Financial Market Developments Since Lift-Off

February 8, 2016
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Today’s Presenters

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  Federal Reserve Bank of St. Louis

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  Federal Reserve Bank of St. Louis

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  Federal Reserve Bank of St. Louis
Agenda

I. Federal Reserve (Fed) monetary policy operating practices before the financial crisis

II. Fed monetary policy operating practices during the financial crisis

III. Fed monetary policy operating practices after the financial crisis

IV. Operational details regarding interest payments on reserve balances

V. Market signals to gauge success of the new monetary policy operating practices
I. Fed Monetary Policy Operating Practices Before the Financial Crisis (pre-2007)

• Monetary policy objectives: The Federal Open Market Committee (FOMC) sought to influence economic conditions in pursuit of its statutory dual mandate of price stability and maximum employment.

• Instrument: The instrument used was the average effective overnight federal funds rate (FFR)

• Implementation: The Federal Reserve Bank of New York targeted the FFR chosen by the FOMC.

• Operating procedures:
  a) Open market operations fine-tuned the quantity of banks’ reserve balances to achieve the FFR target
  b) Discount Window lending provided backup liquidity to banks, and
  c) Reserve requirements ensured bank demand for reserves.
Federal Reserve Banks’ Liabilities Prior to the Financial Crisis

Currency in Circulation
Deposits at Federal Reserve Banks
Reverse Repurchase Agreements
Other Liabilities and Capital

Periods of National Bureau of Economic Research (NBER)-determined recession are indicated by vertical gray shading.

Source: Haver Analytics
Weekly H.4.1 Report
Federal Reserve Banks’ Consolidated Balance Sheet, December 2006

<table>
<thead>
<tr>
<th>Assets</th>
<th>Billions of $</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Securities held outright</td>
<td>779</td>
<td>783 Curreny in circulation</td>
</tr>
<tr>
<td>Treasury</td>
<td>779</td>
<td>18 Deposits at Federal Reserve Banks</td>
</tr>
<tr>
<td>Agency debt, mortgage-backed securities (MBS), etc.</td>
<td>0</td>
<td>32 Reverse repos</td>
</tr>
<tr>
<td>Central bank liquidity swaps</td>
<td>0</td>
<td>37 Other liabilities and Federal Reserve capital</td>
</tr>
<tr>
<td>Other assets</td>
<td>91</td>
<td></td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td><strong>870</strong></td>
<td><strong>870</strong> Total liabilities and capital</td>
</tr>
</tbody>
</table>

*Source: H.4.1 Report*
II. Fed’s Monetary Policy Operating Practices During and Immediately Following the Financial Crisis (2007-14)

- Monetary policy objectives: The FOMC temporarily elevated financial stability above the dual mandate of price stability and maximum employment.
- Instruments: Unconventional credit and liquidity programs designed by the FOMC (TAF, PDCF, TSLF, CPFF, AMLF, MMIFF, TALF, LSAP, etc. *)
- Implementation: Some tools employed by the Federal Reserve Bank of New York alone, others by all Reserve Banks
- Operating procedures:
  a) Some crisis tools and programs required new infrastructure,
  b) Open market operations expanded to include outright purchases of Federal agency bonds and mortgage-backed securities (MBS).

* TAF: Term Auction Facility; PDCF: Primary Dealer Credit Facility; TSLF: Term Securities Lending Facility; CPFF: Commercial Paper Funding Facility; AMLF: Asset-Backed Commercial Paper Money Market Mutual Fund; MMIFF: Money Market Investor Funding Facility; TALF: Term Asset-Backed Securities Loan Facility; LSAP: Large-Scale Asset Purchase
Federal Reserve Banks’ Assets

Total Assets
Billions of dollars

Securities
Billions of dollars

QE I:

QE II:
Nov. 2010 – June 2011

QE III:

Periods of NBER-determined recession are indicated by vertical gray shading.

Source: Haver Analytics

Weekly H.4.1 Report

Billions of dollars
(= $5 trillion)
Federal Reserve Banks’ Liabilities

Currency in Circulation
Deposits at Federal Reserve Banks
Reverse Repurchase Agreements
Other Liabilities and Capital

Periods of NBER-determined recession are indicated by vertical gray shading.

Source: Haver Analytics
Weekly H.4.1 Report
Federal Reserve Banks’ Consolidated Balance Sheet, December 2008

<table>
<thead>
<tr>
<th>Assets</th>
<th>Billions of $</th>
<th>Liabilities</th>
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</thead>
<tbody>
<tr>
<td>Securities held outright</td>
<td>496</td>
<td>853</td>
</tr>
<tr>
<td>Treasury</td>
<td>476</td>
<td>1,248</td>
</tr>
<tr>
<td>Agency debt, mortgage-backed securities (MBS), etc.</td>
<td>20</td>
<td>88</td>
</tr>
<tr>
<td>Central bank liquidity swaps</td>
<td>554</td>
<td>50</td>
</tr>
<tr>
<td>Other assets</td>
<td>1,189</td>
<td></td>
</tr>
<tr>
<td>Total assets</td>
<td>2,239</td>
<td>2,239</td>
</tr>
</tbody>
</table>

Source: H.4.1 Report
III. Fed’s Monetary Policy Operating Practices After the Crisis (Monetary Policy Normalization)

- See FOMC Statement of September 17, 2014
- **Monetary policy objectives:** The FOMC will elevate its dual economic mandate of price stability and maximum employment above financial stability concerns.
- **Instruments:**
  a) Set the FFR target to achieve dual mandate, but b) maintain a large balance sheet to ensure economic stability.
  - The new challenge: How to use two instruments that affect each other—namely, the price and quantity of reserves?
  - A very large balance sheet with trillions of dollars of excess reserves makes FFR targeting impossible under the old operating procedures.
    - Why? To set the price (FFR) under old procedures, the Fed managed the scarcity of reserves.
    - But with abundant excess reserves, there is no scarcity and the price—the FFR—will always be zero.
  - **Solution:** Construct an interest rate floor that will lift the FFR.
III. Fed’s Monetary Policy Operating Practices After the Crisis (continued)

- **Implementation**: The FOMC will instruct the Federal Reserve Bank of New York to achieve the FFR target range while re-investing all principal and interest from the securities portfolio.

- **Operating procedures**:
  - a) IOR puts a floor under short-term interest rates among reserve holders (banks), and
  - b) Overnight reverse repurchase facility (ON RRP) puts a floor under short-term interest rates among an expanded set of non-bank Fed counterparties.
# Federal Reserve Banks’ Consolidated Balance Sheet, December 2015

<table>
<thead>
<tr>
<th>Assets</th>
<th>Billions of $</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Securities held outright</td>
<td>4,242</td>
<td>1,381</td>
</tr>
<tr>
<td>Treasury</td>
<td>2,462</td>
<td>2,561</td>
</tr>
<tr>
<td>Agency debt, mortgage-backed securities (MBS), etc.</td>
<td>1,780</td>
<td>499</td>
</tr>
<tr>
<td>Central bank liquidity swaps</td>
<td>1</td>
<td>46</td>
</tr>
<tr>
<td>Other assets</td>
<td>244</td>
<td></td>
</tr>
<tr>
<td>Total assets</td>
<td>4,487</td>
<td>4,487</td>
</tr>
</tbody>
</table>

Source: H.4.1 Report
IV. Operational Details for Interest Payments on Reserve Balances

• What’s the difference between IOR, IORR, IOER?
  – IOR refers to the Federal Reserve’s authority to pay interest on reserve balances held at Federal Reserve Banks. IOR includes:
    • The interest rate paid on required reserve balances (IORR)
    • The interest rate paid on excess reserve balances (IOER)

• Where are IORR and IOER rates published?

• How are rate changes communicated?

• Can IOR payments and calculations be viewed for my institution?
  – Yes. For more information: http://www.FRBServices.org
IOR Payment Calculation Concept

Overview

Total interest paid on reserves balances (IOR) =

Interest paid on required reserves (IORR rate) +

Interest paid on excess reserves (IOER rate)

See the Reserve Maintenance Manual for the actual IOR payment formulas:

http://www.federalreserve.gov/
IOR Payment Calculation Conceptual Example

Excess Reserves
Daily balances paid at daily IOER rate (with adjustments)

Required Reserves
Maintenance period average balances paid at average IORR rate

Penalty free band (top)
Reserve balance requirement
Penalty free band (bottom)

Reserve Maintenance Period (Days)

- Account balance
IOER in Action December 2015: Target Range Increase

Source: Federal Reserve Bank of St. Louis / FRED
V. Market Signals to Gauge Success of the New Monetary Policy Operating Practices

• **Volume of ON RRP (slide 20):**
  – Volume caps should prevent a disruptive flight to safety into the ON RRP facility during financial turmoil.

• **Functioning of money markets (slide 21):**
  – Is the Fed able to keep the FFR in its target range?
  – Are other money market rates moving with the FFR?

• **Monetary policy transmission (slide 22):**
  – Economic growth: Has the Fed tightened economic conditions, as indicated by the slope of the yield curve?
  – Inflation expectations: Has the Fed reduced long-term inflation expectations, as indicated by Treasury spreads?
Volume of Reverse Repos

Reverse Repurchase Agreements

Billions of dollars

Periods of NBER-determined recession are indicated by vertical gray shading.

Source: Haver Analytics

Weekly H.4.1 Report
Money Market Rates

1-Month Eurodollar Deposit Rate
1-Month Nonfinancial Commercial Paper Paper Yield
1-Month Treasury Bill Yield
Average Effective Federal Funds Rate

Source: Federal Reserve Board / Haver Analytics
Financial Indicators for Growth and Inflation Expectations

Yield-Curve Slope: 10-Year Minus 3-Month Treasury Yields
Percentage points

Inflation Compensation: 10-Year Nominal Minus 10-Year Inflation-Indexed
Percentage points

Source: Haver Analytics
Questions?

You have three ways to ask a question
1. By webinar: Type your question into the webinar “Ask Question” box
2. By phone: Press *1 to ask a live question
3. By email: rapid@stls.frb.org
APPENDIX
Acronyms

- **AMLF**: Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility
- **CPFF**: Commercial Paper Funding Facility
- **DWE**: Discount Window Eligible
- **FFR**: Federal Funds Rate
- **FOMC**: Federal Open Market Committee
- **GSE**: Government-Sponsored Enterprise
- **IOER**: Interest Rate on Excess Reserves
- **IOR**: Interest on Reserves
- **IORR**: Interest Rate on Required Reserve Balances
- **LSAP**: Large-Scale Asset Purchase
- **MBS**: Mortgage-Backed Securities
- **MMIFF**: Money Market Investor Funding Facility
- **NBER**: National Bureau of Economic Research
- **ON RRP**: Overnight Reverse Repurchase Facility
- **PDCF**: Primary Dealer Credit Facility
- **TAF**: Term Auction Facility
- **TALF**: Term Asset-Backed Securities Loan Facility
- **TSLF**: Term Securities Lending Facility
8th District Reserves Resources

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Janice Harris
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8th District Reserves Resources (continued)

• Reserve Maintenance Manual:
  – Information on the reserve requirement, IORR, and IOER

• Reserve account administration:
  – Web-based application for accessing reserve balances and interest payment information

• Account management information:
  – Web-based application for real-time Federal Reserve account information
  – [https://www.frbservices.org/serviceofferings/account/ami.html](https://www.frbservices.org/serviceofferings/account/ami.html)

• Ask the Fed:
  – Monthly conference calls featuring Fed experts and guest speakers on top banking issues:
    • Monetary Policy Normalization: Understanding the Fed’s Tools (January 13, 2016)
  – [https://www.askthefed.org](https://www.askthefed.org)
Thank you!