

Economics 435

The Financial System

(11/11/2019)

Instructor: Prof. Menzie Chinn
UW Madison
Fall 2019

Unconventional Monetary Policy (UMP)

- Most central banks set a target for the overnight interbank lending rate.
- However there are two circumstances when additional policy tools can play a useful stabilization role:
 1. When lowering the target interest-rate to zero is not sufficient to stimulate the economy; and
 2. When an impaired financial system prevents conventional interest-rate policy from supporting the economy.

Interpreting UMP

$$i_{nt} = \frac{\tilde{(i_{1t} + i_{1t+1}^e + \dots + i_{1t+n-1}^e)}}{n} + tp_{nt}$$

The diagram illustrates the components of the interest rate equation. A yellow arrow points to the term $\tilde{(i_{1t} + i_{1t+1}^e + \dots + i_{1t+n-1}^e)}$. A blue arrow points to the term n . A blue arrow points to the term tp_{nt} . A red arrow points to the term i_{1t} .

Quantitative easing

Forward guidance

Credit easing

Unconventional Policy Tools

1. A policy duration commitment.
 - This is when the central bank promises to keep interest rates low in the future.
2. Quantitative easing (QE).
 - When the central bank supplies aggregate reserves beyond the quantity needed to lower the policy rate to zero.
3. Credit easing (CE).
 - When the central bank alters the mix of assets it holds on its balance sheet in order to change their relative prices in a way that stimulates economic activity.

Interpreting QE

$$i_{nt} = \frac{\tilde{(i}_{1t} + i_{1t+1}^e + \dots + i_{1t+n-1}^e)}{n} + tp_{nt}$$

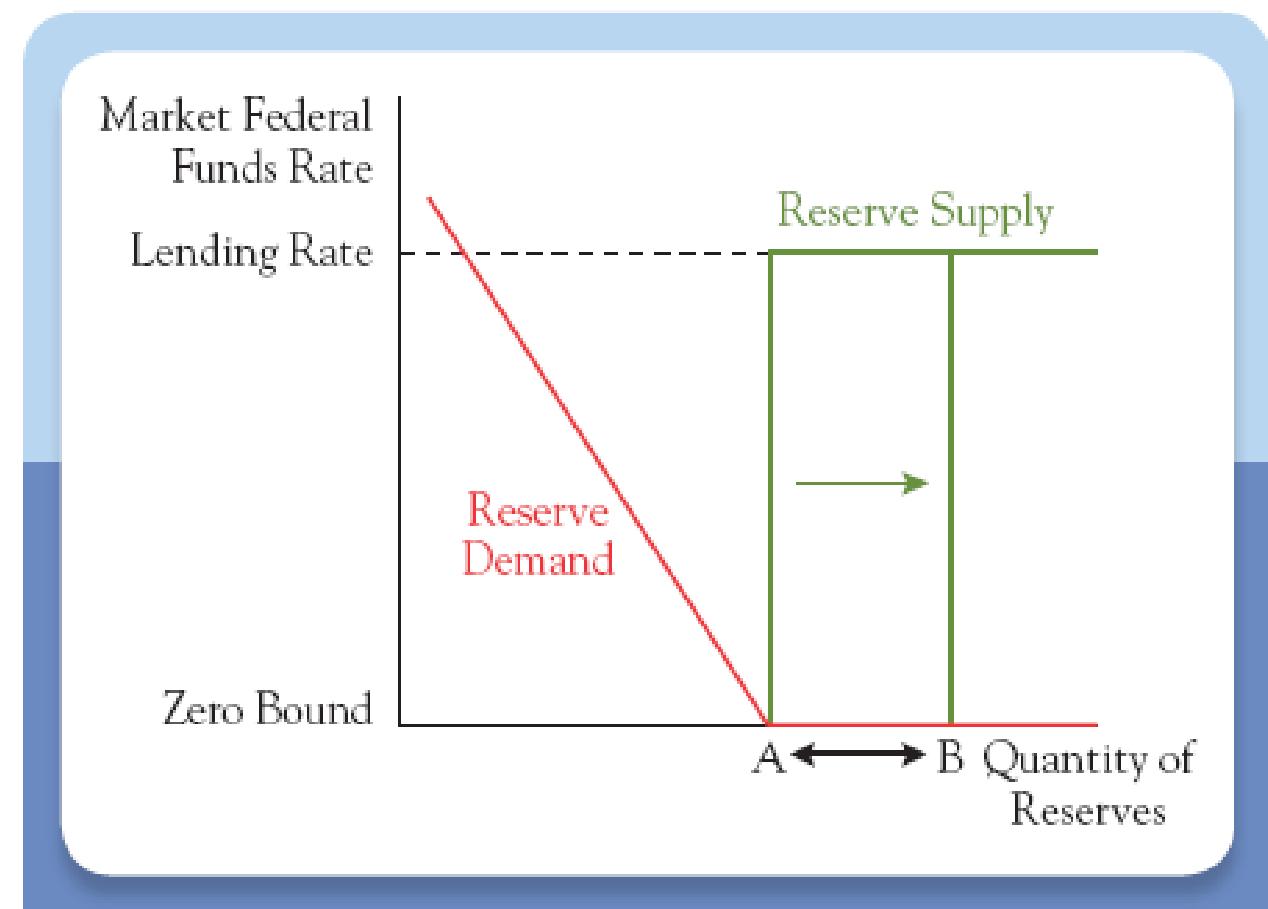
Quantitative
easing

Quantitative Easing

- At a rate of zero, banks hold cash rather than lend.
- The Fed can add limitlessly to reserves without affecting the market federal funds rate.
- QE is the difference between A and B.

Figure 18.10

Quantitative Easing



Quantitative Easing

- It is difficult to predict the effects of QE.
- Our limited experience means that we have little data on which to base such a forecast.
- Moreover, the mechanism by which QE affects economic prospects is not clear.
- An increase in the supply of reserves (QE) may simply lead banks to hold more of them rather than provide additional loans.

Interpreting Credit Easing

$$i_{nt} = \frac{\tilde{(i_{1t} + i_{1t+1}^e + \dots + i_{1t+n-1}^e)}}{n} + tp_{nt}$$

A red circle highlights the term tp_{nt} in the equation.

Credit
easing

Credit Easing

- *Credit easing* (CE) shifts the *composition* of the balance sheet away from risk-free assets and toward risky assets.
- The central bank's actions can influence both the cost and availability of credit, changing spreads
- In the absence of private demand for the risky asset, the central bank's purchase makes credit available where none existed.
- Impact:
 - To be greater in thin, illiquid markets.
 - To be larger the bigger the difference between the yield on the asset that the central bank buys and the yield on the asset that the central bank sells.

Credit Easing

Table 1

Characteristics of the Four Asset Purchase Programs

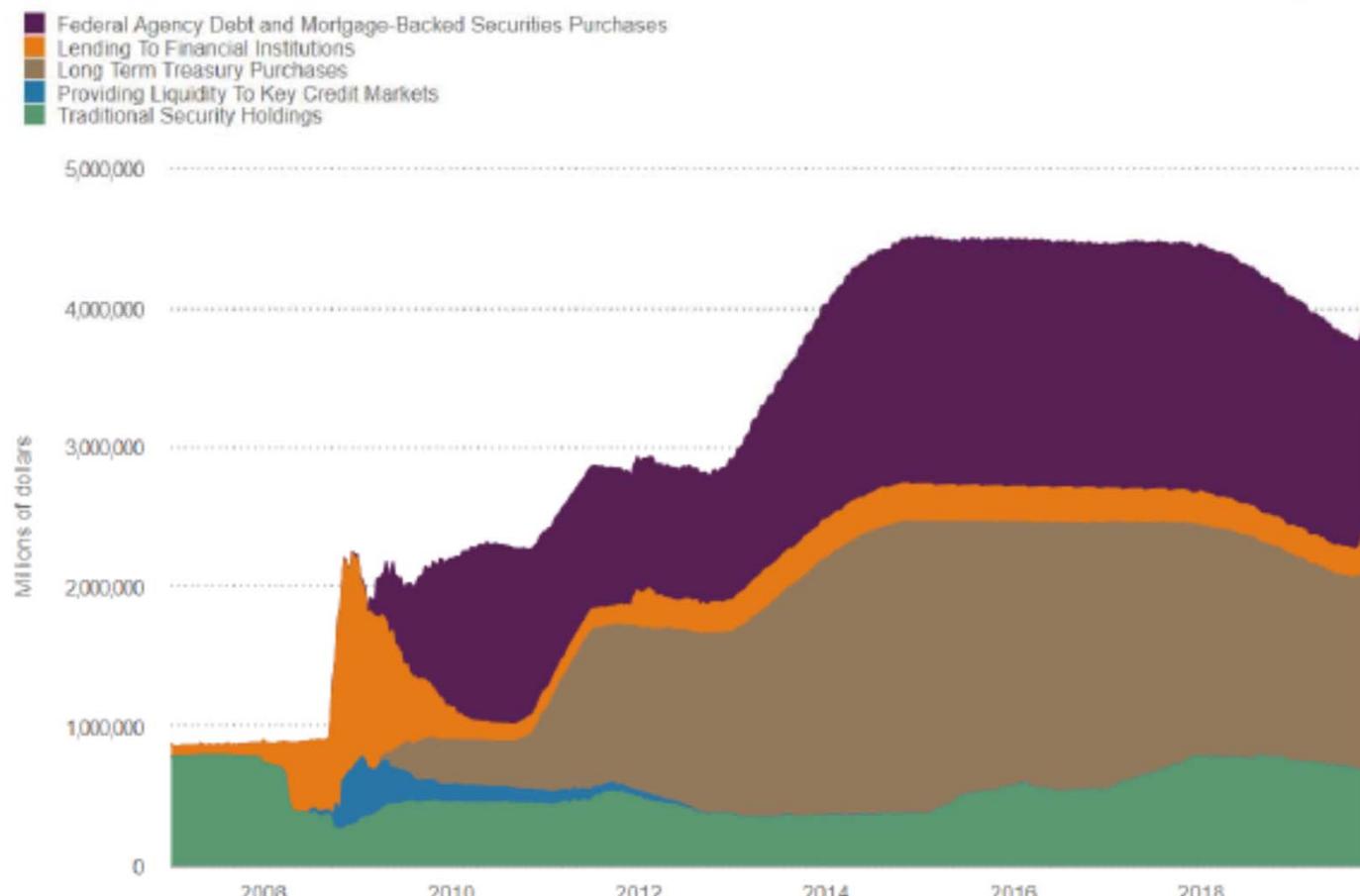
<i>Program</i>	<i>Dates</i>	<i>Assets purchased</i>	<i>Size</i> <i>(billions)</i>	<i>Sterilized?</i>
First LSAP (QE1)	11/2008 to 3/2009	Agency debt Agency MBSs Treasuries	\$200 \$1,250 \$300	No
Second LSAP (QE2)	11/2010 to 6/2011	Longer-dated Treasuries	\$600	No
MEP (“Twist”)	9/2011 to 12/2012	6- to 30-year Treasuries	\$667	Yes
Third LSAP (QE3)	9/2012 to 10/2014 12/2012 to 10/2014	MBSs Longer-dated Treasuries	\$40/month \$45/month	No

Note: Quantitative easing refers to a set of four asset purchase programs: the three Large-Scale Asset Purchases (LSAPs), commonly known as QE1, QE2, and QE3; and the Maturity Extension Program (MEP), also known as the second “Operation Twist.” The table summarizes the key features of these programs. MBSs are mortgage-backed securities.

Summary View



Click/drag to zoom



Source: Federal Reserve Bank of Cleveland calculations based on data from Federal Reserve Board and Haver Analytics.

Source: Cleveland Fed <https://www.clevelandfed.org/our-research/indicators-and-data/credit-easing.aspx>

Credit Easing

- CE purposely deviates from such *asset neutrality* in order to influence relative prices.
- Exiting from CE probably is also more difficult than unwinding QE.
- Risky assets are generally harder to sell than Treasuries.
 - The central bank may not be able to get rid of them exactly when it wants.
 - Political influences can become important if the Fed is hindered from selling specific assets for fear of raising the costs of a particular class of borrowers.

Estimated Impact (I)

Table 2
Estimated Event-Study Interest Rate Effects

Study	Window (days)	Yield on:	QE1 (basis points)	QE2 (basis points)	MEP (basis points)	QE3 (basis points)
Gagnon, Raskin, Remache, and Sack (2011)	1	T10	-91***			
		Agency	-156***			
		MBS	-113***			
Krishnamurthy and Vissing-Jorgenson (2011)	2	T10	-107*	-30***		
		Agency	-200***	-29***		
		MBS	-88	-13**		
Ehlers (2012)	1	T10		-14	-27***	
	2	T10		-40***	-46***	
Bauer and Neely (2014)	1	T10	-123**	-23		-14

Notes: “T10” refers to the 10-year Treasury, MBS to the 15-year Agency mortgage-backed securities, and “Agency” to the debt issued by Ginnie Mae, Fannie Mae, and/or Freddie Mac. QE1, QE2, and QE3 are three quantitative easing programs. MEP is the Maturity Extension Program. Asterisks indicate the magnitude of the ratio of the observed event-day relative to the standard deviation of the yield changes at the indicated horizon, as reported by the authors:

***denotes ratios greater than 2.58 in absolute value (1 percent tail),

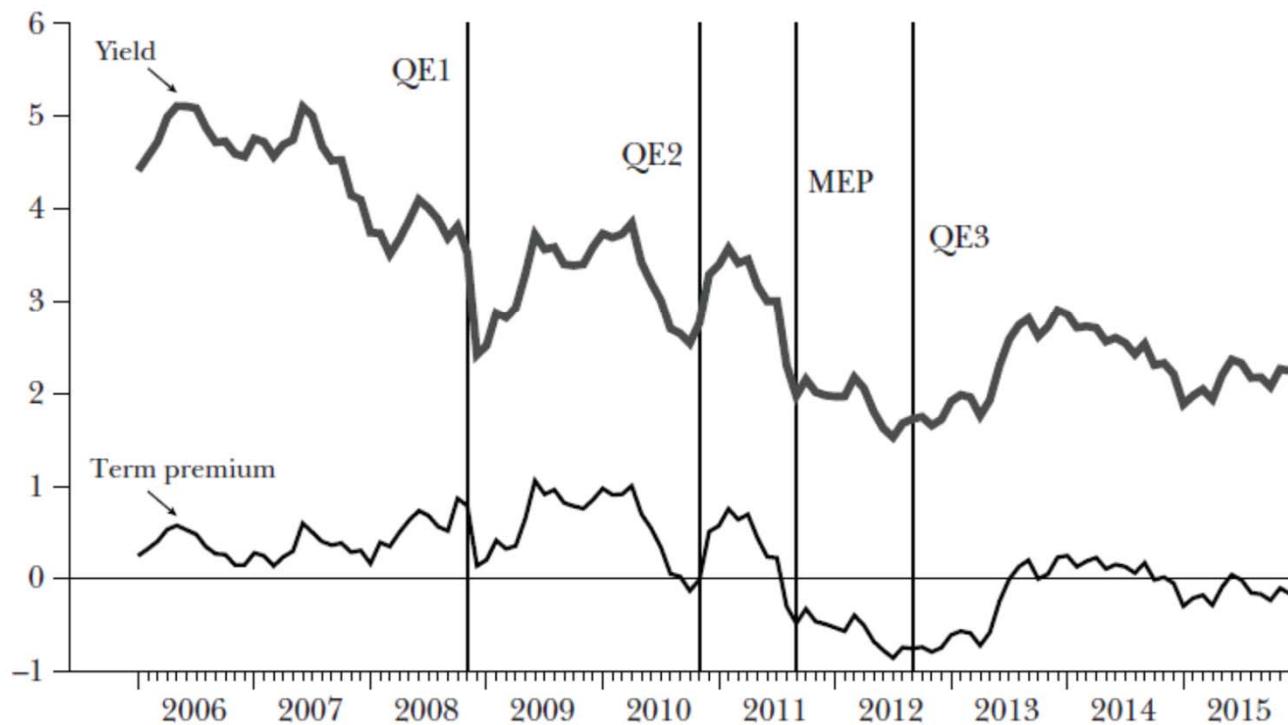
**ratios greater than 1.96 (5 percent tail), and

*greater than 1.69 (10 percent tail).

Estimated Impact (II)

Figure 2

Kim-Wright Estimated 10-year Term Premium and 10-year Treasury Yield
(percent)



Note: QE1, QE2, and QE3 are three quantitative easing programs. MEP is the Maturity Extension Program.

Estimated Impact (II)

Table 3

Estimated Effects of Quantitative Easing on 10-year Term Premiums (basis points)

Study	QE1	QE2	MEP	QE3
Gagnon, Raskin, Remache & Sack (2011)	-38 ^a			
D'Amico, English, López-Salido & Nelson (2012)	-35	-45		
Ihrig, Klee, Li, Schulte & Wei (2012)	-40	-40	-17	-50 ^b
Hamilton & Wu (2012)			-27 ^c	

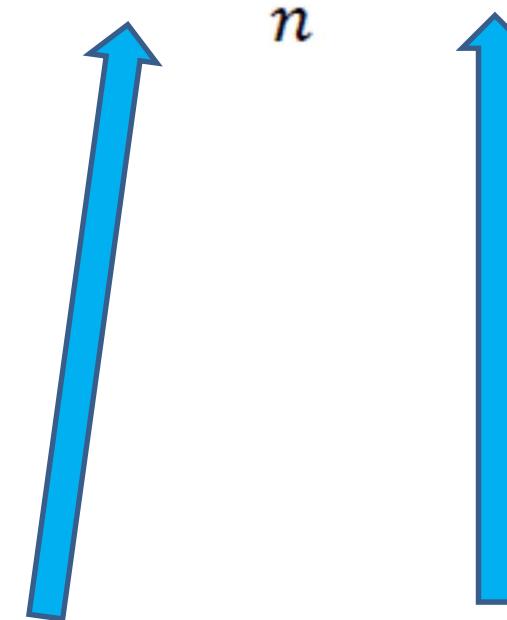
Notes: QE1, QE2, and QE3 are three quantitative easing programs. MEP is the Maturity Extension Program.

^a The smallest of the range of estimates reported.

^b Estimated by Engen, Laubach, and Reifschneider (2015) using the Ihrig, Klee, Li, Schulte, and Wei (2012) model.

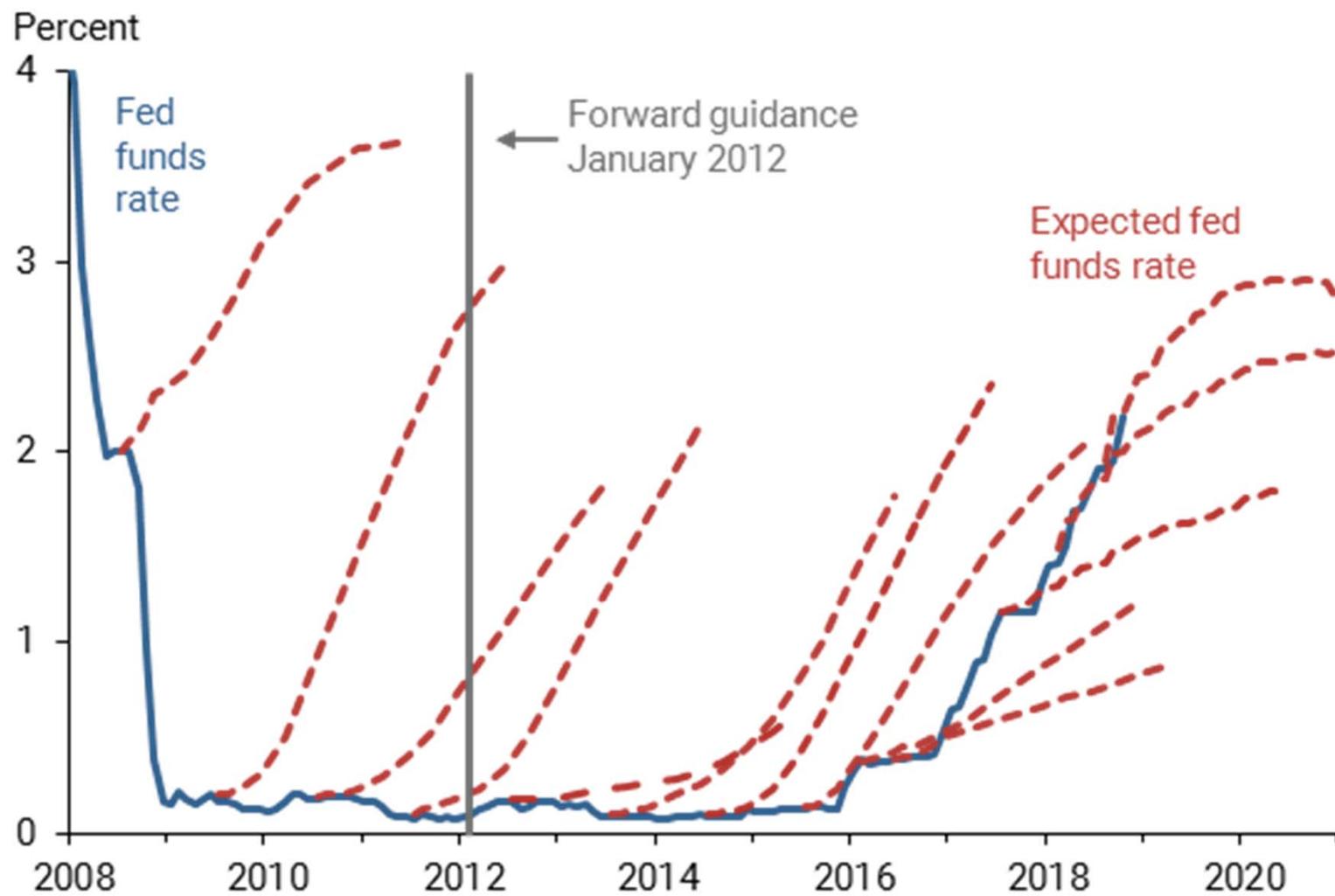
^c The reported impact of a \$400 billion maturity swap, scaled up to the \$667 billion size of the Maturity Extension Program.

Interpreting Forward Guidance

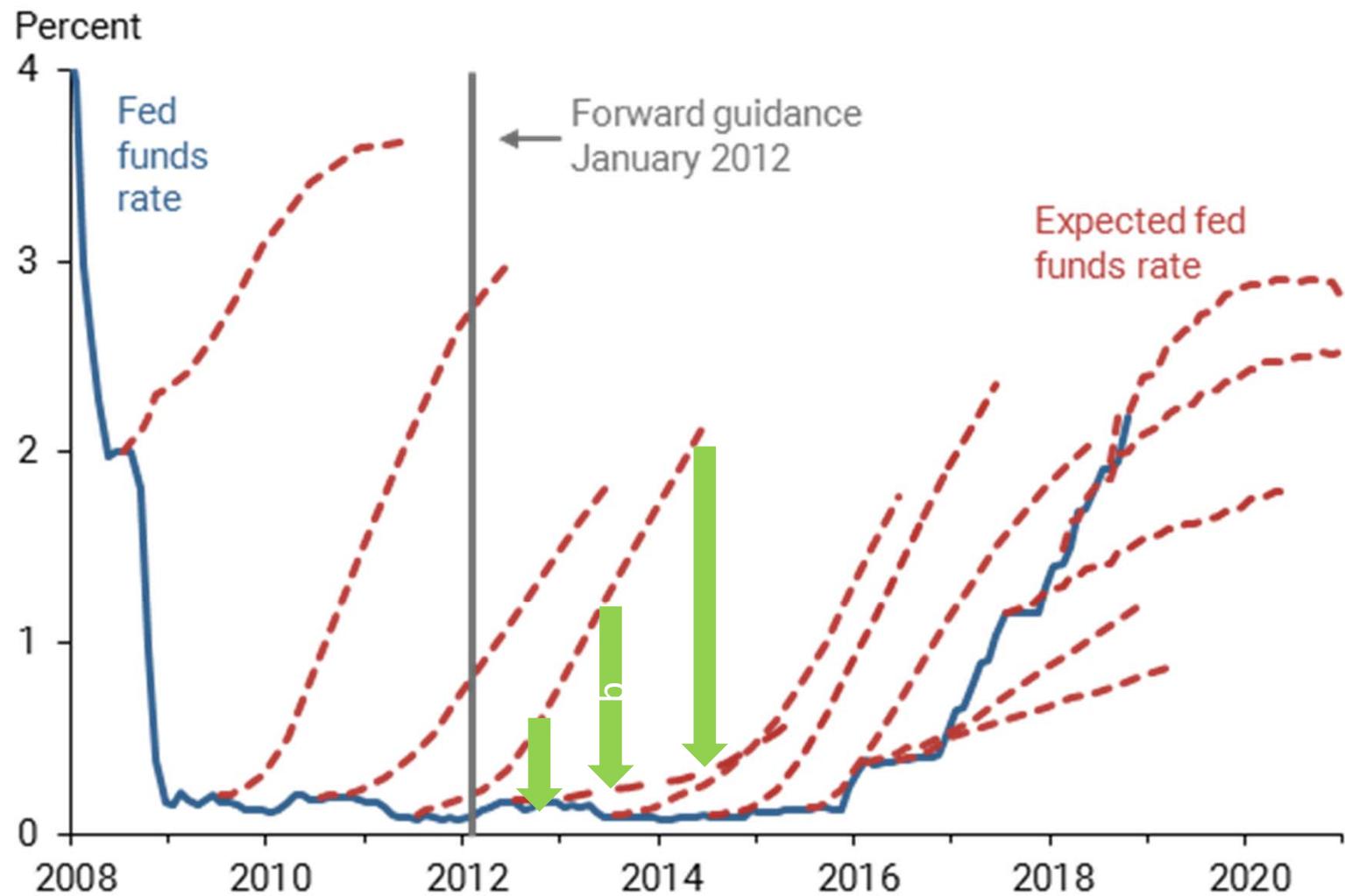
$$i_{nt} = \frac{\tilde{(i_{1t} + i_{1t+1}^e + \dots + i_{1t+n-1}^e)}}{n} + tp_{nt}$$


Forward guidance

a.k.a. “Policy Duration Commitment”



a.k.a. “Policy Duration Commitment”



Making an Effective Exit

- Exiting from QE and CE poses additional obstacles that appear technical but have important implications.
- The question is whether a central bank that wishes to raise interest rates will be able to do so as quickly as desired.
- The answer depends on the size and composition of the central bank's balance sheet and the toolset available.

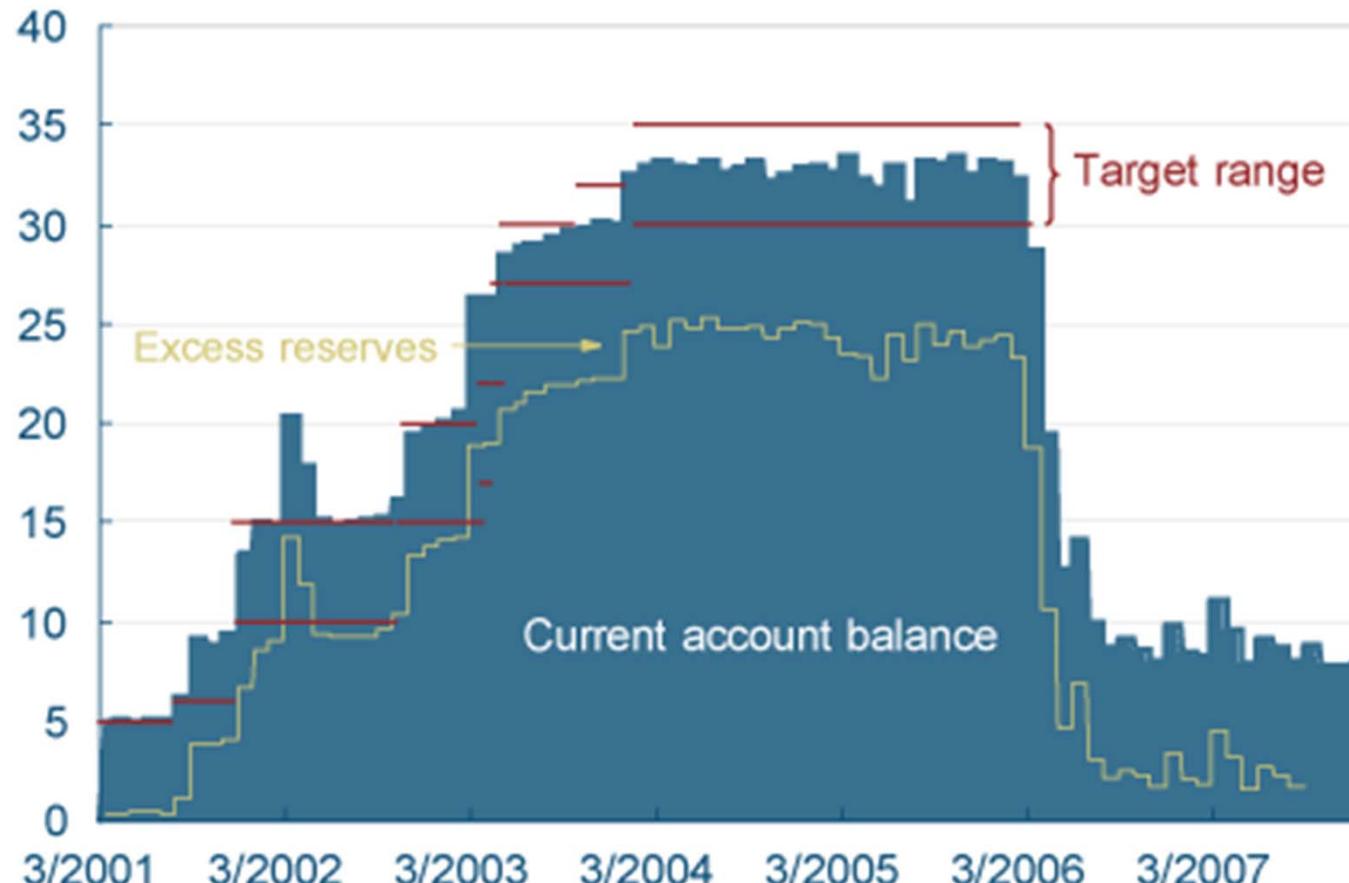
Making an Effective Exit

- What happens with QE and CE have vastly expanded the amount of reserves and assets on the central bank's balance sheet?
 - The central bank may need to sell a large volume of assets to reduce reserve supply sufficiently to raise the policy rate target.
- But, QE and CE assets are typically more difficult to sell.

The Japanese Exit

Quantitative Easing

Trillions of yen



Source: Bank of Japan.

Source: Humpage and Schenk, "Japan's Quantitative Easing Policy," Economic Trends, Cleveland Fed 12/10/2008
<http://www.clevelandfed.org/research/trends/2008/1208/01intmar.cfm>

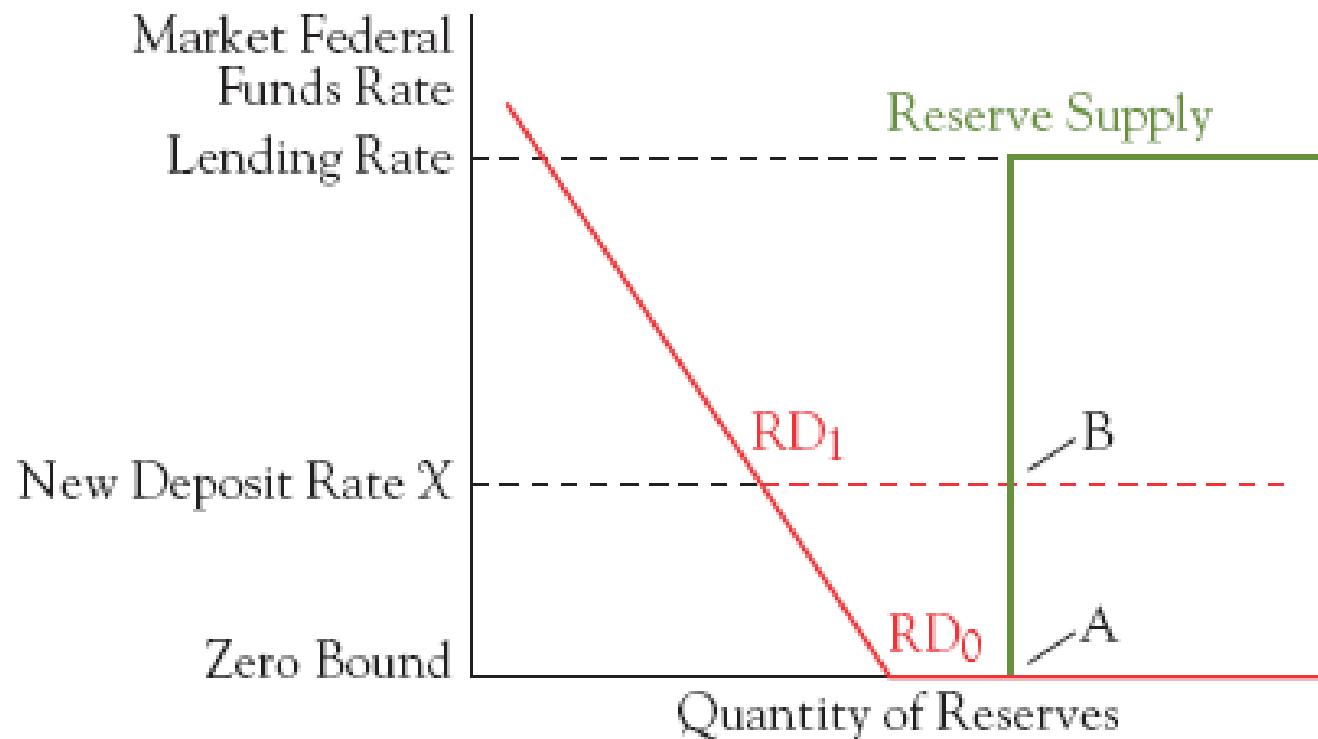
Making an Effective Exit

- A central bank may be unable to sell assets and withdraw reserves from the banking system rapidly enough to hike the policy interest rate when it desires.
- However, Central banks like the Fed have several policy options that allow them to tighten without having to sell their assets.
- Raising (deposit) rate on reserves.

Making an Effective Exit by Raising the Interest Rate on Reserves

Figure 18.11

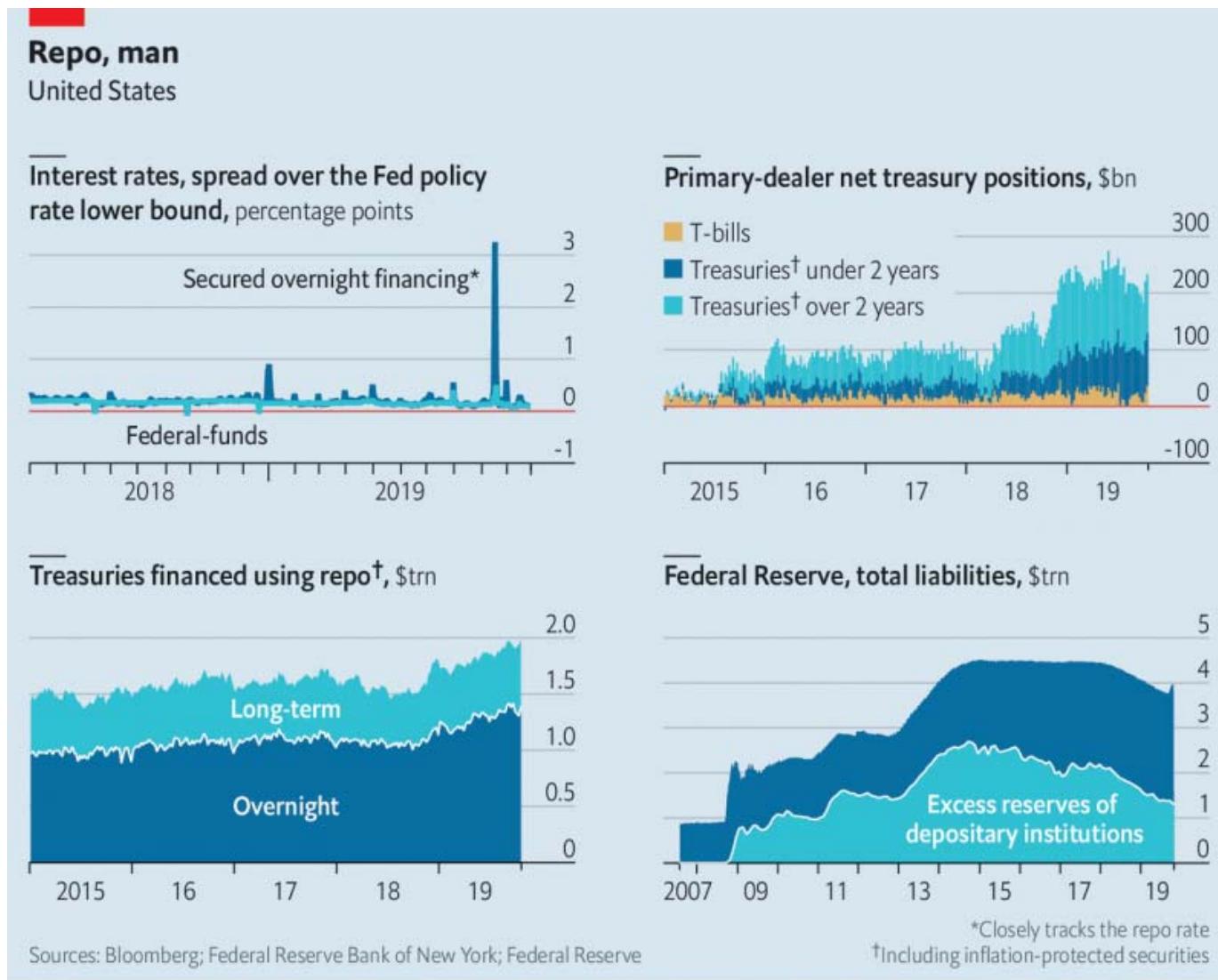
Exiting Quantitative Easing by Hiking the Deposit Rate



Making an Effective Exit

- Paying interest on reserves allows a central bank to use two powerful policy tools independently of one another:
 1. It can adjust the target rate for interbank loans without changing the size or composition of its balance sheet, and
 2. It can adjust the size and composition of its balance sheet without changing the target interest rate for interbank loans.
- This means the central bank can change its balance sheet in a fashion consistent with financial stability and keep inflation under control.
- It can avoid a fire sale by simply raising the deposit rate that they pay on reserves.

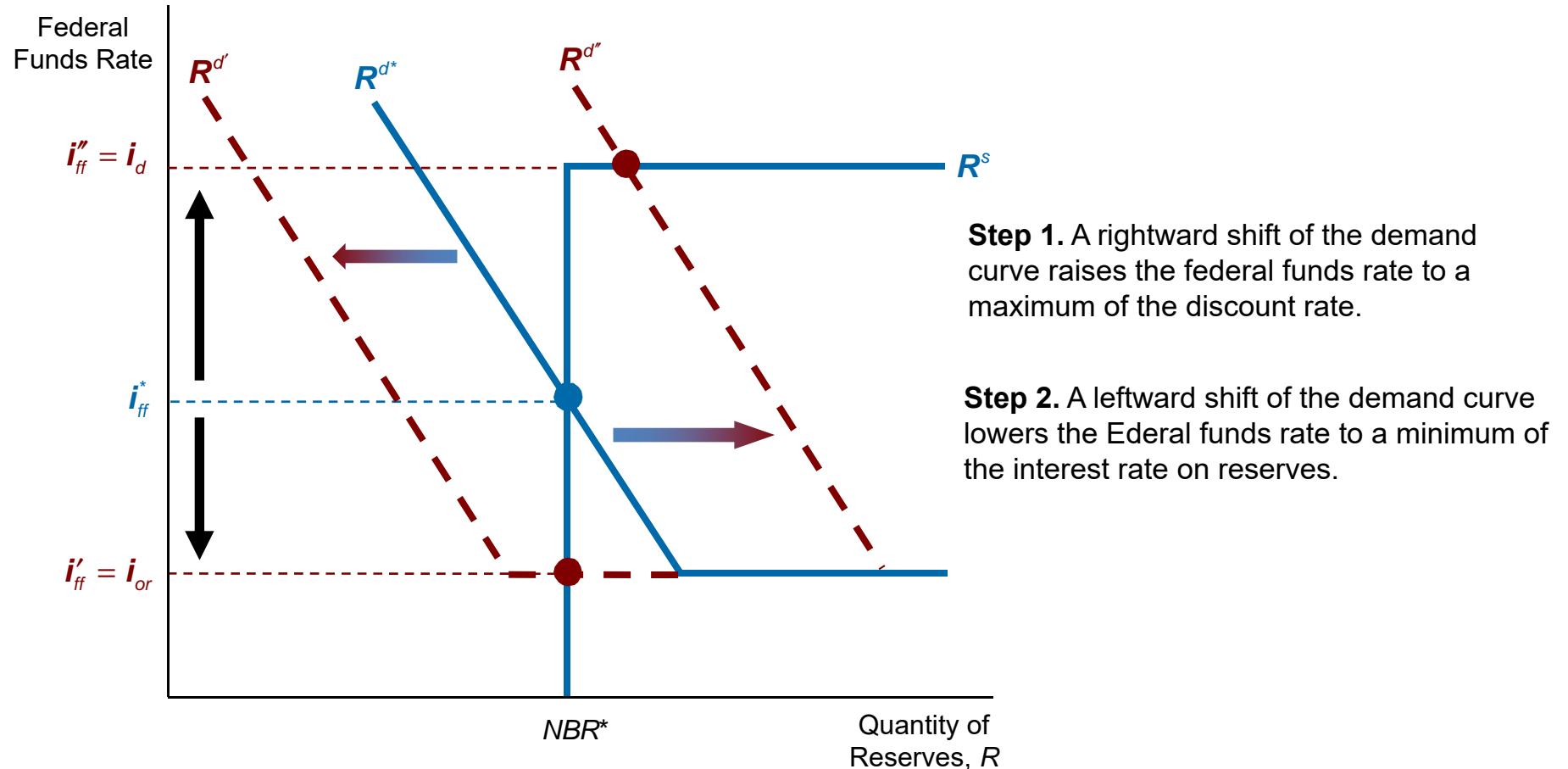
Repo Market Kerfuffle



The Economist

<https://www.economist.com/finance-and-economics/2019/11/02/why-the-repo-market-went-awry>

How the Federal Reserve's Operating Procedures **Should** Limit Fluctuations in the Federal Funds Rate



How the Federal Reserve's Operating Procedures **Should** Limit Fluctuations in the Federal Funds Rate

