DISCUSSION OF:

TRADING DYNAMICS IN THE MARKET FOR FEDERAL FUNDS

JONATHAN CHIU

BANK OF CANADA

BANK OF FINLAND/CEPR/PHILADELPHIA FED CONFERENCE NOVEMBER 19, 2012

My Discussion

- 1. Why we should care about the FF market
- 2. Why we need a new model for the FF market
- 3. What we learn from this model
- 4. How we can extend this model









Why we should care about this market?



- Payments system (daily transactions = 28 % annual GDP)
- Monetary policy implementation

Standard Model

 \diamond Frictionless market







Standard Model

- \diamond Frictionless market
- \diamond Rates determined by aggregate supply and demand
- \diamond One competitive rate bound by policy rates

Real World

- \diamond Frictional OTC
- \diamond Bilateral negotiation
- \diamond Distribution of rates
 - can go below the floor



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A structural quantitative model of FF market helps policy makers design exit strategy.

This Model

- Finite horizon: last 2.5 hours of a business day
- Decentralized OTC market
 - Banks endowed with different initial balances k_0
 - Pairwise random matching $\boldsymbol{\alpha}$
 - Bilateral Nash bargaining $\left(b,R\right)$
- Exogenous:
 - Central bank policy rates
 - Initial reserve distribution
- Endogenous:
 - (time-varying) distribution of balances and interest rates
 - (time-varying) value function of reserve V_t

Implications

- Solving for equilibrium dynamics is very difficult in general.
- Two simplifying assumptions that brings tractability:
 - banks ex-ante identical (except for k_0)
 - quasi-linear preference
- Allocation of fed funds
 - match partners equally share reserve balances
 - allocation is socially efficient !
- Fed funds rates depend on
 - bargaining power
 - initial distribution
 - time of day ...



A1: Quasi-linear preference: $V(k)+c \cdot x$, where $c = e^{-r(\tau+\Delta)}$

Intuition



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In a match, borrower and lender bargain over

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- loan size \frac{b}{a} and repayment R
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A2: Agents are ex-ante identical (same V_t)



Determination of FF rates



Borrower's bargaining power $\uparrow \longrightarrow R \downarrow$

Determination of FF rates



Efficiency

- Externalities: social value $(\mathcal{W}(k)) \neq$ Private value (V(k)) .
- However, social planner still splits balances equally because

$$\frac{\mathcal{W}'(k_b+b)}{c} = MRS_b = MRS_\ell = \frac{\mathcal{W}'(k_\ell+b)}{c}$$



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 - 2. Long-term lending relationship
 - 3. Endogenous initial distribution

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Extension 1: Lending Relationship

• <u>Model</u>:

- Only random, 1-time spot-trades
- FF market:
 - Mainly repeated trades with long-term relationships
- Afonso, Kovner and Schoar (2012):

"Relationships between counterparties are very important in this market ... More than half of the banks form stable and persistent trading relationships." Chiu-Monnet (2012): allow repeated relationship in interbank market

- Every period, a bank chooses between
 - use CB facilities
 - search for new match partner
 - stay with last match partner
- Terms-of-trade depend on
 - current period payoffs
 - expected payoffs of staying in a match
- Implications:
 - a bank is willing to suffer short term loss to maintain a long-term relationship
 - in particular, when reserve supply is abundant, some lenders lend below the deposit rate

Extension 2: Endogenous Payment Activities

- <u>Model</u>: Payment activities and initial distribution invariant to policy changes.
- <u>FF Market</u>: Changes in policy can lead to significant change in payment activities (e.g. interest on daylight overdraft in 1994).

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- <u>Model</u>: Payment activities and initial distribution invariant to policy changes.
- <u>FF Market</u>: Changes in policy can lead to significant change in payment activities (e.g. interest on daylight overdraft in 1994).
- Incorporate FF market into a macro model



Banks provide intermediation service to underlying agents

- endogenize payment activities
- endogenize initial distribution of liquidity
- perform welfare analysis

Basic idea:

- banks provide intermediation to underlying clients, but cannot perfectly predict/control their payment flows
- banks relies on FF market to adjust their liquidity position

 $\left. \begin{array}{c} {\rm Discount\ window\ rate} \uparrow \\ {\rm FF\ market\ search\ friction} \uparrow \\ {\rm Reserve\ supply} \downarrow \end{array} \right\}$

 $\Rightarrow \text{cost of intermediation} \uparrow$ $\Rightarrow \text{bank payment service} \downarrow$ $\Rightarrow \text{welfare} \downarrow$

SUMMING UP

- \diamond I like the paper.
- ◇ Provide a nice, new model for an important market.
- ◇ Potential for many interesting extensions.
- ♦ Want to see quantitative work with heterogeneous types for policy analysis and testing with data.

THANK YOU