Agenda

- Federal Reserve’s operating framework
- Execution of large-scale asset purchases
- Implications for the Fed’s balance sheet
- Implications for income
- Implications for normalization

*The views expressed are the presenter’s and not those of the Federal Reserve Bank of New York or the Federal Reserve System.*
Federal Reserve’s Operating Framework
Monetary Policy Formulation and Implementation

- Policy formulation
  - Objectives established by Federal Reserve Act
  - “Dual mandate” of maximum employment and price stability

- Policy implementation through open market operations (OMOs)
  - FOMC votes on domestic policy directive
    - Directive establishes an operating objective for OMOs
  - Desk designs and conducts OMOs to achieve the objective
    - SOMA Manager accountable to the FOMC
    - Market monitoring supports policy formulation and execution

- Board of Governors regulates complementary policy tools
  - Discount window (administered by Reserve Banks)
  - Reserve requirements, interest on reserves, term deposits
Conventional operating objective for OMOs was target federal funds rate (FFR)

- Desk adjusted supply of reserve balances to achieve target
  - Repos/reverse repos address transitory reserve needs
  - Treasury purchases offset currency growth

With the FFR at the effective zero bound, operating objective has shifted to adjustments in balance sheet size/composition

- Large-scale purchases of Treasuries, agency MBS and debt
- Maturity Extension Program
- Reinvestment policies
- Interest on reserves keeps FFR in target range w/o OMOs

FOMC has also used communications to influence policy
Timeline of Asset Purchase Programs

USD, billions (par)

SOMA Domestic Securities Holdings

- LSAP1
- LSAP2
- MEP
- LSAP3

Start of LSAP3 for agency MBS
Reinvest agency MBS/debt in MBS
Reinvest agency MBS/debt in Treasuries

Source: Board of Governors of the Federal Reserve System
Purchases put downward pressure on longer-term interest rates, ease financial conditions and stimulate economic activity.

Purchases are understood to work through several channels:

- **Portfolio balance effect**
  - Reduce stock of securities held by private sector
  - Remove duration risk and prepayment risk from market
  - Drive risk premiums lower than they would otherwise be

- **Market functioning/liquidity effect (LSAP1)**
  - Provide consistent and significant market presence

- **Signaling effect**
  - May be perceived as signal of FOMC intentions for FFR path
Execution of Large-scale Asset Purchases
Implications for Open Market Operations

- LSAPs raised new operational challenges for the Desk
  - New, more complex instruments (agency MBS)
  - Increased frequency and size of operations

- However, the fundamental approach has remained the same
  - Carry out FOMC’s directives with efficiency and competence
  - In doing so:
    ▫ Seek competitive pricing and cost efficiency
    ▫ Prudently manage risks
    ▫ Be mindful of disruptions to financial markets
    ▫ Be consistent, predictable and transparent
    ▫ Innovate and adjust operations as needed

- Same attention will apply to tools used during normalization
# Treasury and Agency MBS Purchase Operations

<table>
<thead>
<tr>
<th>Design</th>
<th>Treasuries</th>
<th>Agency MBS</th>
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<tbody>
<tr>
<td>Type of Securities</td>
<td>longer-term Treasuries</td>
<td>newly-issued agency MBS</td>
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<tr>
<td>Market</td>
<td>secondary market</td>
<td>TBA market</td>
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<tr>
<td>Purchase Distribution</td>
<td>planned by maturity sector</td>
<td>roughly proportional to anticipated gross issuance</td>
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<table>
<thead>
<tr>
<th>Operations</th>
<th>Treasuries</th>
<th>Agency MBS</th>
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<tr>
<td>Trading Platform</td>
<td>FedTrade</td>
<td>Tradeweb ➔ FedTrade</td>
</tr>
<tr>
<td>Scope of Operation</td>
<td>single maturity range</td>
<td>multiple coupons w/in single MBS settlement class</td>
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<tr>
<td>Auction Style</td>
<td>multi-security, multi-price auction</td>
<td>simultaneous, single-security multi-price auctions</td>
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<tr>
<td>Concentration Limit</td>
<td>70% of individual security</td>
<td>N/A</td>
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<td>Selection Criteria</td>
<td>relative value market prices</td>
<td>market prices</td>
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<th>Counter-parties</th>
<th>Treasuries</th>
<th>Agency MBS</th>
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<tr>
<td>Standing Counterparties</td>
<td>primary dealers</td>
<td>primary dealers</td>
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<tr>
<td>Small Firms</td>
<td>TOC pilot program completed</td>
<td>MOC pilot program accepting applicants</td>
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<table>
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<th>Other</th>
<th>Treasuries</th>
<th>Agency MBS</th>
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<tr>
<td>Additional Considerations</td>
<td>none</td>
<td>dollar rolls margining regime CUSIP aggregation</td>
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</table>
Coupon Distribution of SOMA Agency MBS Purchases

Monthly SOMA Purchases of 30-Year Agency MBS

Source: FRBNY
Agency MBS Operations in FedTrade

- Agency MBS operations moved to FedTrade in April 2014
  - Multi-year effort to expand proprietary system’s capabilities

- Strategic objectives were quickly realized
  - Increase efficiency
  - Enhance transparency
  - Reduce operational and information security risk

- Dollar rolls still conducted over commercial trading platform
Additional Operational Considerations

- Market functioning
  - Monitor effects of purchases on market conditions, results
  - Conduct securities lending and dollar rolls

- Transparency
  - Release planned operation schedules in advance
  - Release aggregate operational results and prices paid
  - Release summary of individual transaction details monthly
  - Release full transaction details with a 2-year lag

- Operational risk management and resiliency
  - Ensure robust controls
  - Provide end-to-end resiliency for mission-critical operations
SOMA Holdings as a Share of Outstanding Supply

SOMA Treasury Holdings
August 2014

Percent

Years to Maturity/Security Type

Sources: FRBNY, U.S. Treasury Department

SOMA Agency MBS Holdings
August 2014

Percent

Coupon (percent)

Sources: FRBNY, eMBS
Implications for the Fed’s Balance Sheet
Evolution of the Federal Reserve’s Balance Sheet

**Assets**
- Treasuries
- Agency Debt
- Agency MBS
- Other Assets*

**Liabilities and Capital**
- FR Notes
- Reserve Balances
- Other Liabilities** + Capital

* Includes DW, crisis facilities, central bank liquidity swaps, foreign portfolio, and unamortized premiums and discounts.

** Includes Treasury accounts and reverse repos.

Source: Board of Governors of the Federal Reserve System
Distribution of SOMA Treasury Holdings

SOMA Treasury Holdings by Maturity/Sector

Percent

< 3 years
3 - 6 years
6 - 10 years
10 - 30 years
TIPS
FRNs

Source: FRBNY
Distribution of SOMA Agency MBS Holdings

August 27, 2014
Total = $1,678 billion (settled)

Issuer
- Freddie Mac
- Fannie Mae
- Ginnie Mae

Term*
- 30-year
- 15-year

Coupon
- ≤2.5%
- 3%
- 3.5%
- 4%
- ≥4%

Vintage
- Pre-2009
- 2010
- 2011
- 2012
- 2013
- 2014

*Includes <1% in 10-year and 20-year agency MBS, which may be delivered into 15- and 30-year TBA contracts, respectively.

Source: FRBNY
Duration and 10-Year Equivalents of SOMA Portfolio

- 10-Year Equivalents - Total SOMA Portfolio (LHS)
- Duration - SOMA Treasury Portfolio (RHS)

Source: FRBNY
Implications for Income
SOMA Net Income and Fed Remittances to Treasury

USD, billions

SOMA Net Income
Remittances

Source: FRBNY
July 2014 *Survey of Primary Dealers (FRBNY)* median results
- Asset purchases continue to taper, end in October 2014
- FFR target lifts off in Q3-2015
- Normalization framework*
  - IOER and ON RRPs
    - $350 billion in ON RRPs immediately after liftoff
    - Spread of 20 bps between IOER and ON RRP rates
  - Reinvestments end after FFR liftoff (Q1-2016)
  - No MBS sales

June 2014 *Blue Chip Financial Forecasts Survey* consensus
- FFR target lifts off in Q3-2015, rises to 3.8% over long run
- 10-year Treasury yield rises gradually to ~5% by early 2019

Currency and capital assumptions from Fed staff research**

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Projected Path of SOMA Domestic Securities Portfolio

USD, billions

Historical Values

Projections (rounded)

Source: FRBNY staff projection (August 2014)
Projected SOMA Net Income

USD, billions

Historical Values

Projections (rounded)

Source: FRBNY staff projection (August 2014)
Implications for Normalization
Normalization Tools

- The Fed has developed and tested tools to “normalize” policy
  - Interest on excess reserves (IOER)
  - Overnight reverse repos (ON RRPs)
  - Term Deposit Facility (TDF)
  - Term reverse repos (term RRPs)
  - Asset sales

- Tools may be used towards different ends
  - Control short-term rates with an elevated level of reserves
  - Drain reserve balances
Considerable agreement on framework described in July 2014 FOMC minutes
- FOMC says it intends to provide more information later this year

Normalizing the stance and conduct of policy
- FFR remains key policy rate
  - Target range of 25 bps at liftoff and for some time thereafter
- IOER adjustments as primary tool to move FFR and influence other rates
- ON RRP facility helps firm floor under rates during normalization
  - Facility described as temporary and limited in scale
- Initially, IOER rate at top of FFR range and ON RRP rate at bottom

Normalizing the size and composition of the balance sheet
- In long run, reduce balance sheet to smallest level needed for efficiency
  - Portfolio should consist primarily of Treasuries
- Reduce or end reinvestments sometime after liftoff
- Anticipate no MBS sales, except perhaps to eliminate residual holdings
FOMC Resolutions Authorizing ON RRP Exercise

- Through temporary resolutions, the FOMC has authorized the New York Fed to conduct a series of fixed-rate ON RRPs according to the following terms

<table>
<thead>
<tr>
<th>Approval Date</th>
<th>Terms</th>
</tr>
</thead>
</table>
| Sep 17, 2013  | • Fixed rate may vary from 0 to 5 basis points  
                 • Maximum allotment of $1 billion/day per counterparty  
                 • SOMA Manager will inform FOMC in advance of changes  
                 • Operations authorized through Jan 29, 2014 |
| Dec 17, 2013  | • Maximum allotment cap raised to $3 billion/day per counterparty |
| Jan 28, 2014  | • Fixed rate may vary from 0 to 5 basis points  
                 • No stated allotment cap per counterparty  
                 • Changes in offered rate or per-counterparty bid limit requires approval of the FOMC Chair  
                 • SOMA Manager will notify FOMC in advance of changes  
                 • Operations authorized through Jan 30, 2015 |
Secured Overnight Interest Rates

Basis points

FOMC authorizes extension of ON RRP exercise

Sources: FRBNY, DTCC
ON RRP Exercise: Operation Results

ON RRP Participation

USD, billions

Month/Quarter-end Allotment (LHS)
Allotment (LHS)
Bidders (RHS)

# of bidders

USD, billions

Source: FRBNY

ON RRP Allotment vs. Rate Spread (since $10 bn cap/counterparty)

USD, billions

Treasury GCF Repo Index less ON RRP Rate (bps)

Sources: FRBNY, DTCC

Q2-2014 end
Broad set of RRP counterparties participates in exercise

- 140 counterparties currently eligible
  - 22 primary dealers
  - 118 expanded RRP counterparties
    - 94 2a-7 money market funds (MMFs) (32 government; 62 prime)
    - 18 depository institutions
    - 6 government-sponsored enterprises

Counterparty observations

- All types of counterparties participate
- Largest take-up from money market funds (MMFs)
- Some bids awarded at maximum limit
  - 64 instances since increase to $10 billion cap on April 7, 2014
ON RRP Exercise: Take-up by Counterparty Type

Daily Allotment in ON RRPs by Counterparty Type

USD, billions

- MMFs
- GSEs
- Primary Dealers
- Banks

Source: FRBNY
ON RRP Exercise: Take-up by Counterparty Type

Share of Total Participation in ON RRP Exercise Operations to Date

- MMFs-Gov 60%
- MMFs-Prime 49%
- MMFs-Gov 40%
- MMFs-Prime 22%
- GSEs 10%
- PDs 6%
- Banks 2%
- GSEs 7%
- PDs 3%
- Banks 1%

Non-Quarter-End Dates

Quarter-End Dates

Source: FRBNY
# Term Deposit Facility: Exercise Results

<table>
<thead>
<tr>
<th>Date</th>
<th>Term (days)</th>
<th>Max Award Amount (billions)</th>
<th>Rate</th>
<th>Size (billions)</th>
<th># of participants</th>
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<tbody>
<tr>
<td>Jan 13, 2014</td>
<td>28</td>
<td>$1.25</td>
<td>0.26%</td>
<td>$12.8</td>
<td>31</td>
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<td>Mar 3, 2014</td>
<td>7</td>
<td>$1.25</td>
<td>0.26%</td>
<td>$13.5</td>
<td>26</td>
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<td>Mar 10, 2014</td>
<td>7</td>
<td>$1.25</td>
<td>0.26%</td>
<td>$15.2</td>
<td>29</td>
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<tr>
<td>Mar 17, 2014</td>
<td>7</td>
<td>$1.25</td>
<td>0.26%</td>
<td>$15.4</td>
<td>27</td>
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<td>Mar 24, 2014</td>
<td>7</td>
<td>$1.25</td>
<td>0.26%</td>
<td>$14.3</td>
<td>27</td>
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<tr>
<td>May 19, 2014</td>
<td>7</td>
<td>$3.00</td>
<td>0.26%</td>
<td>$27.6</td>
<td>35</td>
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<td>May 27, 2014</td>
<td>7</td>
<td>$5.00</td>
<td>0.26%</td>
<td>$42.9</td>
<td>33</td>
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<td>Jun 2, 2014</td>
<td>7</td>
<td>$7.00</td>
<td>0.26%</td>
<td>$59.1</td>
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<td>Jun 9, 2014</td>
<td>7</td>
<td>$10.00</td>
<td>0.26%</td>
<td>$77.8</td>
<td>40</td>
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<td>Jun 16, 2014</td>
<td>7</td>
<td>$10.00</td>
<td>0.27%</td>
<td>$92.7</td>
<td>45</td>
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<td>Jun 23, 2014</td>
<td>7</td>
<td>$10.00</td>
<td>0.28%</td>
<td>$92.4</td>
<td>46</td>
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<tr>
<td>Jun 30, 2014</td>
<td>7</td>
<td>$10.00</td>
<td>0.29%</td>
<td>$124.9</td>
<td>58</td>
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<tr>
<td>Jul 7, 2014</td>
<td>7</td>
<td>$10.00</td>
<td>0.30%</td>
<td>$152.8</td>
<td>75</td>
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Money Market Data Collection

- New data collection requirement effective April 1, 2014
  - Report of Selected Money Market Rates (FR 2420)
  - Collects transaction-level data on unsecured borrowing

<table>
<thead>
<tr>
<th>Transaction Type</th>
<th>Reporting Entities*</th>
<th>Submission Frequency</th>
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<tbody>
<tr>
<td>Federal Funds</td>
<td>U.S. banks and thrifts, FBO branches</td>
<td>Daily, previous day’s transactions by 7:00 am</td>
</tr>
<tr>
<td>Eurodollars</td>
<td>U.S banks and thrifts</td>
<td>Daily, previous day’s transactions by 7:00 am</td>
</tr>
<tr>
<td>Certificates of Deposits</td>
<td>U.S. banks and thrifts, FBO branches</td>
<td>Daily, activity from two days prior by 2:00 pm</td>
</tr>
</tbody>
</table>

* U.S. banks with > $26 billion in assets report the activity of their U.S. operations and foreign branches with > $2 billion in assets. FBO branches with > $900 million in third-party assets each report separately.