$$\max \; E[-\exp(-\theta w_{i3} \mid \Omega_i)]$$

$$s.t.$$

$$w_{i3} = w_{i0} + c_{i1}(P_{i1} - P'_{i2}) + (D_{i2} + E[T'_{i2} \mid \Omega_{i2}])(P_{i3} - P'_{i2}) - T'_{i2}(P_{i3} - P_{i$$

' denotes interdealer quote or trade

yields price equation:

$$\Delta P_t = r_t + \lambda \Delta x_t$$

for *r* use $\Delta(i\text{-}i^*)$

estimate:

$$\Delta P_t = \beta_1 \Delta(i_t - i_t^*) + \beta_2 \Delta x_t + \eta_t$$

ESTIMATION

Data: Reuters Dealing 2000-1

- ***time, price, and signed trade (+ buy, - sell)**
- ***no quantity, no quotes**
- ***take price from 4pm to 4pm GMT**
- ***(i-i*)** **overnight rates from Datastream (4pm GMT)**

Sig. & pos. order flow effect

- ***high R^2**
- ***estimates indicate that day with 1000 more purchases than sales ↑DM/$ by 2.1%**

If order flow drives prices, what drives order flow?

References

Evans & Lyons, "Order Flow and Exchange Rate Dynamics," *JPE*, 2000 (http://www.haas.berkeley.edu/~lyons**)**

