Monetary Policy Operations

Experiences During the Crisis & Lessons Learnt

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ECB Paper

Nuno Cassola, Alain Durré and Cornelia Holthausen

"Implementing Monetary Policy in Crisis Times:
The Case of the ECB/Eurosystem"

New York Fed Paper

Spence Hilton and James McAndrews

"Challenges and Lessons of the Federal Reserve's
Monetary Policy Operations during the Financial Crisis"

Key issues

- How was monetary policy implemented before the crisis?
- How did the ECB and the Fed respond to the crisis?
- How should the framework be changed after the crisis?

MP implementation before the crisis (i)

- Same structure in US and EA based on separation principle
  - On the one hand: decisions on policy rate
    → By Governing Council or FOMC
  - On the other hand: open market operations
    → To keep short-term market rates close to policy rate

MP implementation before the crisis (ii)

- Important differences in implementation
  - ECB: Lending to large number of banks once a week
  - Fed: Trading with few primary dealers every day
- Other significant differences
  - Lending facility vs. discount window (with stigma)
  - Remunerated vs. non-remunerated reserves

Challenge of crisis

- Many institutions faced liquidity shocks
  - Increased demand for liquidity
  - Also increased supply of liquidity (no flight to cash)
- Many markets stop functioning (due to lemons problem)
  - Problem in redistributing liquidity
  - Central banks had to step in as intermediaries

Response to crisis

- Both ECB and Fed significantly increased their balance sheet

  → Acting as lenders or market makers of last resort

- Fed is perceived as more “innovative” central bank

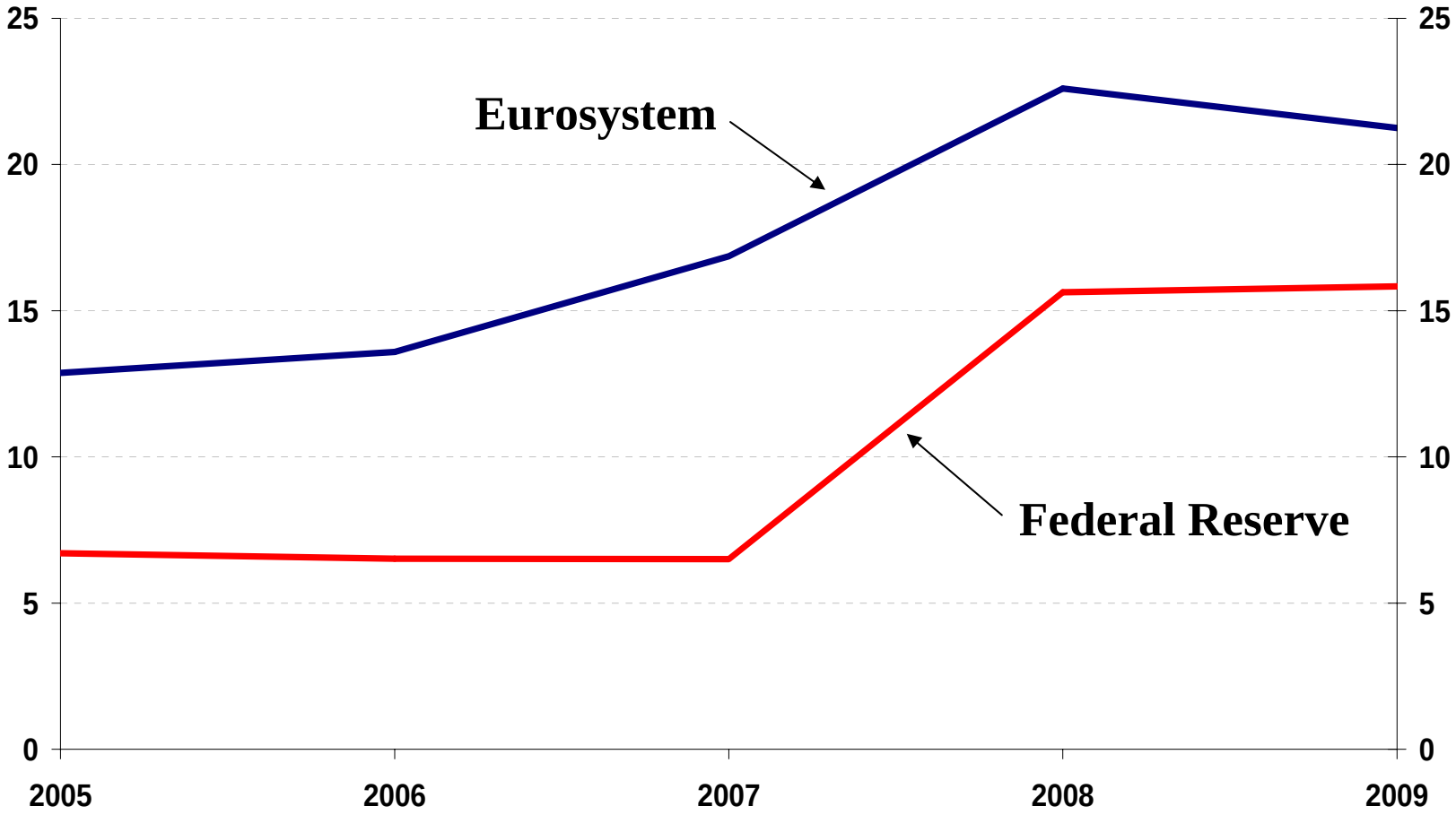
  → ECB had a better set on instruments to respond to crisis

- Fed is perceived as more “active” central bank (QE)

  → Not much difference in terms of impact on balance sheet

Consolidated balance sheets

(% of GDP)



Structure of presentation

- Review ECB paper
- Review New York Fed paper
- Monetary policy implementation after the crisis

Part 1

ECB paper

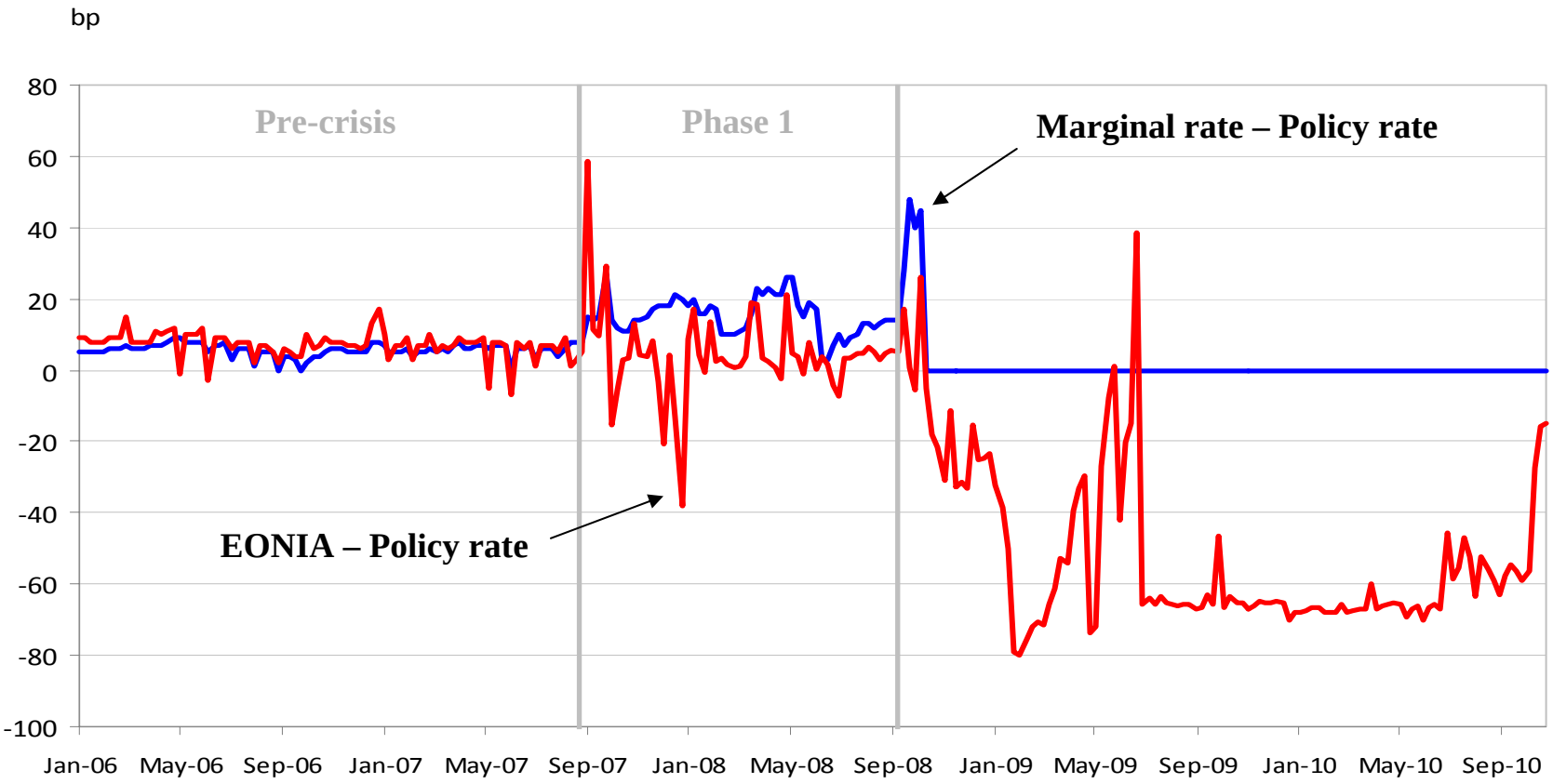
Structure of paper

- Three phases of the crisis
  - Market turmoil: Aug 2007 – Sep 2008
  - Financial crisis: Sep 2008 – Oct 2009
  - Phasing out + Sovereign debt crisis: Oct 2009 –
- Theoretical model of the interbank market
- Empirical evidence: VARX model

Phases of crisis

- Market turmoil: Aug 2007 – Sep 2008
  - Frontloading of liquidity provision
  - More longer-term refinancing
- Financial crisis: Sep 2008 – Oct 2009
  - Non-standard measures
  - Suspension of separation principle
- Phasing out + Sovereign debt crisis: Oct 2009 –
  - Intervention in government debt securities markets

What happened to key spreads?



Comment 1: Frontloading of liquidity

- Consequence of separation principle
  - Appropriate reaction to change in banks' bidding behavior
- ECB allowed marginal rate to increase above policy rate
  - Signal of tighter liquidity provision
  - What was the point of doing this?
  - Was it to tighten policy through the back door?

    → Inflation was moving up

Comment 2: Separation principle

- Since Sept 2008 market rates were way below policy rate
  - Why was separation principle abandoned?
  - Why wasn't the policy rate lowered to 50 or 25 bps?
  - Why introduce this element of confusion in policy stance?

    → Theoretical model

Theoretical model (i)

- Model setup
  - 4 dates ($t = 0, 1, 2, 3$)
  - Large number of risk-neutral banks
  - Banks are identical ex-ante but different ex-post

    → Idiosyncratic liquidity shocks at $t = 1$ and $t = 2$
  - Credit risk: Banks may fail at $t = 2$ or $t = 3$
  - Liquidity risk: Possible aggregate liquidity shock at $t = 2$
  - Central bank with deposit and lending facilities

Theoretical model (ii)

- Main issue: When will there be an active interbank market?
- Main results:
  - Width of interest rate corridor has to be sufficiently large
  - Credit risk has to be sufficiently small
  - Liquidity risk reinforces effect of credit risk

Review of model (i)

- Consider (type A) bank
  - Unit liquidity surplus at $t = 1$
  - Unit liquidity deficit at $t = 2$
- Let r_t denote interbank rate at date t
- Let d_t denote deposit facility rate at date t
- Let q_t denote probability that interbank loan will not be repaid
- Bank can either
  - Use deposit facility at $t = 1$
  - Lend surplus in market at $t = 1$

Review of model (ii)

- Assume $d_1 = 0$
- Using deposit facility at $t = 1$ yields $1 + d_1 = 1$ at $t = 2$

  → Use unit for payment due at $t = 2$

  → Zero payoff at $t = 3$

Review of model (iii)

- Lending surplus in market at t = 1 yields

  $1+r_1$ with probability $1-q_1$ at $t=2$

  → Use principal for payment due and invest interest

  0 with probability q_1 at $t=2$

  → Borrow unit for payment due

- Expected payoff at $t=3$

$$r_1(1+r_2)(1-q_1)-(1+r_2)q_1=\left[r_1(1-q_1)-q_1\right](1+r_2)$$

Review of model (iv)

- Bank will lend surplus in market if

Expected payoff of lending ≥ Payoff of using deposit facility

$$\downarrow$$

$$\left[r_1(1-q_1)-q_1\right](1+r_2)\geq 0 \quad \rightarrow \quad \frac{1}{1-q_1}\leq 1+r_1$$

- In general case where $d_1 \geq 0$ we have

$$\frac{1+d_1}{1-q_1}\leq 1+r_1$$

Comment 3: Credit risk and liquidity risk

- Condition

$$\frac{1+d_1}{1-q_1} \leq 1+r_1$$

does not depend on interbank rate at $t = 2$

→ Lemma 2 is wrong

→ No interaction between credit risk and liquidity risk!

- What's the problem with the analysis in the paper?

→ Interest r_1 on initial loan is not taken into account

Comment 4: Interbank market (i)

- Model focuses on conditions for an active interbank market
  - Why do we care?

    → Central bank intermediation has no efficiency effects
  - Why does the ECB care?

    → Reason for suspension of separation principle

    "Bringing the main policy rate too close to zero would risk hampering the functioning of the money markets."

    Lorenzo Bini Smaghi (2009)

Comment 4: Interbank market (ii)

- Role of interbank market in model

  → To deal with idiosyncratic liquidity shocks

- Alternative role of interbank market

  → To transfer funds from surplus to deficit banks

- In models with market freezes (Bruche and Suarez, JME 2010)

  → Central bank intermediation leads to efficiency gains

  → Narrowing the interest rate corridor would be desirable

- Conclusion: Suspension of separation principle not justified

Empirical results (i)

- VARX model

$$Y_t = A(L)Y_t + B(L)X_t + \eta_t$$

  - Y_t is a vector of 7 endogenous variables
  - X_t is a vector that contains "changes in policy rate"
- Estimated with daily data with 2 lags for Aug 2007 – Oct 2010
- Generalized impulse response functions

  → Pesaran and Shin, *Economics Letters* 1998

Empirical results (ii)

- Main results:
  - Shocks to outstanding volume of refinancing operations

    → Decrease spread between EURIBOR and OIS rate

    → Decrease EONIA volumes

    → No effect on overnight repo market volumes

Comment 5: Why this empirical model?

- Too many endogenous variables

  → More parsimonious model would be better

- Some of them have a trend

  → Cumulative asset purchase programs

- Why leave obvious endogenous variables in the vector X_t?

  → Changes in policy rate

- Why not estimate a standard structural VAR approach?

  → With proper justification of identification restrictions

Part 2

New York Fed paper

Structure of paper

- Three challenges in responding to the crisis
  - Balance sheet constraints
  - Stigma of discount window
  - New collateral arrangements
- Three lessons for the future
  - Interest on reserves
  - Structure of portfolio
  - Reserve balances

Challenges in responding to the crisis (i)

Balance sheet constraints

- Liquidity injections to institutions increase reserves
- Control of policy rate requires
  - Either mopping up reserves via OMO
    - → Need to have enough Treasury securities
    - → Supplementary Financing Program (Sep 2008)
  - Or paying market interest on excess reserves
    - → Need to have authority to pay interest on reserves
    - → Emergency Economic Stabilization Act (Oct 2008)

Challenges in responding to the crisis (ii)

Stigma of discount window

- Banks were unwilling to borrow at discount window
  - – Inheritance of traditional (anti-Bagehot) system
  - – Consequence of exceptional nature of discount window
    - → No stigma in Euro Area
    - → Success of Term Auction Facility (Dec 2007)

Challenges in responding to the crisis (iii)

Collateral arrangements

- Fed had to set up new lending arrangements
  - To banks that run out of Treasury securities
  - To other institutions (e.g., Money Market Mutual Funds)
- Fed has to assume significant amount of credit risk
  - Justified to address market-wide disruptions
  - Key role of securitization markets in US financial system

Lessons for the future (i)

Interest on reserves

- Paying interest on excess reserves allows
  - – Solve problem of balance sheet constraint
    - → Run monetary policy with structural liquidity surplus
  - – Facilitate acting on term premium (QE)
    - → Even outside of the zero lower bound

Lessons for the future (ii)

Structure of portfolio

- Fed acquired large amount of non-Treasury securities
  - This will eventually be reversed
  - No need to use these securities in normal times
- Need to be ready to act in future crisis
  - Lending for terms longer than overnight
  - Against non-Treasury securities
  - Possibly on a non-recourse basis
- Need for expanded credit risk management in normal times

Lessons for the future (iii)

Reserve balances

- Potential value for wholesale payment systems (Fedwire)
  - Improve efficiency of payments
  - Reduce risks posed by daylight overdrafts
- Same result with large remunerated reserve requirement
  - As in Euro Area
  - No need to remunerate excess reserves

Comment (i)

- Very good summary of the challenges faced by the Fed
- Paper is weaker on the lessons for the future
  - Piecemeal approach focusing on three issues
  - More systematic approach would be desirable

Comment (ii)

- What I would have liked to see
  - Description of the relevant environment
  - Specification of central bank's objectives
  - List of possible instruments
  - Analysis of optimal implementation of monetary policy

Part 3

MP implementation after the crisis

Three different ways to implement MP

- Structural liquidity deficit (ECB)

  → Central bank lends to banks

  → Policy rate is lending rate

- Approximate liquidity balance (Fed prior to crisis)

  → Central bank conducts open market operations

  → Policy rate is short-term money market rate

- Structural liquidity surplus (Fed after crisis?)

  → Central bank pays interest on excess reserves

  → Policy rate is rate paid on excess reserves

Which one is best?

- Proper analysis is needed

  → Should be high priority

  → Central banks should invite academics to contribute

Some preliminary thoughts (i)

- Structural liquidity deficit
  - – Good for distributing liquidity broadly (no stigma)
  - – Requires careful management of credit risk
    - → Not comparative advantage of central bank
  - – Penalizes banks in Basel III (Liquidity Coverage Ratio)
    - → Additional requirement of liquid assets

Some preliminary thoughts (ii)

- Structural liquidity surplus
  - – Bad for distributing liquidity broadly (stigma)
  - – Requires large pool of suitable assets for central bank
    - → Not a problem in the foreseeable future
  - – May lead to losses to central bank
    - → Central bank as S&Ls in the 1980's
    - → Constraint to monetary policy decisions?

Issues for discussion

- Why should we care about the interbank market?

  → Differentiating between normal and crisis times

- Was the ECB right in abandoning separation principle?

  → Letting short-term market rates fall below policy rate

- What would be the best way to implement monetary policy?

  → Structural liquidity deficit or surplus