

Comments by Rafael Repullo on

**Understanding Monetary Policy  
Implementation**

Huberto Ennis and Todd Keister

*Conference on the Role of Money Markets*

*Federal Reserve Bank of New York, May 29-30, 2008*

# Motivation

- Fed will be able to pay interest on reserves from October 2011
  - Should monetary policy implementation be changed?
  - Paper presents analytical framework to discuss issues

# General comments

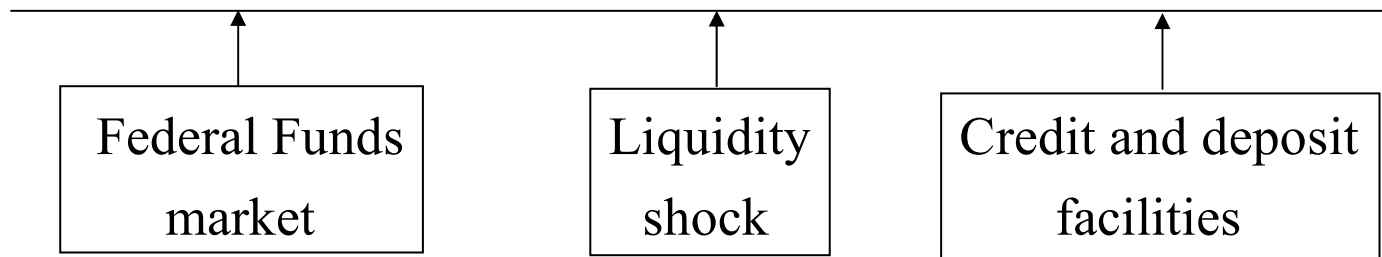
- Simple useful model (building on extant literature)
  - There is not much to comment on the model
- Paper does not discuss some of the relevant issues
  - Should there be a reserve requirement?
  - Should interest be paid on required or on excess reserves?
  - Should there be a deposit facility?
- Paper does not properly discuss prior issue
  - What is the objective function of the central bank?

# Overview of discussion

- Model setup
  - Effect of paying interest on required or excess reserves
- Central bank's objective function
- Tentative conclusions
- Two common misconceptions
- Other relevant issues (not discussed in the paper)

# Model (i)

- Assumptions
  - One-day maintenance period
  - No interest on required reserves + Standing facilities
- Time line



## Model (ii)

- Notation

$K$  = Reserve requirement

$R$  = Reserves

$P$  = Liquidity shock (late payment if  $P > 0$ , deposit if  $P < 0$ )

$F$  = Recourse to facilities (credit if  $F > 0$ , deposit if  $F < 0$ )

$r$  = Federal funds rate

$r_C$  = Interest rate of credit facility (discount window)

$r_D$  = Interest rate of deposit facility

## Model (iii)

- Recourse to the facilities:  $F = K - R + P$
- Recourse to the credit facility:  $F^+ = \max \{F, 0\}$
- Recourse to the deposit facility:  $F^- = \max \{-F, 0\}$

## Model (iv)

- Objective function of representative bank

→ Minimize expected cost of complying with requirement

$$\min_R \left[ rR + r_C E(F^+) - r_D E(F^-) \right]$$

- First-order condition

$$r = r_C \Pr(F > 0) + r_D \Pr(F < 0)$$

- Bank's demand for reserves

$$R = R(r), \text{ with } R'(r) \leq 0$$



## Alternative regimes (i)

- No interest on excess reserves
  - Set  $r_D = 0$
  - More inelastic demand for reserves (as illustrated in paper)
- Pay interest on required reserves at target federal funds rate  $r_T$ 
  - Bank's objective function
$$\min_R \left[ rR + r_C E(F^+) - r_D E(F^-) - r_T K \right]$$
  - Subtracts constant term  $r_T K$
  - No change in the bank's decision

## Alternative regimes (ii)

- Pay interest on excess reserves at target federal funds rate  $r_T$

→ Bank's objective function

$$\min_R \left[ rR + r_C E(F^+) - r_T E(F^-) \right]$$

→ Equivalent to setting  $r_D = r_T$

→ More elastic demand for reserves

→ Federal funds rate  $r$  above target rate  $r_T$

$$r = r_C \Pr(F > 0) + r_T \Pr(F < 0) > r_T \text{ (unless } \Pr(F > 0) = 0)$$

## Alternative regimes (iii)

- Pay interest on total reserves at target federal funds rate  $r_T$

→ Bank's objective function

$$\min_R \left[ rR + r_C E(F^+) - r_T E(F^-) - r_T K \right]$$

→ Subtracts constant term  $r_T K$

→ Same result as in the case of interest on excess reserves

# Key issue

- How should one choose among these alternative regimes?
  - What is the objective function of the central bank?

# Possible central bank objectives

- Keep federal funds rate close to the target rate
  - But averaging provisions already achieve this
- Tax financial intermediaries
  - Small revenue + some distortions
- Facilitate proper functioning of federal funds market
  - Avoid intermediation by central bank
- Facilitate smooth functioning of payment system
  - Reduce (or even eliminate) daylight overdrafts

## Tentative conclusions (i)

- For federal funds rate to be close to target rate
  - Do not pay market interest on excess (or total) reserves
  - Introduce a deposit facility
- For proper functioning of federal funds market
  - Let surplus banks directly lend to deficit banks
  - Do not encourage surplus banks to invest in reserves
  - Do not pay market interest on excess (or total) reserves

## Tentative conclusions (ii)

- For smooth functioning of payment system
  - Get banks to hold more reserves (higher requirements)
  - Pay interest on required reserves (to avoid tax distortions)
- Summing up: Adopt policy framework of ECB

## Two common misconceptions

- The federal funds market is not a market for bank reserves
  - It is a market for overnight (unsecured) loans
  - No different from other markets in which banks trade
- Reserve requirements relate to total reserves
  - Distinction between BR and NBR is irrelevant
  - In fact NBR are negative since January 2008



## Other relevant issues

- Should vault cash be counted as reserves (and be remunerated)?
  - Probably not
- What should be the length of the maintenance period?
  - Avoid changes in policy rate during maintenance period
- Should there be carryover provisions (to the next period)?
  - Probably not (or very small)
- What should be the width of the interest rate corridor?
  - Should it be reduced at the end of the maintenance period?
  - Probably yes