



FEDERAL RESERVE BANK *of* NEW YORK

Normalizing Monetary Policy

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May 19, 2015

The views expressed in this presentation reflect the author's and do not necessarily reflect that of the Federal Reserve Bank of New York or the Federal Reserve System.

Disclaimer

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Agenda

- Section 1: The Markets Group at the New York Fed
- Section 2: Unconventional Policy & the Fed's Portfolio
- Section 3: Money Markets
- Section 4: Normalizing Monetary Policy

Section 1: The Markets Group at the New York Fed

Preamble to the Federal Reserve Act

“Act to provide for the establishment of Federal Reserve banks, to furnish an elastic currency, to afford means of rediscounting commercial paper, to establish a more effective supervision of banking in the United States, and for other purposes”

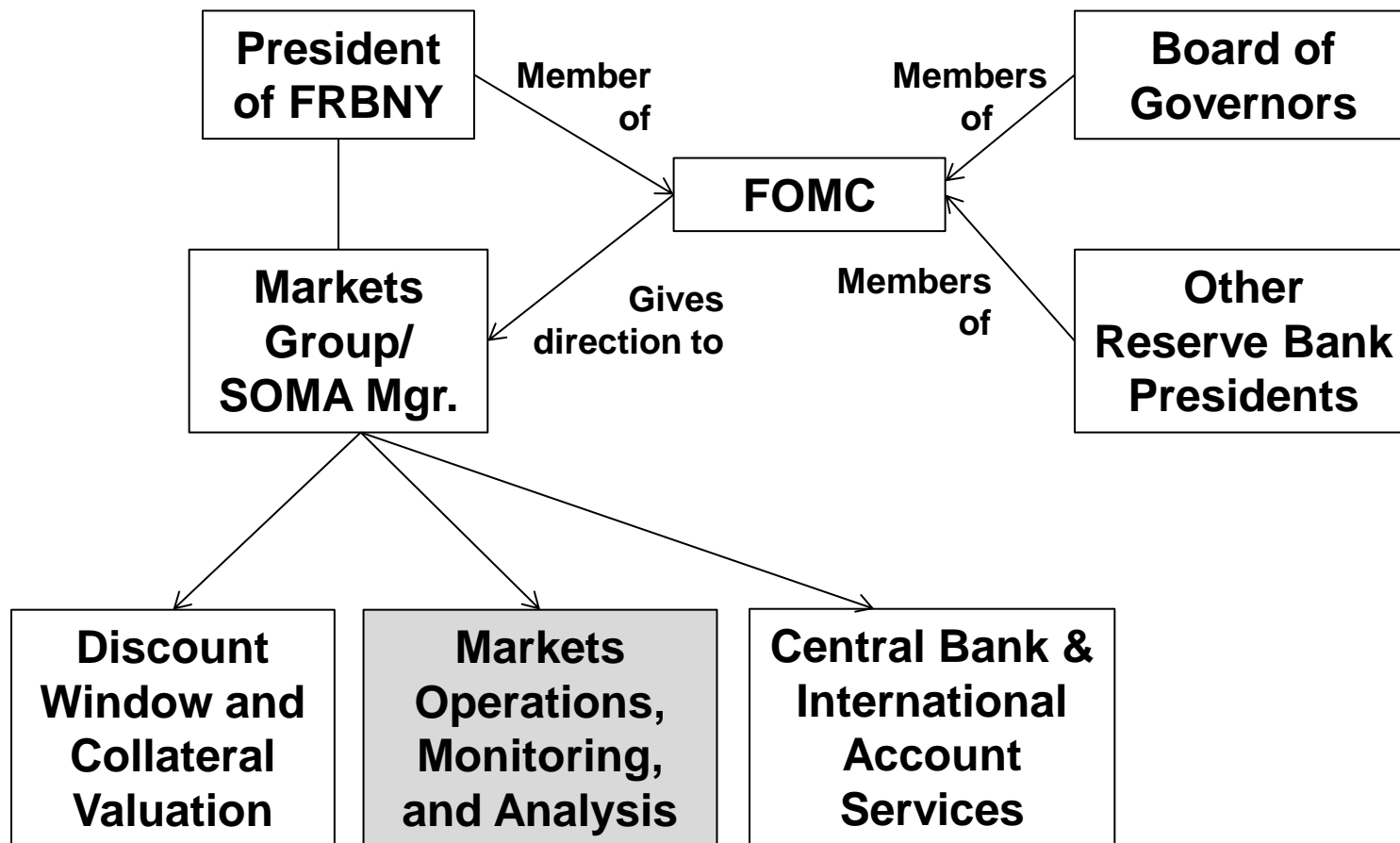
Federal Reserve History

- The Federal Reserve was created to “solve a currency problem”
 - The supply of currency did not expand and contract with the needs of the economy/financial system
- The Federal Reserve Act of 1913
 - 12 Federal Reserve Banks created to manage money supply
- Banking Act of 1933 (revised 1935) formed the Federal Open Market Committee (FOMC)
 - A new government agency to direct open market operations for the Federal Reserve system
 - The 7 members of the Board of Governors
 - The President of the FRBNY
 - 4 of the remaining 11 reserve bank Presidents, on a rotating basis
- Bank Holding Company Act of 1956 named the Fed the regulator of bank holding companies owning more than one bank

Functions of the Federal Reserve System

- Monetary policy goals of price stability and maximum employment
 - The longer-run inflation objective of 2 percent is deemed consistent with the Federal Reserve's mandate
 - Assessment of the maximum level of employment is based on a wide range of indicators
- Supervise and regulate banking institutions
- Provide financial services to depository institutions, the U.S. government, and foreign official institutions
 - Payments systems – [Fedwire](#)
- More recently, a focus on maintaining stability in the financial system and containing systemic financial risks

Federal Reserve Organization



The Markets Group's Mission

- Monetary policy implementation
 - Manage Federal Reserve balance sheet and execute open market operations (OMO) consistent with FOMC directives
 - Includes swap lines, exchange rate intervention, foreign reserves management
- Monitor and analyze financial market and financial stability developments
- Lender of last resort responsibilities
 - Discount Window for the 2nd District
 - Collateral valuation services for Federal Reserve Banks
- Fiscal agent support for the U.S. Treasury
 - Provide debt issuance, debt management advisory, foreign exchange services and foreign reserves management
- Account services to foreign central banks, international agencies, and U.S. government agencies

Monetary Policy Implementation

- Implement policy through domestic open market operations (OMOs)
 - FOMC votes on domestic monetary 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
 - OMOs include
 - Repurchase agreements (RPs): temporary loans to primary dealers using all eligible securities as collateral
 - Reverse repurchase agreements (RRPs): temporary loans from primary dealers against general collateral
 - Outright transactions: permanent purchases or sales of securities

How Do We Implement Monetary Policy?

- We have 22 trading counterparties used to conduct domestic open market operations, called “primary dealers”
 - Includes banks and securities broker-dealers
 - Required to participate consistently in open market operations and provide trading desk with market information
 - Also participate in US Treasury auctions
 - Currently running a pilot program that includes smaller firms
- Also have 141 “expanded counterparties” used only for RRP operations
 - Includes banks, government-sponsored enterprises, and money market mutual funds

Section 2: Unconventional Policy & the Fed's Portfolio

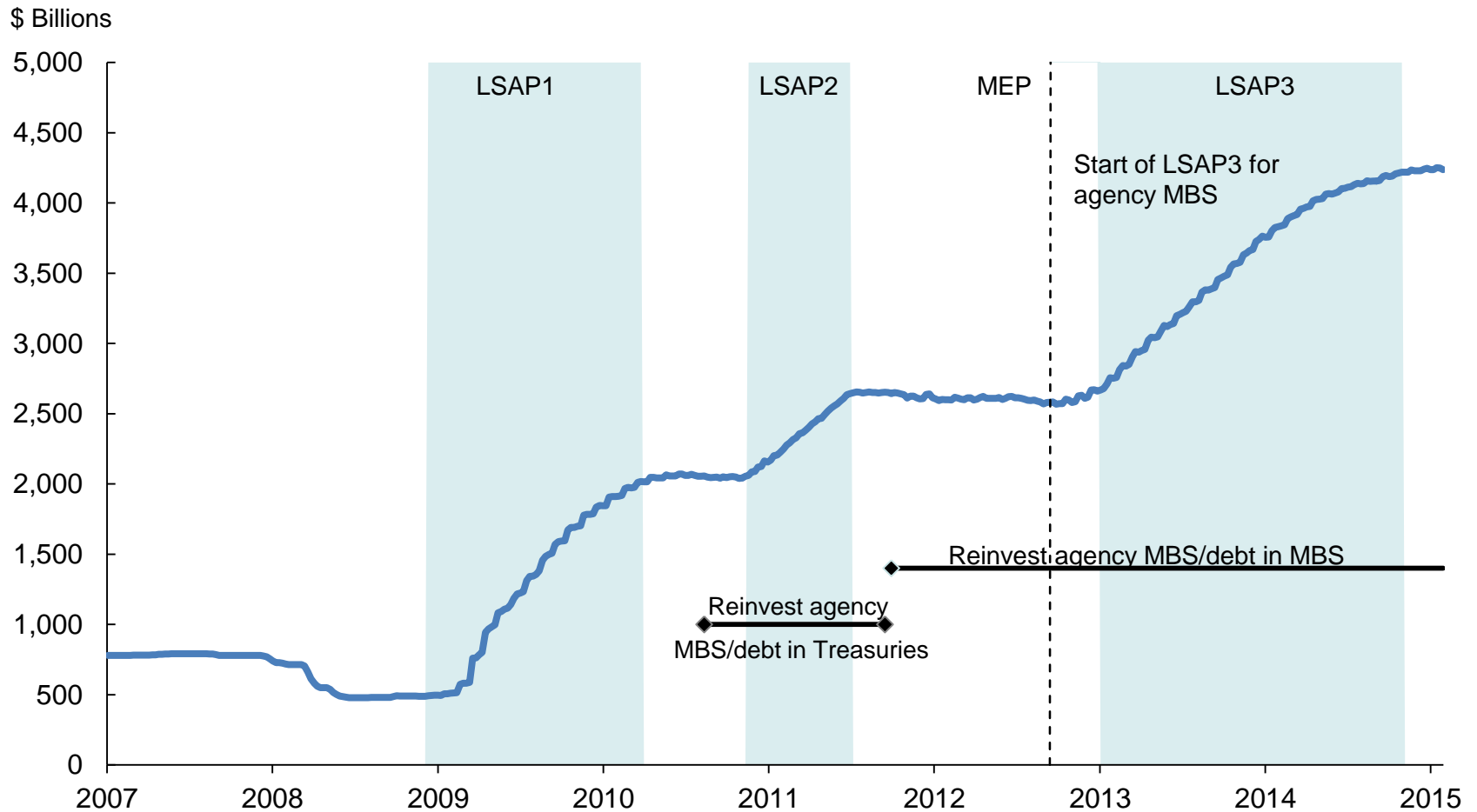
The Markets Group During the Financial Crisis

- Discount window lending to banks increased dramatically
- Designed and implemented variations on traditional “lender-of-last-resort” function
 - Auction term funds to depository institutions (TAF)
 - Lend Treasury securities from Fed’s portfolio on weekly basis (TSLF)
 - Overnight collateralized loans to primary dealers (PDCF)
 - Bilateral currency swaps with major foreign central banks
- Designed and implemented tools to support credit markets
 - Provide liquidity to U.S. issuers of commercial paper (CPFF)
 - Provide liquidity to U.S. money market investors (MMIFF)
 - Boston Fed provided liquidity to U.S. banks to finance purchases of ABCP (ABCP MMMF LF)
 - Lend to holders of consumer and small business ABS (TALF)

Large-Scale Asset Purchases as a Policy Tool

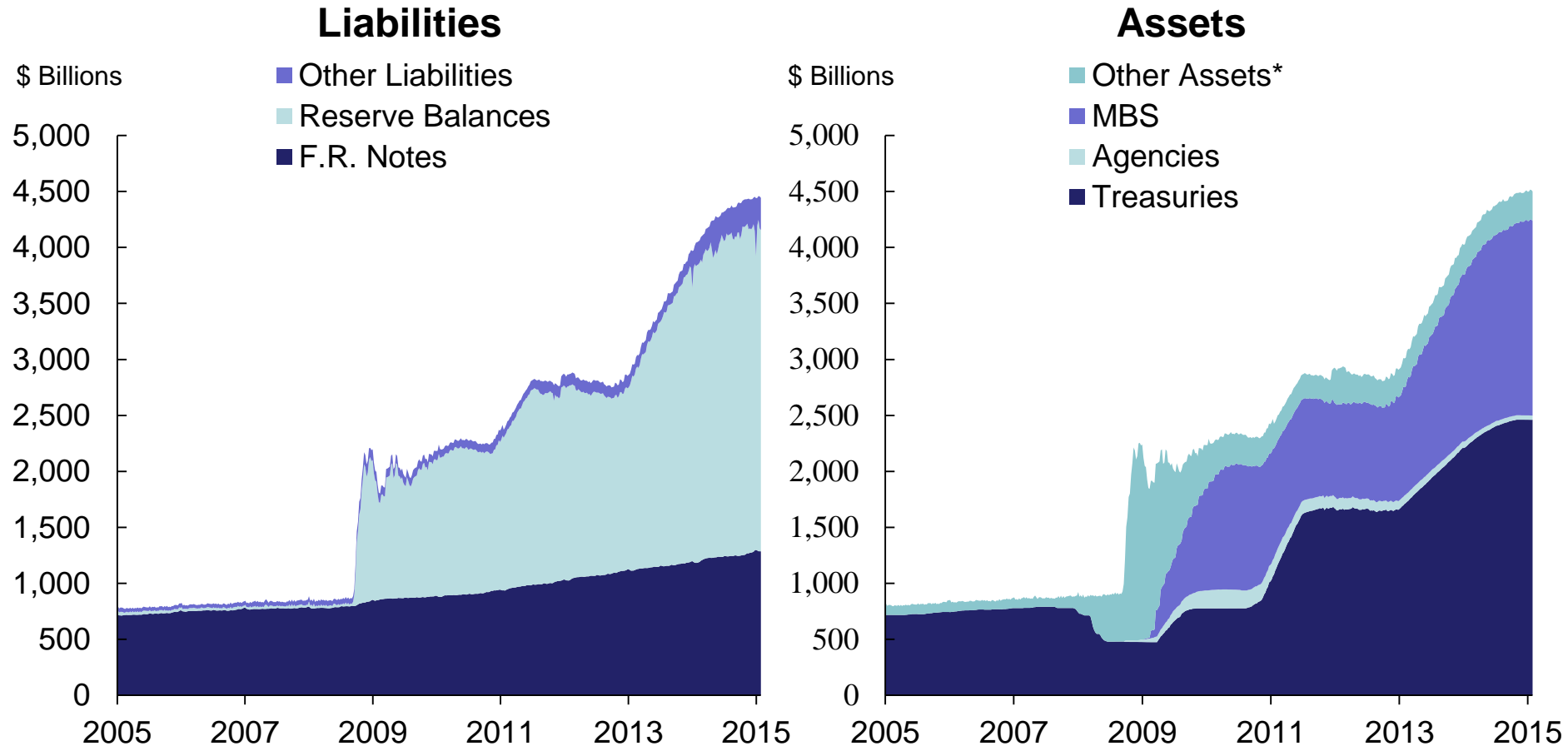
- Purchases put downward pressure on longer-term interest rates, eased financial conditions, and stimulated economic activity
- Purchases are understood to work through several channels
 - Portfolio balance effect
 - Reduce stock of securities held by private sector
 - Remove duration risk and prepayment 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 the FOMC's intentions for the federal funds rate path

Timeline of Fed Securities Holdings & Asset Purchase Programs



Source: FRBNY

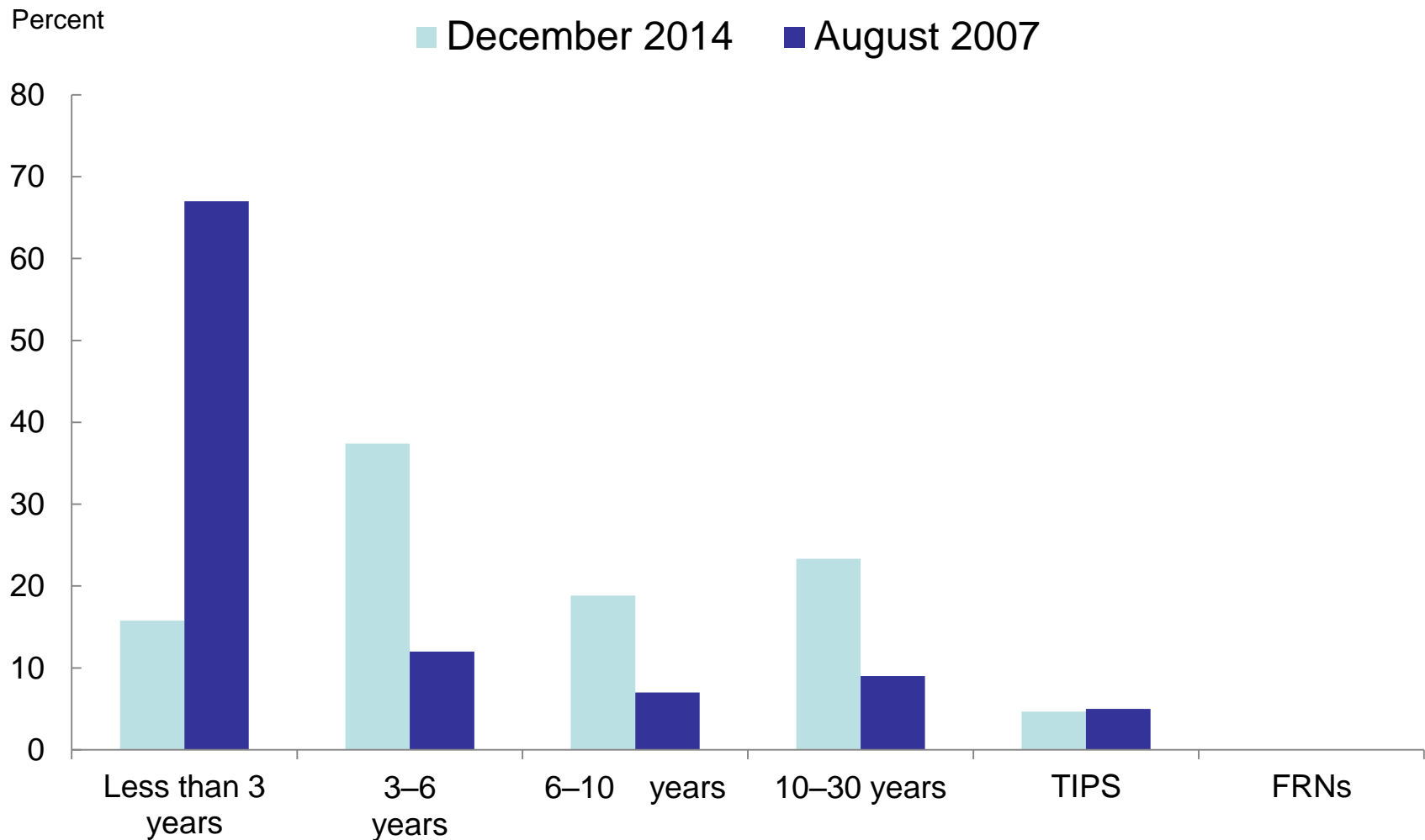
Evolution of the Federal Reserve's Balance Sheet



Source: Federal Reserve Board of Governors

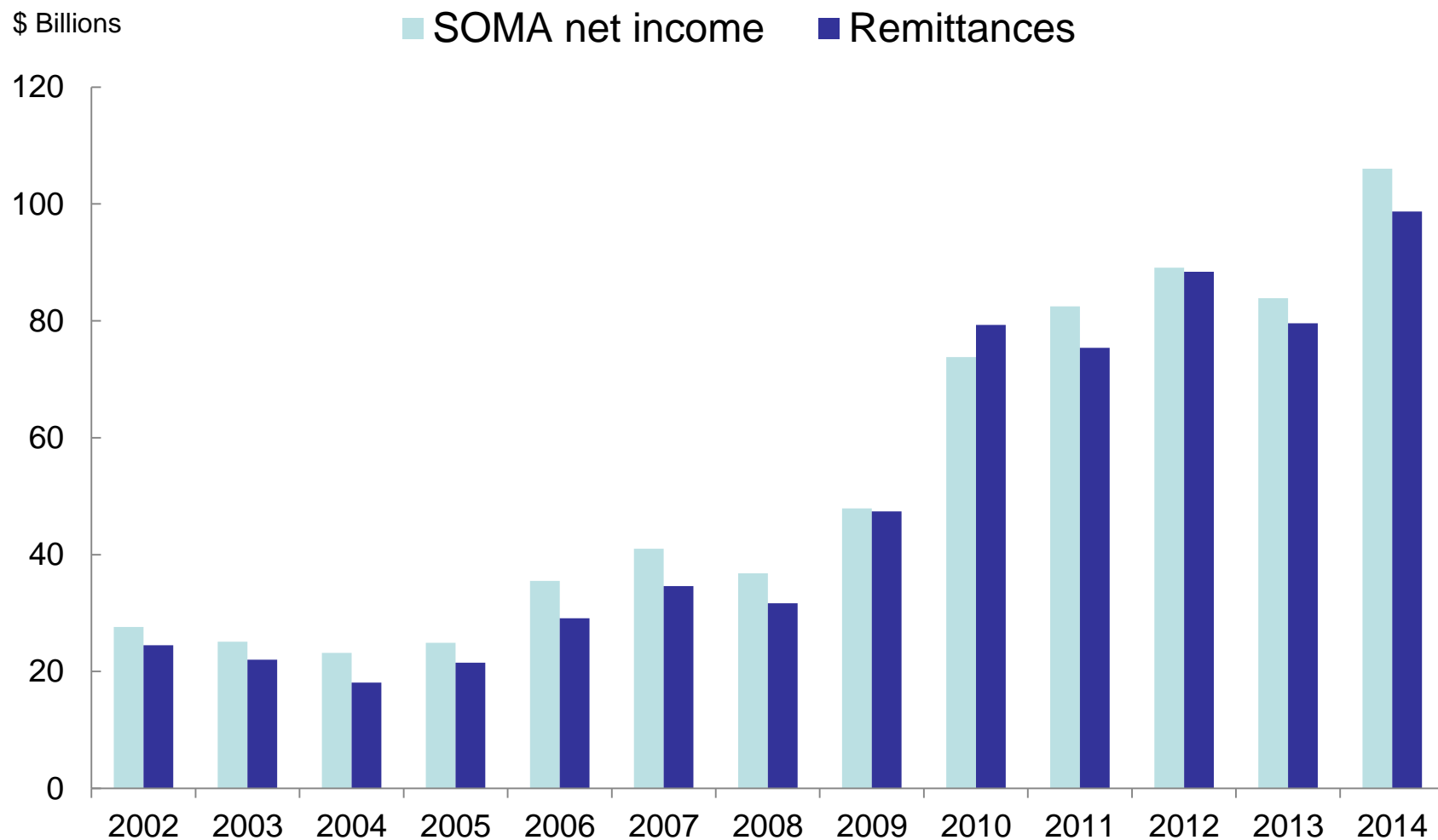
*Includes crisis facilities.

Maturity Distribution of SOMA Treasury Holdings



Source: Federal Reserve Bank of New York

SOMA Net Income and Fed Remittances to Treasury



Source: FRBNY

H4.1: Assets of All Federal Reserve Banks

5. Consolidated Statement of Condition of All Federal Reserve Banks

Millions of dollars

Assets, liabilities, and capital

	Eliminations from consolidation	Wednesday Apr 29, 2015	Change since Wednesday Apr 22, 2015		Wednesday Apr 30, 2014
Assets					
Gold certificate account		11,037		0	0
Special drawing rights certificate account		5,200		0	0
Coin		1,801	-	8	- 96
Securities, unamortized premiums and discounts, repurchase agreements, and loans		4,397,889	-	18,983	+ 178,612
Securities held outright (1)		4,214,779	-	18,106	+ 187,667
U.S. Treasury securities		2,460,034	+	114	+ 109,762
Bills (2)		0		0	0
Notes and bonds, nominal (2)		2,346,709		0	+ 106,320
Notes and bonds, inflation-indexed (2)		98,468		0	+ 3,079
Inflation compensation (3)		14,858	+	115	+ 364
Federal agency debt securities (2)		35,895		0	- 9,070
Mortgage-backed securities (4)		1,718,850	-	18,220	+ 86,975
Unamortized premiums on securities held outright (5)		200,860	-	915	- 8,887
Unamortized discounts on securities held outright (5)		-17,811	+	39	- 108
Repurchase agreements (6)		0		0	0
Loans		61		0	- 60
Net portfolio holdings of Maiden Lane LLC (7)		1,689	-	5	+ 35
Net portfolio holdings of Maiden Lane II LLC (8)		0		0	- 63
Net portfolio holdings of Maiden Lane III LLC (8)		0		0	- 22
Net portfolio holdings of TALF LLC (9)		0		0	- 92
Items in process of collection	(0)	59	-	21	- 33
Bank premises		2,244	-	1	- 30
Central bank liquidity swaps (10)		0		0	- 300
Foreign currency denominated assets (11)		20,057	+	557	- 4,168
Other assets (12)		31,522	+	263	+ 1,605
Total assets	(0)	4,471,499	-	18,196	+ 175,450

Note: Components may not sum to totals because of rounding. Footnotes appear at the end of the table.

Source: Federal Reserve <http://www.federalreserve.gov/releases/h41/Current/>

H4.1: Liabilities & Equity of All Federal Reserve Banks

5. Consolidated Statement of Condition of All Federal Reserve Banks (continued)

Millions of dollars

Assets, liabilities, and capital	Eliminations from consolidation	Wednesday Apr 29, 2015	Change since Wednesday Apr 22, 2015		Wednesday Apr 30, 2014	
Liabilities						
Federal Reserve notes, net of F.R. Bank holdings		1,315,983	+	945	+	87,275
Reverse repurchase agreements (13)		249,887	-	25,503	-	75,611
Deposits	(0)	2,839,718	+	7,379	+	161,453
Term deposits held by depository institutions		0		0		0
Other deposits held by depository institutions		2,581,067	-	36,313	+	66,629
U.S. Treasury, General Account		245,426	+	44,353	+	97,083
Foreign official		5,233	+	2	-	2,593
Other (14)	(0)	7,992	-	664	+	333
Deferred availability cash items	(0)	549	-	5	-	314
Other liabilities and accrued dividends (15)		7,661	-	1,012	+	1,073
Total liabilities	(0)	4,413,797	-	18,196	+	173,875
Capital accounts						
Capital paid in		28,851		0	+	787
Surplus		28,851		0	+	787
Other capital accounts		0		0		0
Total capital		57,702		0	+	1,575

Note: Components may not sum to totals because of rounding.

Source: Federal Reserve <http://www.federalreserve.gov/releases/h41/Current/>

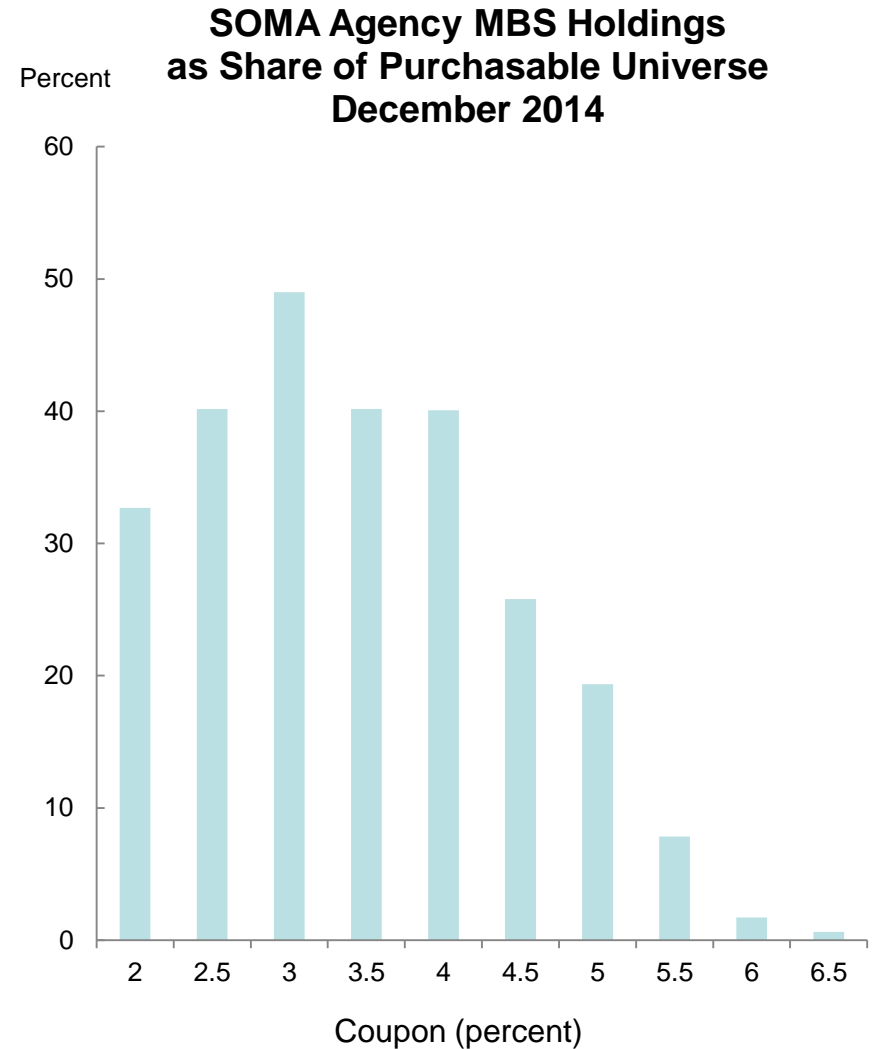
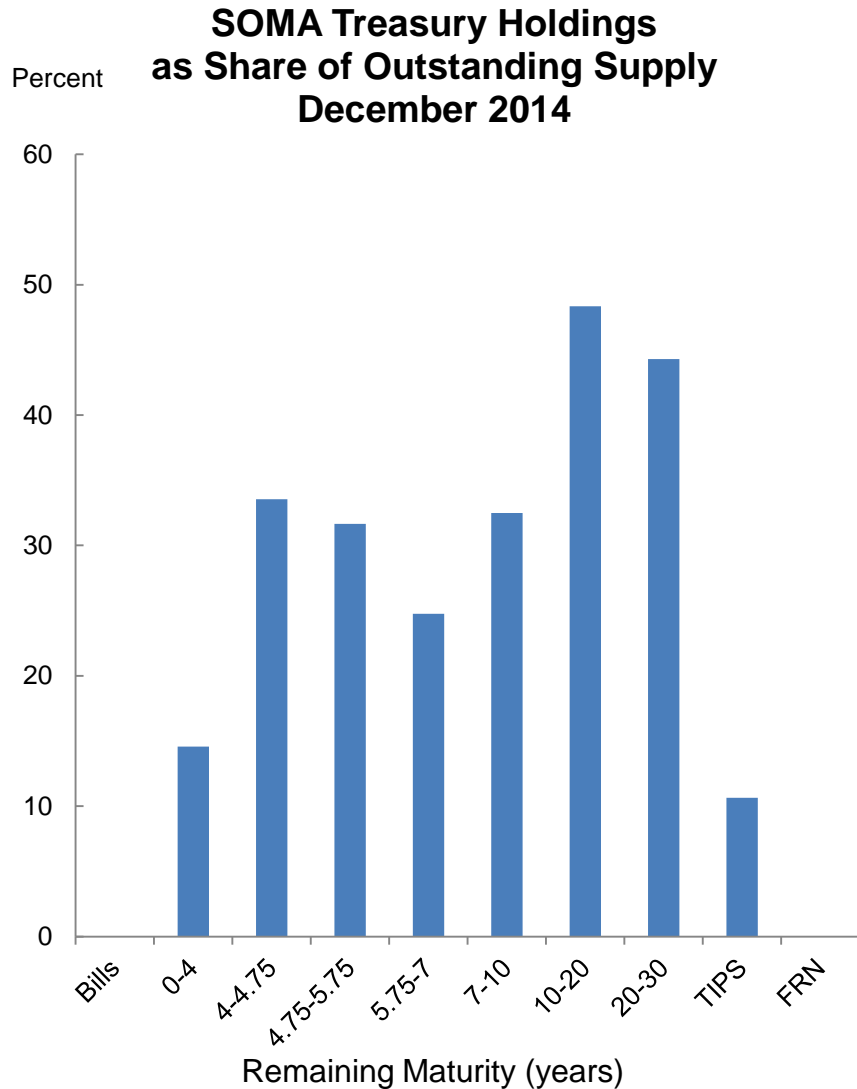
Implications for Open Market Operations

- 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
 - Seek competitive pricing and cost efficiency
 - Manage risks
 - Be mindful of disruptions to financial markets
 - Be consistent, predictable, and transparent
 - Innovate and adjust operations as needed

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



Source: Federal Reserve Bank of New York

Global Asset Purchases

- Bank of Japan
 - Expanding the monetary base by **¥80 trillion rate per year** since October 2014
 - Purchases include JGBs, commercial paper, corporate bonds, ETFs and JREITs
 - “Will continue with the QQE, aiming to achieve the price stability target of 2 percent, as long as it is necessary for maintaining that target in a stable manner”
 - Balance sheet is currently about 62% of GDP while securities holdings were about 41% of GDP at end-2014
- European Central Bank
 - Purchase **€60 billion per month** beginning in March 2015
 - Purchases will include euro-denominated sovereign bonds, ABS, and covered bonds
 - Intend to continue purchases “until end-September 2016” or in any case until “a sustained adjustment in the path of inflation” is achieved
 - Balance sheet is currently about 22% of GDP while securities holdings were only about 2% of GDP at end-2014

Section 3: Money Markets

Money Markets

- Wholesale market for low-risk, highly liquid, short term loans
 - Banks and other participants trade in excess of a trillion dollars daily

- Money market rates influence other interest rates:
 - U.S. government funding costs
 - Corporate funding costs
 - Interest rate on retail deposits

- Monetary policy is largely transmitted through money markets
 - The Federal Reserve directly changes the supply of reserves\sets administered rates to impact money market rates, thereby changing financial conditions in the real economy
 - Administered rates are expected to be used during policy normalization given the size of the Fed's balance sheet

Money Markets

- Short-term wholesale funding markets provide financial intermediaries with funds that supplement retail deposits and long-term debt issuance.
- Motivations to borrow in funding markets:
 - To finance assets
 - To meet liquidity needs
 - Earn a spread by lending borrowed funds at a higher rate (e.g. fed funds “IOER arbitrage” trades)
- Who lends in funding markets?
 - Institutions seeking returns on their cash positions (e.g. banks, GSEs, MMMFs, Securities Lenders, corporates etc.)
- Transactions can be secured or unsecured
- Money market rates reflect short-term marginal borrowing costs, influence yields on longer-term assets (e.g. Treasury yields)

Types of Money Market Transactions

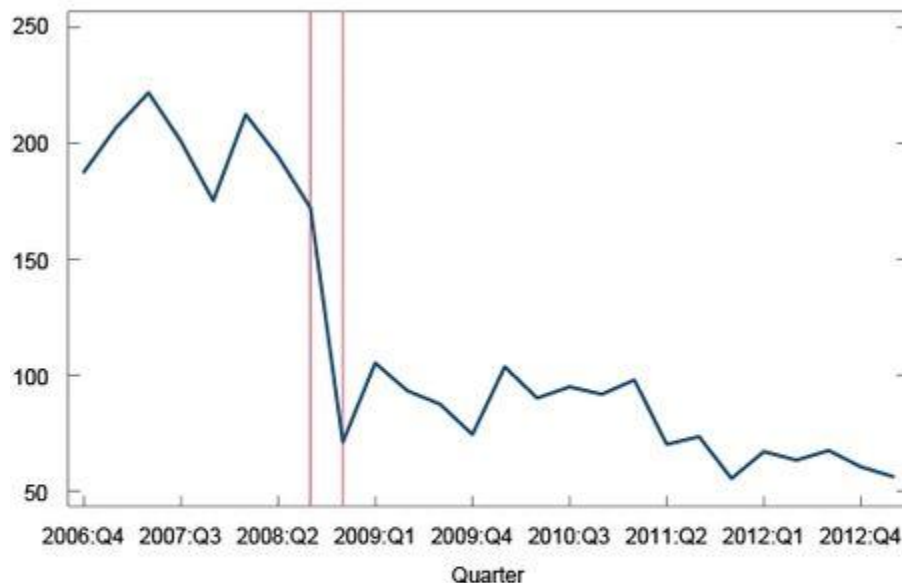
- Unsecured – no collateral pledged by the borrower to obtain the loan
 - Federal funds
 - Eurodollars
 - Commercial paper
 - Negotiable certificates of deposit
- Secured – collateral is pledged by the borrower to obtain the loan
 - Repurchase agreements (Repo markets)

Unsecured: Federal Funds

- What are Federal Funds?
 - Unsecured loans of reserve balances at Federal Reserve Banks of eligible institutions
 - Governed by the Board of Governors of the Federal Reserve System's Regulation D (imposes reserve requirements on depository institutions)
 - Most borrow funds to leave balances at the Fed for liquidity buffers and IOER
 - The Fed does not transact directly in the federal funds market**

Total Fed Funds Sold

Billions of Dollars



Source: FFIEC 002, 031, 041, 10-Q, 10-K, and Y-9C filings.

Notes: The red lines denote filings for the third and fourth quarters of 2008. The chart reflects fed funds sold by bank holding companies, stand-alone commercial banks, foreign banking organizations, and Federal Home Loan Banks. Fed funds sold by thrifts are included only after the first quarter of 2012, when they become publicly available. Data do not include lending by Fannie Mae or Freddie Mac, as historically those agencies report federal funds jointly with repo transactions in their regulatory filings, although additional information on their fed funds activity is often included on an ad hoc basis in the text and footnotes of their 10-Q and 10-K filings.

- Market Participants
 - Depository Institutions, Banks, Thrifts eligible to **Lend**, **Borrow**, and receive **IOER**
 - Agencies & U.S. branches of FBOs eligible to **Lend**, **Borrow**, and receive **IOER**
 - Federal Agencies (GSEs) eligible to **Lend**
 - Government Security Dealers eligible to **Lend**

<http://libertystreeteconomics.newyorkfed.org/2013/12/whos-lending-in-the-fed-funds-market.html>

Unsecured: Other U.S. Dollar Funding Markets

- Eurodollar deposits: unsecured U.S. dollar deposits in a bank or bank branch outside the U.S. – frequently Cayman Islands
 - Eurodollar deposits are used to finance U.S. dollar assets held “outside” of the U.S.
- Commercial paper: short-term debt (<9 months) issued by both financial and non financial institutions
- Certificates of deposit: term deposits placed with a depository institution with maturity profiles ranging from 7 days to 5 years

Collection of Money Market Rates

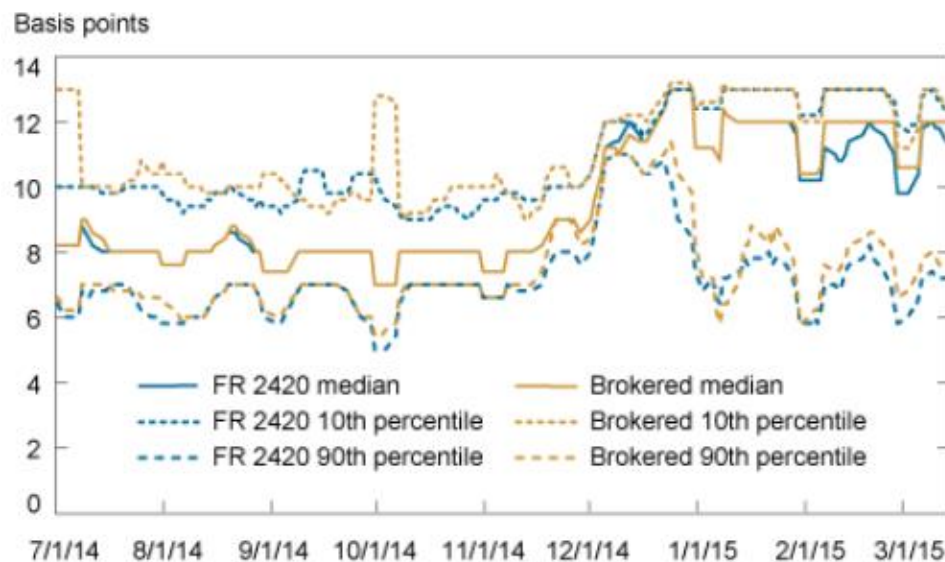
- The FRBNY collects brokered overnight federal funds transactions to calculate and publish the federal funds effective rate
 - Data collected from brokers that represent a subset of the federal funds market
- FRBNY and FR Board finalized new data collection requirements during 4Q 2013 (FR 2420)
 - Since April 2014, daily transaction is collected on federal funds, Eurodollar time deposits, and certificates of deposit (CDs) of all tenors¹
 - Data collection covers insured depository institutions with total assets of \$26 billion or more, and U.S. branches and agencies of foreign banks with third party assets of \$900 million or more
 - Data collected accounts for approximately 80 percent of total fed funds outstanding

1) CD Data is expected to be reported with a 2-day lag; Fed funds and Eurodollar time deposits are reported with a 1-day lag.

FR 2420 Data Collection

- FR 2420 data can improve the process for producing the federal funds effective rate and be a more representative benchmark rate
 - Higher transactions volumes
 - Transaction level detail for better data monitoring
- FR 2420 and brokered FFER levels largely similar

Five-Day Moving Volume Weighted Medians, 10th and 90th Percentiles (7/1/14-3/15/15)



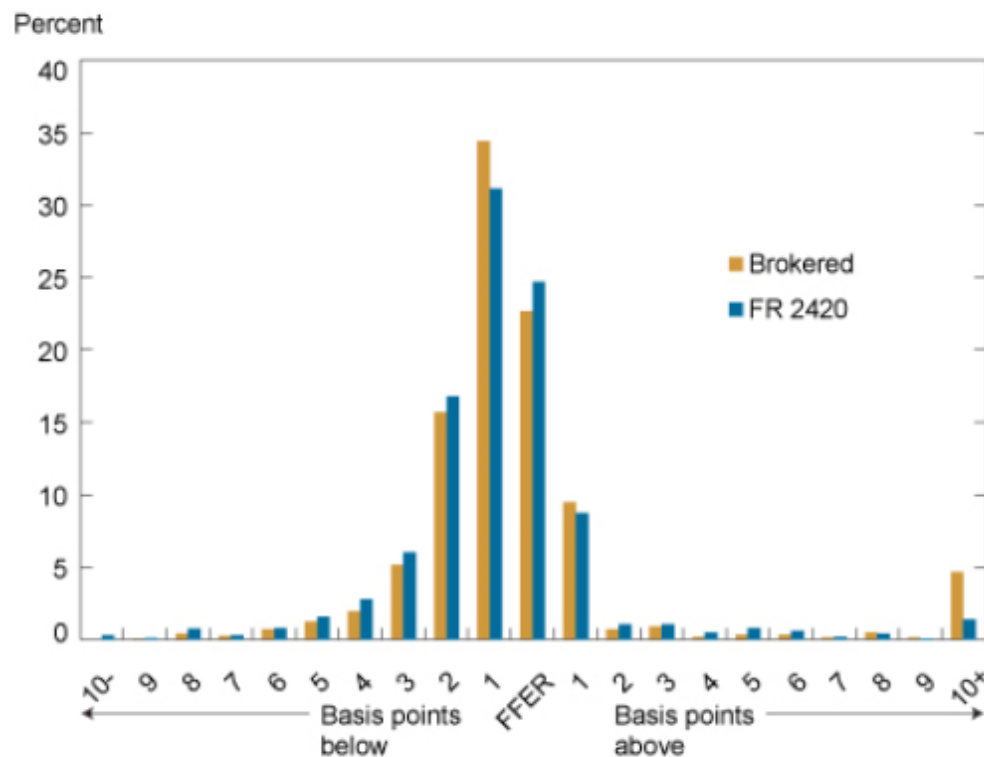
Source: Federal Reserve Bank of New York.

Source: <http://libertystreeteconomics.newyorkfed.org/2015/04/the-fr-2420-data-collection-a-new-base-for-the-fed-funds-rate.html>

FR 2420 Data Collection

- The overall distribution of rates is also quite similar
- The majority of transactions occur close to the brokered FFER
- Transactions occurring substantially away from FFER account for smaller percentage of overall volume

Average Fed Funds Volume Distribution around FFER (7/1/14-3/15/15)

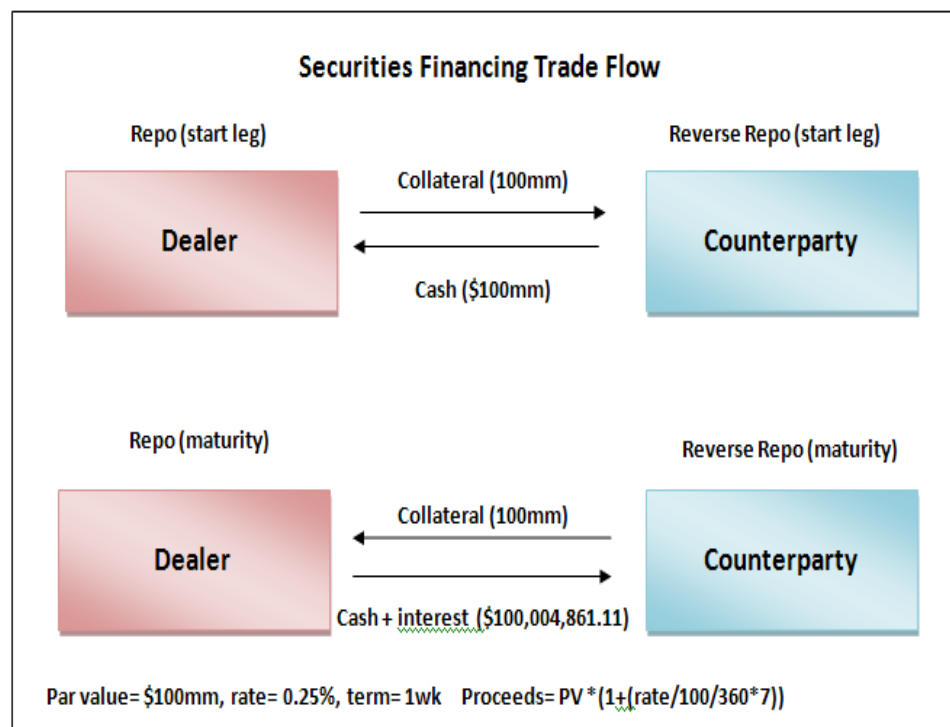


Source: Federal Reserve Bank of New York.

Note: FFER is the federal funds effective rate.

Secured: Repurchase Agreement (Repo)

- What is repo?
 - Economically similar to a collateralized loan
 - Sale of securities together with an agreement to buy back at a later date
 - Securities dealers finance positions, intermediate cash and securities flows (matched-book)
- Tri-party & delivery vs. payment (DVP)
 - Tri-party: settle through clearing banks
 - DVP: settle bilaterally

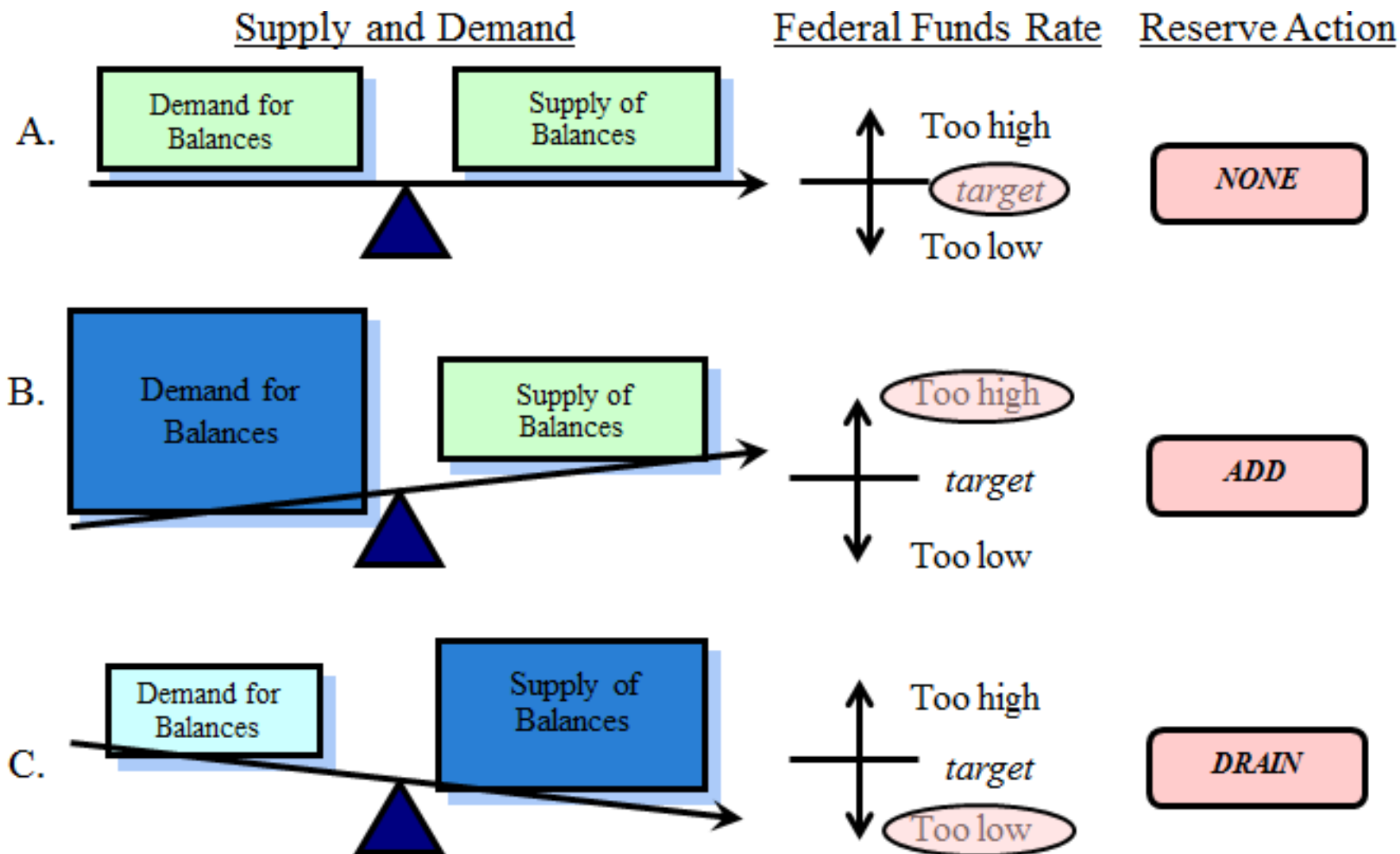


Secured: Repurchase Agreement (Repo)

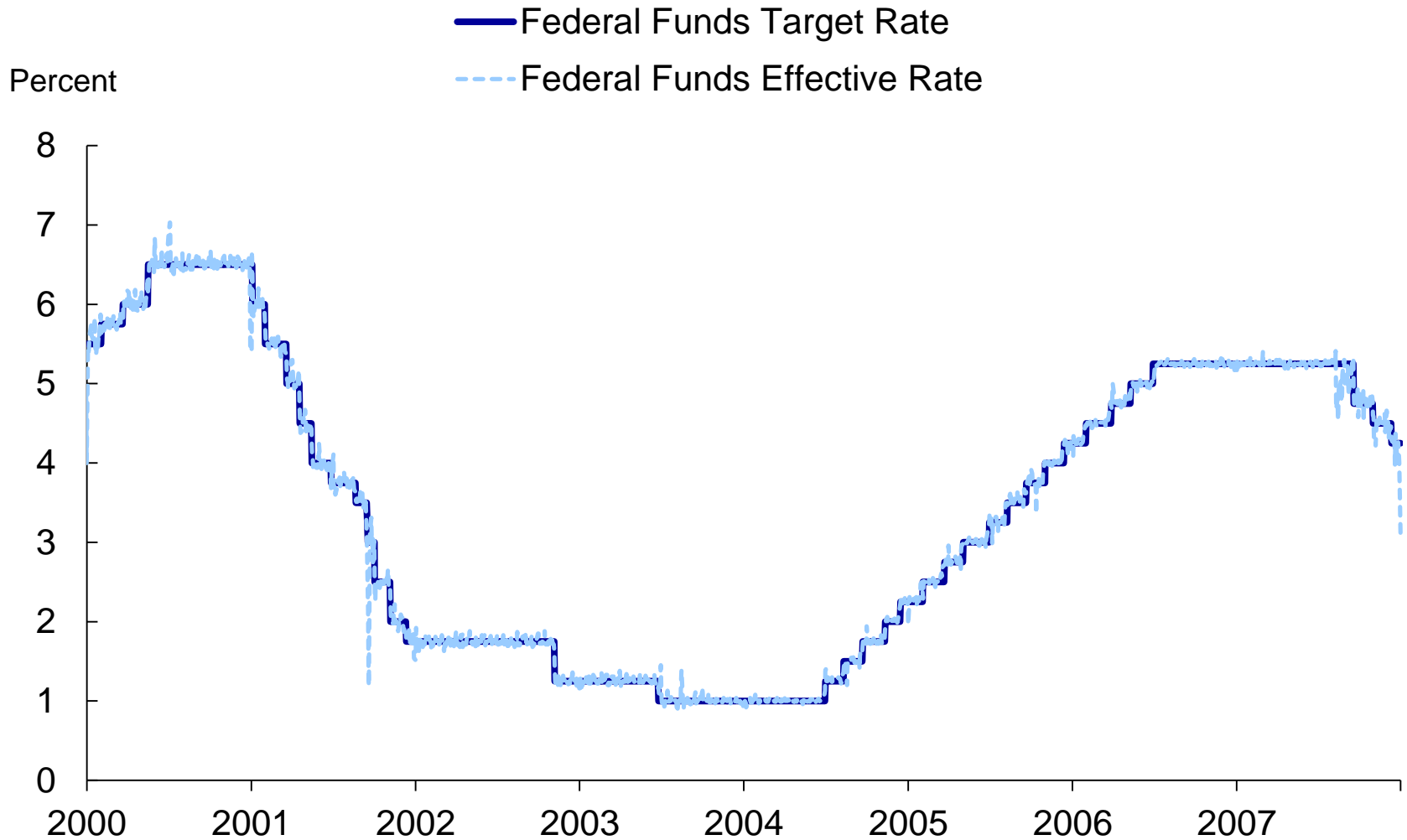
- Primary mechanism for temporarily adding or draining reserves – indirectly affect fed funds rates
 - Repo – dealer borrows funds and pledges collateral to lender
 - Reverse Repo – dealer lends funds and receives collateral from borrower
- Rate on Fed RRP an important component of the Federal Reserve's normalization strategy
- New York Fed has long offered foreign official accounts repo against SOMA collateral, known as the foreign RP pool

Section 4: Normalizing Monetary Policy

Reserve Balances and the Fed Funds Rate (pre-crisis)



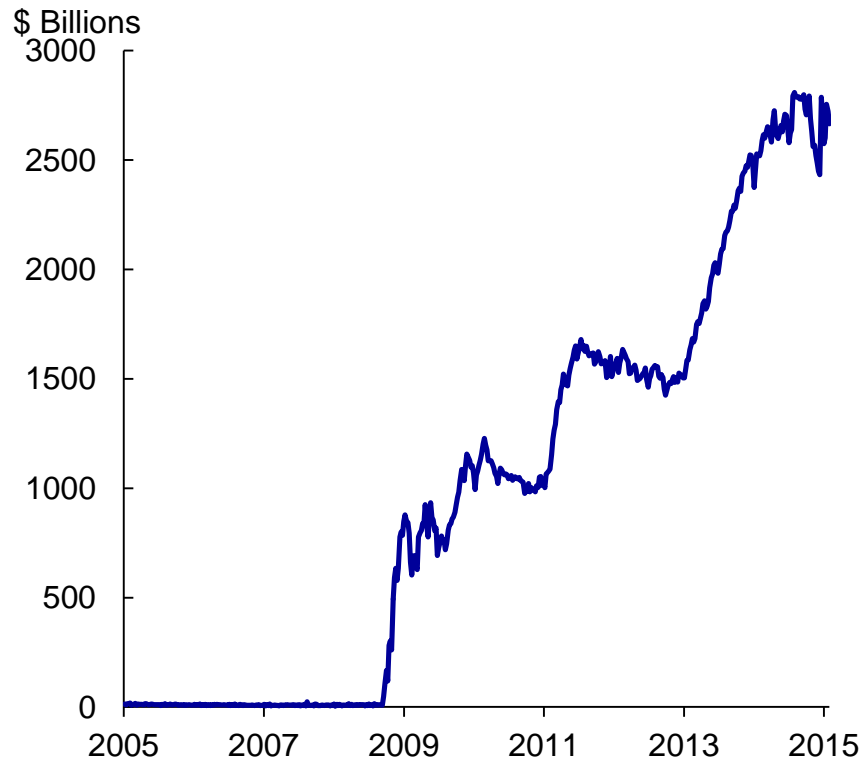
Interest Rate Control: Pre-Crisis



Source: Federal Reserve Board of Governors, Federal Reserve Bank of New York

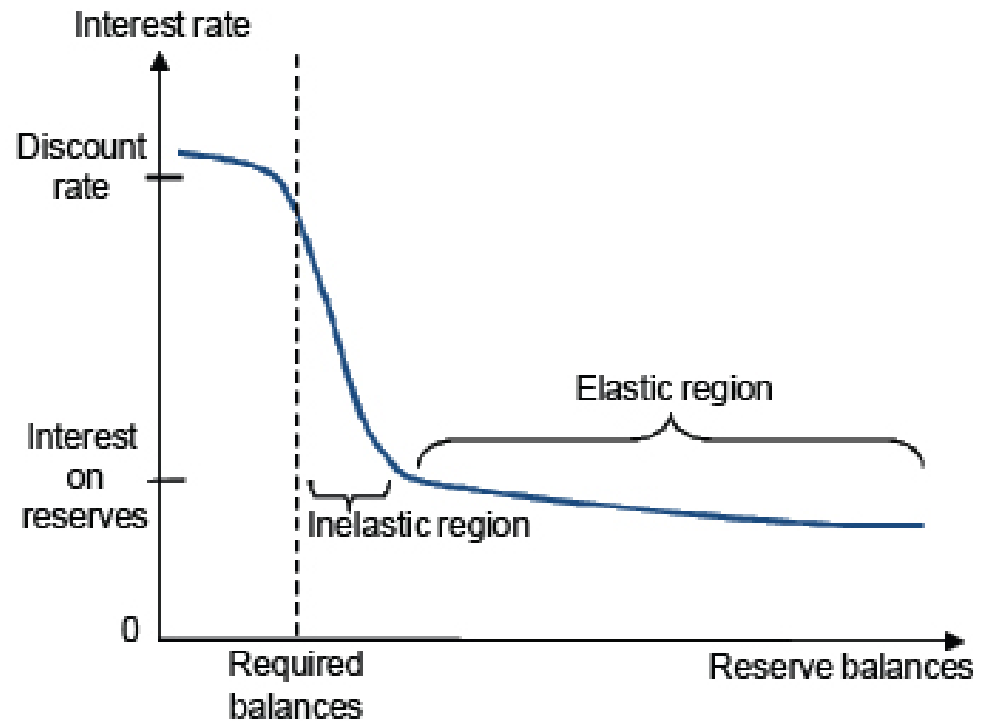
Difficulties of Large Reserve Balances

Reserve Balances



Source: Federal Reserve Board of Governors

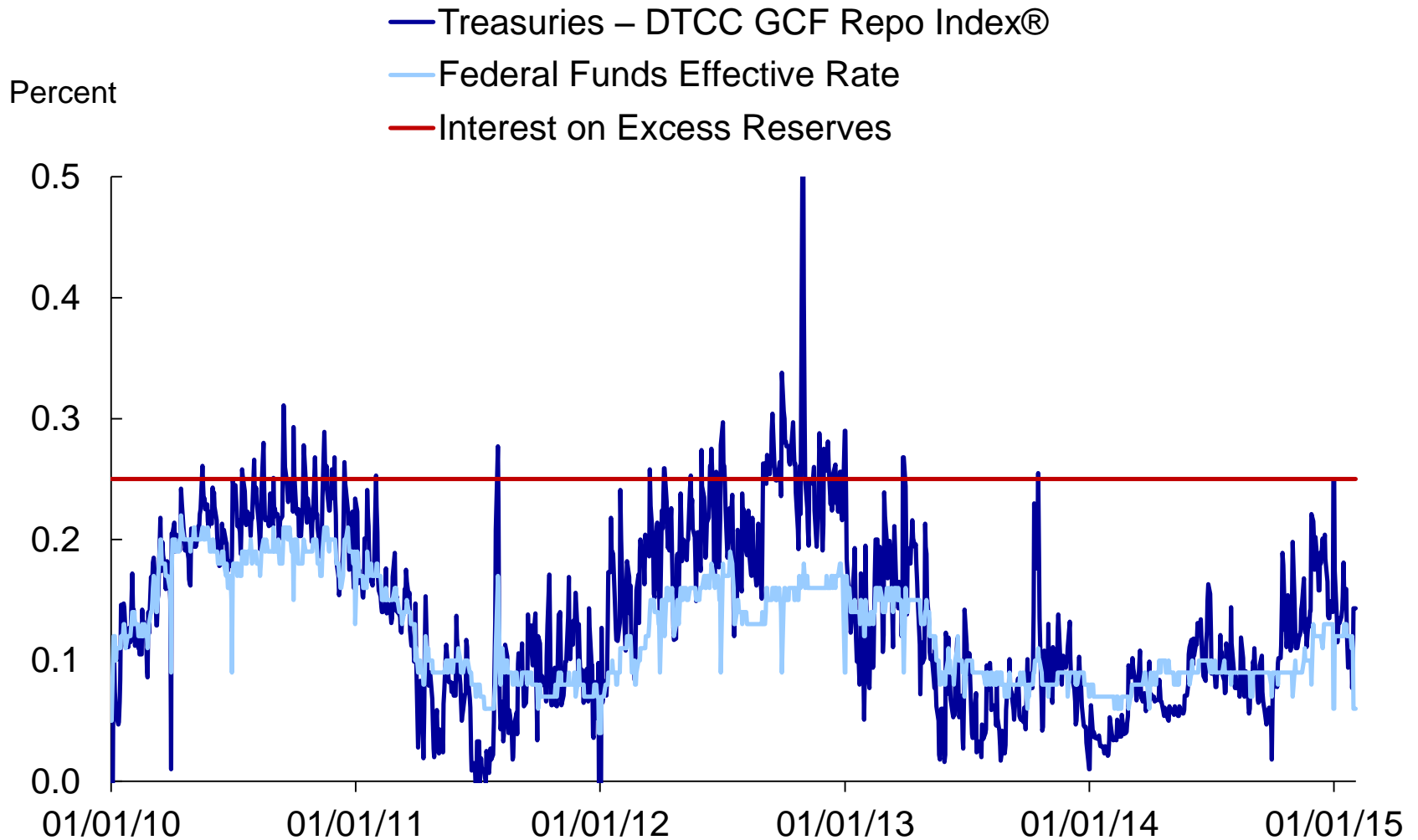
The Demand for Reserve Balances



New Tools in Large Excess Reserve Environment

- Interest on Excess Reserves (IOER)
 - Original authorization granted in 2006 to be applicable on reserve balances starting Oct 2011, accelerated to Oct 2008
 - IOER is paid to depository institutions on reserve balances in excess of the reserve requirement
 - Initially rate 0.75%, 0.25% since Dec 2008
 - Only available to depository institutions
 - Theoretically, if all money market participants had access to deposits earning this risk-free rate, this would serve as a *floor* on rates.
 - However, non-banks are large participants in the federal funds market. These include: money market mutual funds (MMMFs), Government Sponsored Enterprises (GSEs), and Federal Home Loan Banks (FHLBs)

Overnight Interest Rates



Source: Federal Reserve Bank of New York, The Depository Trust & Clearing Corporation

New Tools Focused on Draining Reserves

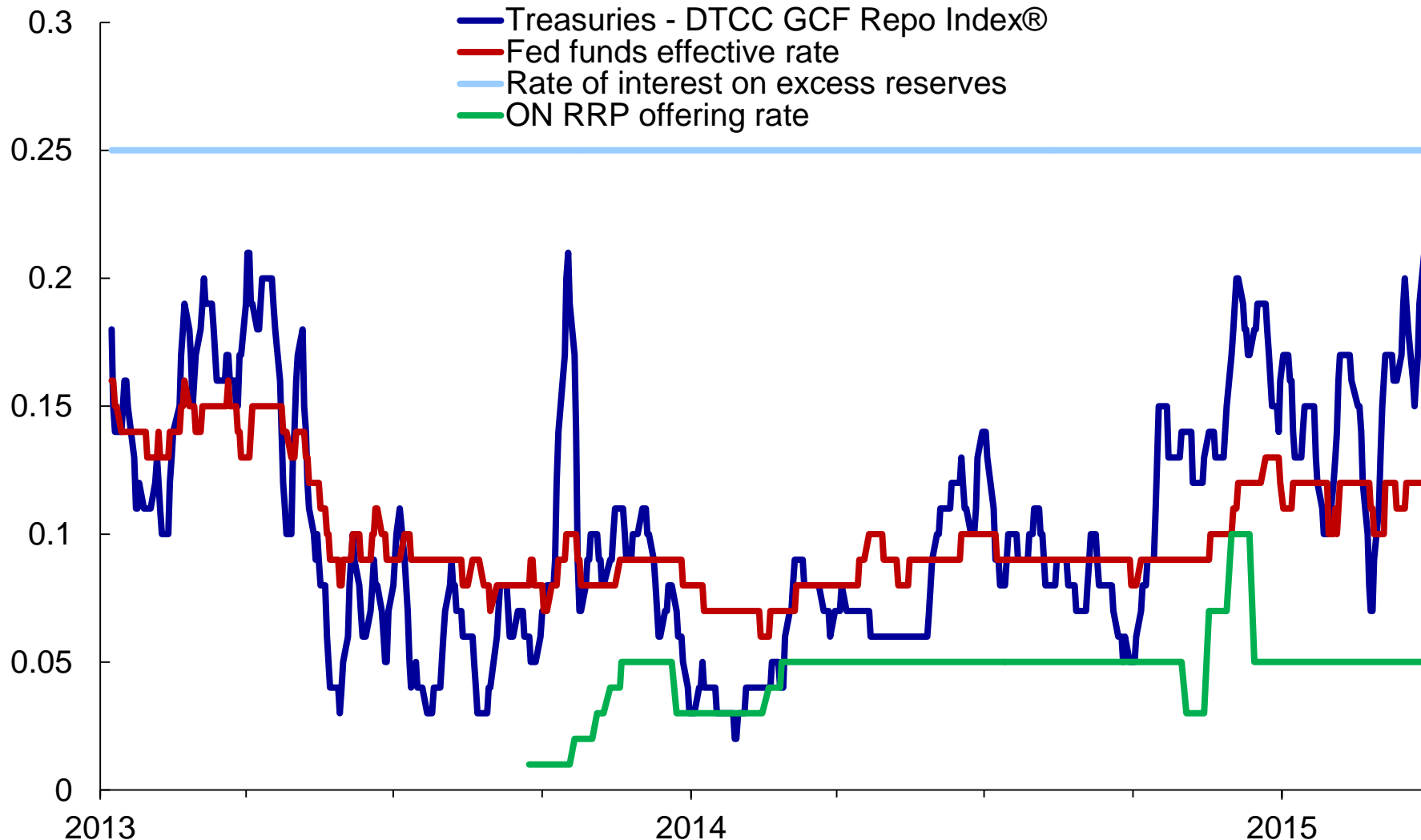
- Term Deposit Facility (TDF)
 - Offers fixed quantities of term deposits through competitive auctions
 - Only available to depository institutions
 - Does not change the size of the balance sheet, but alters the composition of liabilities by substituting reserves for TDFs
- Term and overnight fixed-quantity Reverse Repos (RRPs)
 - Allows the withdrawal of reserves by temporarily selling securities from the SOMA portfolio under an agreement to repurchase the securities in the future
 - Economically equivalent to a collateralized loan made to the Fed by a financial institution
 - Historically infrequently used with primary dealers. In Oct 2009, Fed announced offering RRP to an expanded set of counterparties.
 - Small scale operational exercises of *fixed quantity* since 2009
 - Each dollar of RRP held by counterparties reduces one-for-one reserves held by financial institutions

Overnight Reverse Repurchase Agreement Exercises

- In September 2013, the FOMC authorized a series of daily ON RRP's at a **fixed rate** with a **capped allotment** to explore whether an ON RRP facility could provide greater control over short-term interest rates by setting a floor on money market rates
- Testing currently authorized by FOMC through January 2016
- There are 163 eligible counterparties, including the traditional 22 primary dealers, banks, GSEs and MMMFs
- More usage by MMMFs (cash to invest, no access to IOER)
- Increased take-up around reporting (e.g. quarter- and year-end) dates
- Evidence of increased usage when spread to market rates narrowed

Overnight Interest Rates

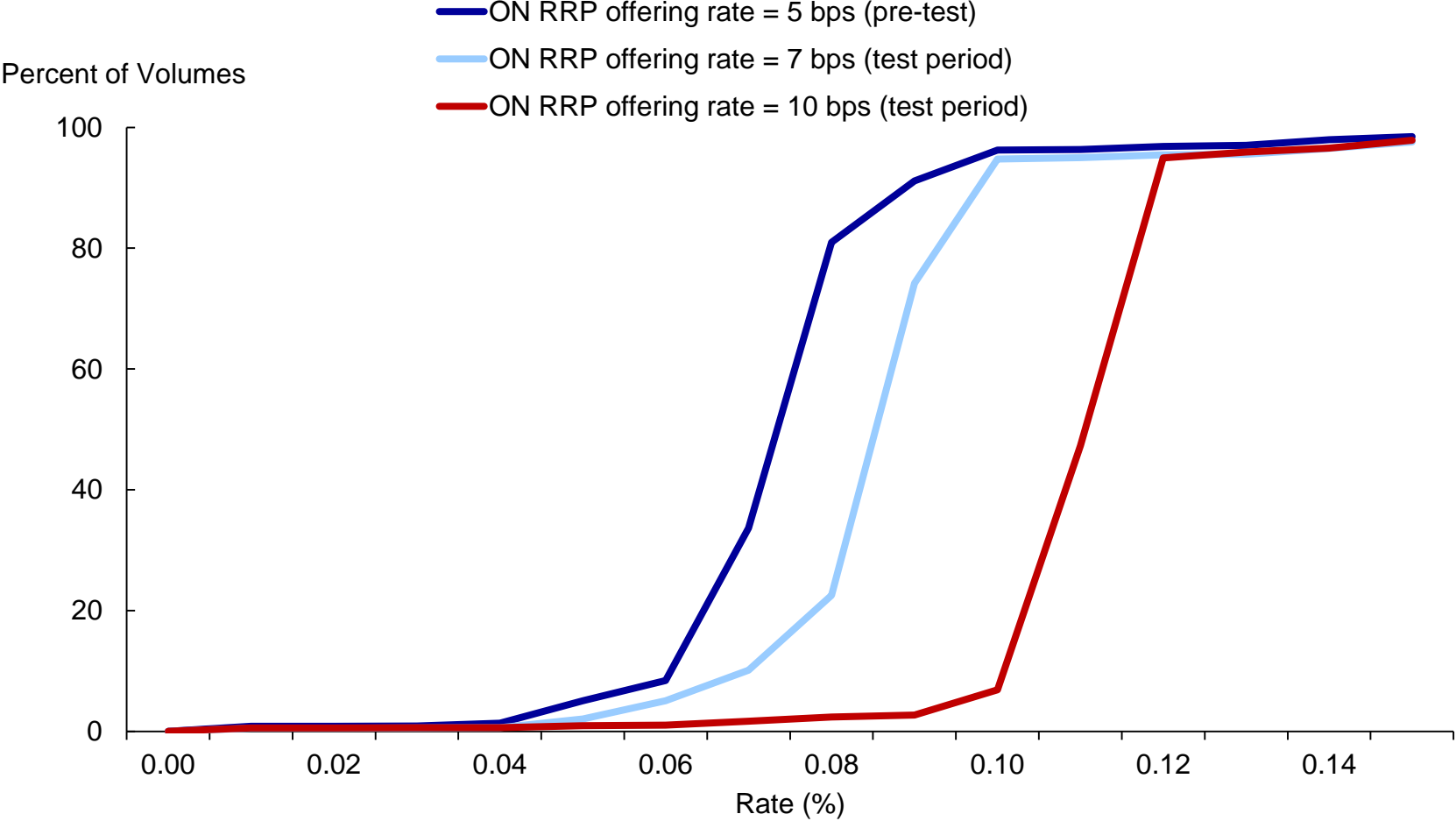
Percent



Five-day moving averages except for ON RRP offering rate.

Sources: Federal Reserve, The Depository Trust & Clearing Corporation.

Cumulative Distribution of ON Fed Funds Volumes during Rate Test, by Rate



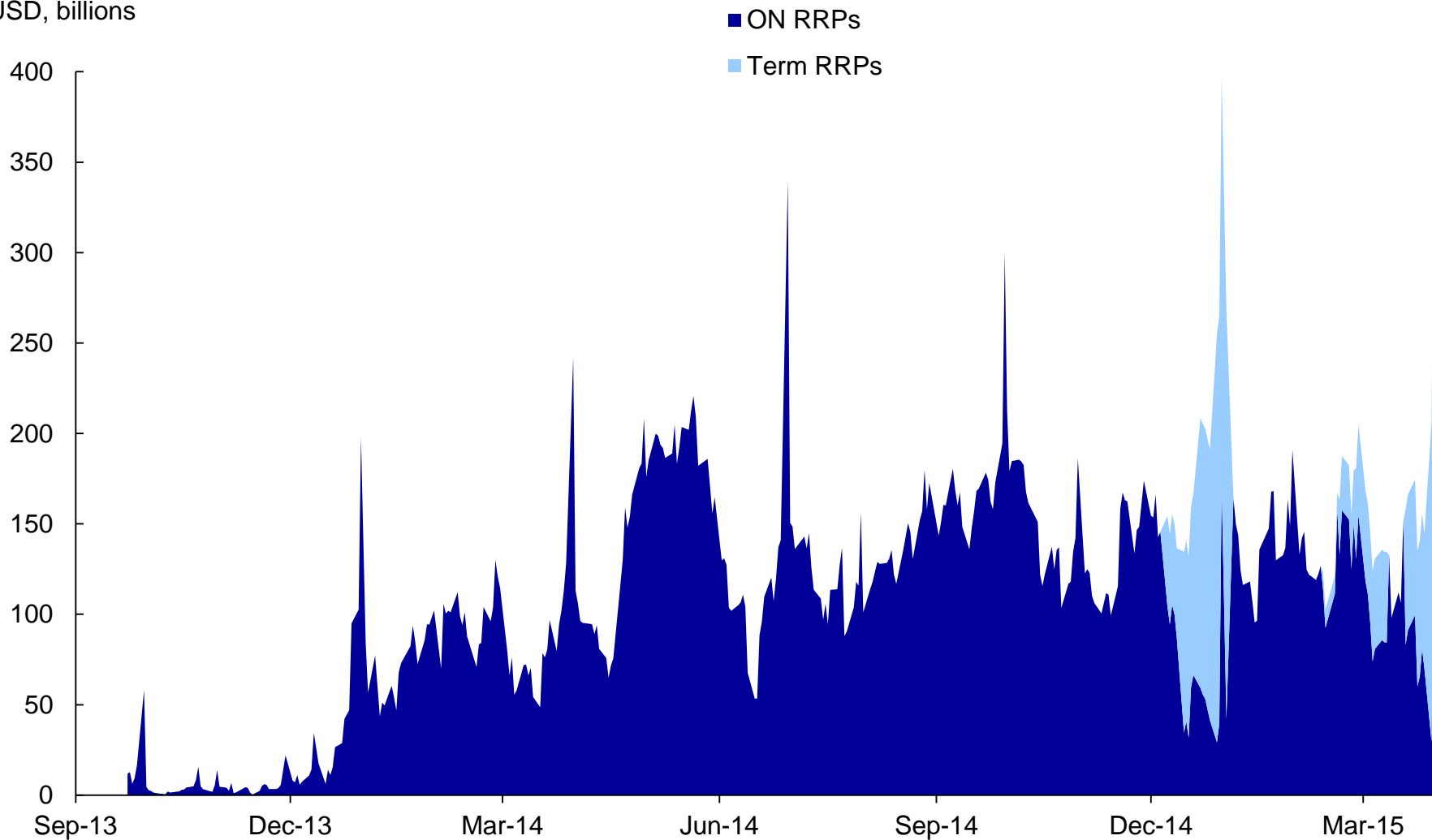
Pre-test period captures rate distributions in October 2014. Test period for an ON RRP offering rate of 7 basis points was November 17 to November 28, 2014, and for a rate of 10 basis points was December 1 to December 12, 2014.
Source: Federal Reserve (FR 2420).

Term RRP Testing

- October 2014: FOMC instructed the Desk to examine how term RRP operations might work as a supplementary tool
 - Could help control the federal funds rate and reduce potential volatility in money market rates, particularly around quarter- and year-end
- Conducted 4 operations over the December 2014 year-end, with a maximum total size of \$300 billion
- Conducted 3 operations over the March 2015 quarter-end, with a maximum total size of \$200 billion
- January 2015: FOMC instructed the Desk to conduct operations that do not cover quarter-end, to enhance operational readiness and increase understanding of the tool

Reverse Repos Outstanding

USD, billions



Temporary open market operations only.

Source: FRBNY.

Normalization Strategy

- FOMC participants agreed on the following elements of the approach to normalization
 - Will raise target 25 bps range for fed funds rate when conditions warrant
 - Intends to control fed funds rate primarily using IOER at top of range
 - Intends to use ON RRP facility and other supplementary tools as necessary, offer rate at bottom of range
 - Elevates capacity of ON RRP facility at liftoff
 - Will phase out ON RRP facility when no longer needed
 - Reduce securities holdings in a gradual and predictable manner
 - Expects to cease or commence phasing out reinvestments after first increase in target range
 - Does not anticipate selling MBS
 - Will hold no more securities than necessary in the longer run; those securities will primarily be Treasuries
 - Prepared to adjust details to normalization as necessary