MONETARY POLICY AND THEORY

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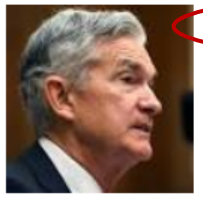
AGENDA

- **Monetary operations (Implementations)**
- Model of reserve market
- Monetary policy tools
  - Conventional policy tools
  - Unconventional policy tools
- International comparisons

Reading: Chapter 16. This chapter examines the tools used by central banks to control the money supply and interest rates

WHAT YOU HAVE HEARD IN THE MEDIA....



Fed's Powell defends policy of gradual interest **rate** hikes
Reuters - Aug 24, 2561 BE
Fed's Powell defends policy of gradual interest **rate** hikes ... Trump said he was "not thrilled" with Powell's **Fed** for **raising rates** and said the ... annual events, drawing international **media** attention and an audience including ...
US **Fed** chief defends policy of gradual **rate** hikes
Nikkei Asian Review - Aug 24, 2561 BE
View all

Bank of England raises **rates** above crisis lows, signals no rush for ...
Reuters - Aug 1, 2561 BE
The **BoE's** nine **rate**-setters unexpectedly voted unanimously to raise ... from a period after the 2016 Brexit vote when they were **cut** even **lower**.
Bank of England raises UK interest **rates**
In-Depth - BBC News - Aug 2, 2561 BE

BANK OF THAILAND

BOT Press Release

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No. 52/2018

Monetary Policy Committee's Decision 5/2018

Mr. Jaturong Jantarangs, Secretary of the Monetary Policy Committee (MPC), announced the outcome of the meeting on 8 August 2018 as follows.

The Committee voted 6 to 1 to maintain the policy rate at 1.50 percent. One member voted to raise the policy rate by 0.25 percentage point from 1.50 to 1.75 percent.

In deliberating their policy decision, the Committee assessed that the Thai economy

Everything is about *interest rate*.

They send the signal to the market by adjusting the so called **"central bank policy (target) rate – e.g. interest rate in the market where central bank targets."**

WHICH TARGET RATE?

Central banks - summary of current interest rates

This page provides a summary of the **current interest rates of a large number of central banks**. The current interest rate is the rate at which banks can borrow money from the central bank. The interest rates are used by central banks to shape monetary policy. The summary records the current and historic interest rates for each central bank. If you click on the name of the interest rate in the first column, you will access a page with extensive supplementary information.

Summary of current interest rates of a large number of central banks

Name of interest rate	country/region	current rate	direction	previous rate	change
American interest rate FED	United States	2.000 %	↑	1.750 %	06-13-2018
Australian interest rate RBA	Australia	1.500 %	↓	1.750 %	08-02-2016
Banco Central interest rate	Chile	2.500 %	↓	2.750 %	05-18-2017
Bank of Korea interest rate	South Korea	1.500 %	↑	1.250 %	11-30-2017
Brazilian interest rate BACEN	Brazil	6.500 %	↓	6.750 %	03-22-2018
British interest rate BoE	Great Britain	0.750 %	↑	0.500 %	08-02-2018
Canadian interest rate BOC	Canada	1.500 %	↑	1.250 %	07-11-2018
Chinese interest rate PBC	China	4.350 %	↓	4.600 %	10-23-2015
Czech interest rate CNB	Czech Republic	1.250 %	↑	1.000 %	08-02-2018
Danish interest rate Nationalbanken	Denmark	0.050 %	↓	0.200 %	01-19-2015
European interest rate ECB	Europe	0.000 %	↓	0.050 %	03-10-2016
Hungarian interest rate	Hungary	0.900 %	↓	1.050 %	05-24-2016
Indian interest rate RBI	India	6.500 %	↑	6.250 %	08-01-2018
Indonesian interest rate BI	Indonesia	6.500 %	↓	6.750 %	06-16-2016
Israeli interest rate BOI	Israel	0.100 %	↓	0.250 %	02-23-2015
Japanese interest rate BoJ	Japan	-0.100 %	↓	0.000 %	02-01-2016
Mexican interest rate Banxico	Mexico	7.750 %	↑	7.500 %	06-21-2018
New Zealand interest rate	New Zealand	1.750 %	↓	2.000 %	11-10-2016

Very short-term market: used for liquidity management

Central bank does not have perfect control over these (very) short-term markets, but it can greatly influence given the institutional details of financial markets.

However, this requires some **operating procedures, interventions, and implementations.**

By the division of monetary operations.

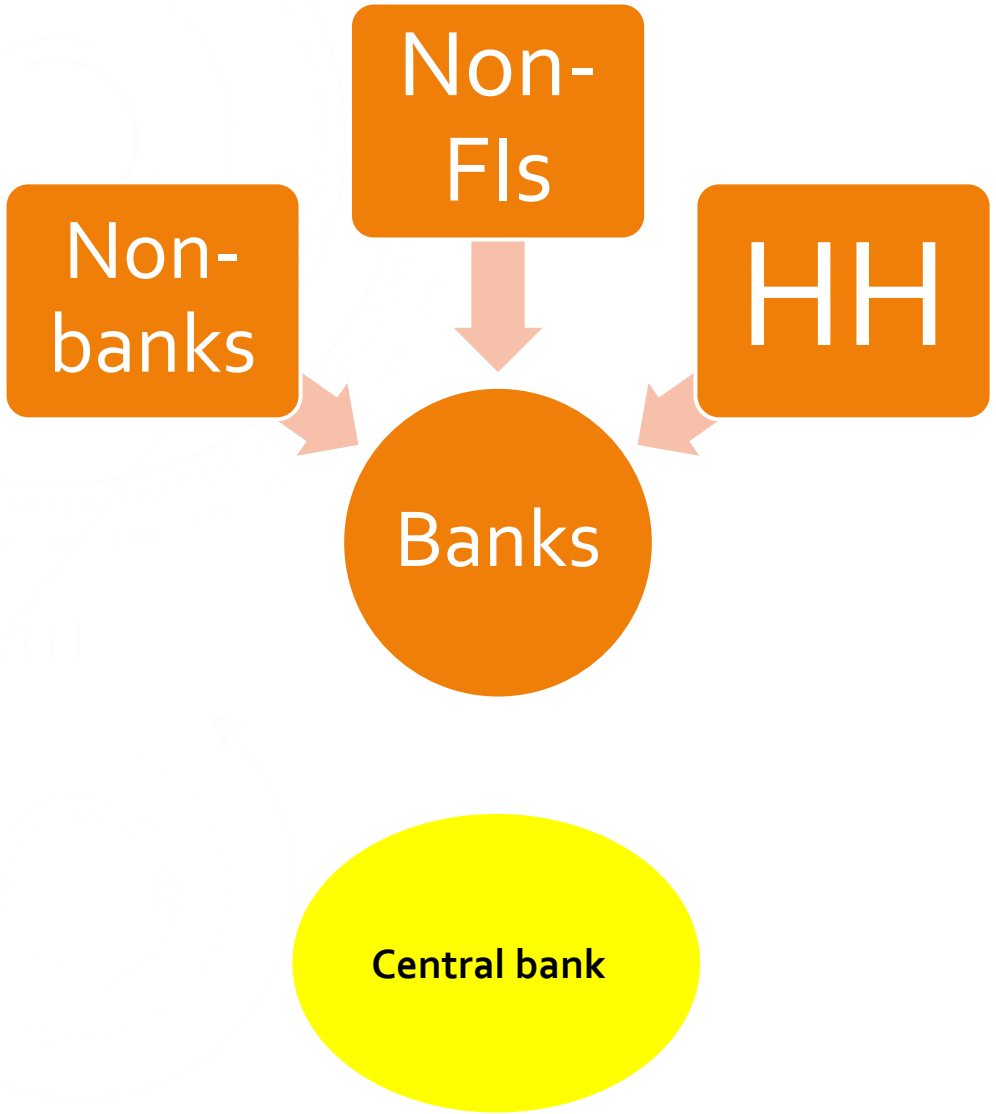
MONETARY OPERATIONS AND TOOLS OF MONETARY POLICY

- This part discusses two things:
  - How central banks control the (very) short-term interest rate.
  - Tools for steering/controlling/maintaining the short-term interest rate - e.g. OMO, Discount rate and other new tools.

AGENDA

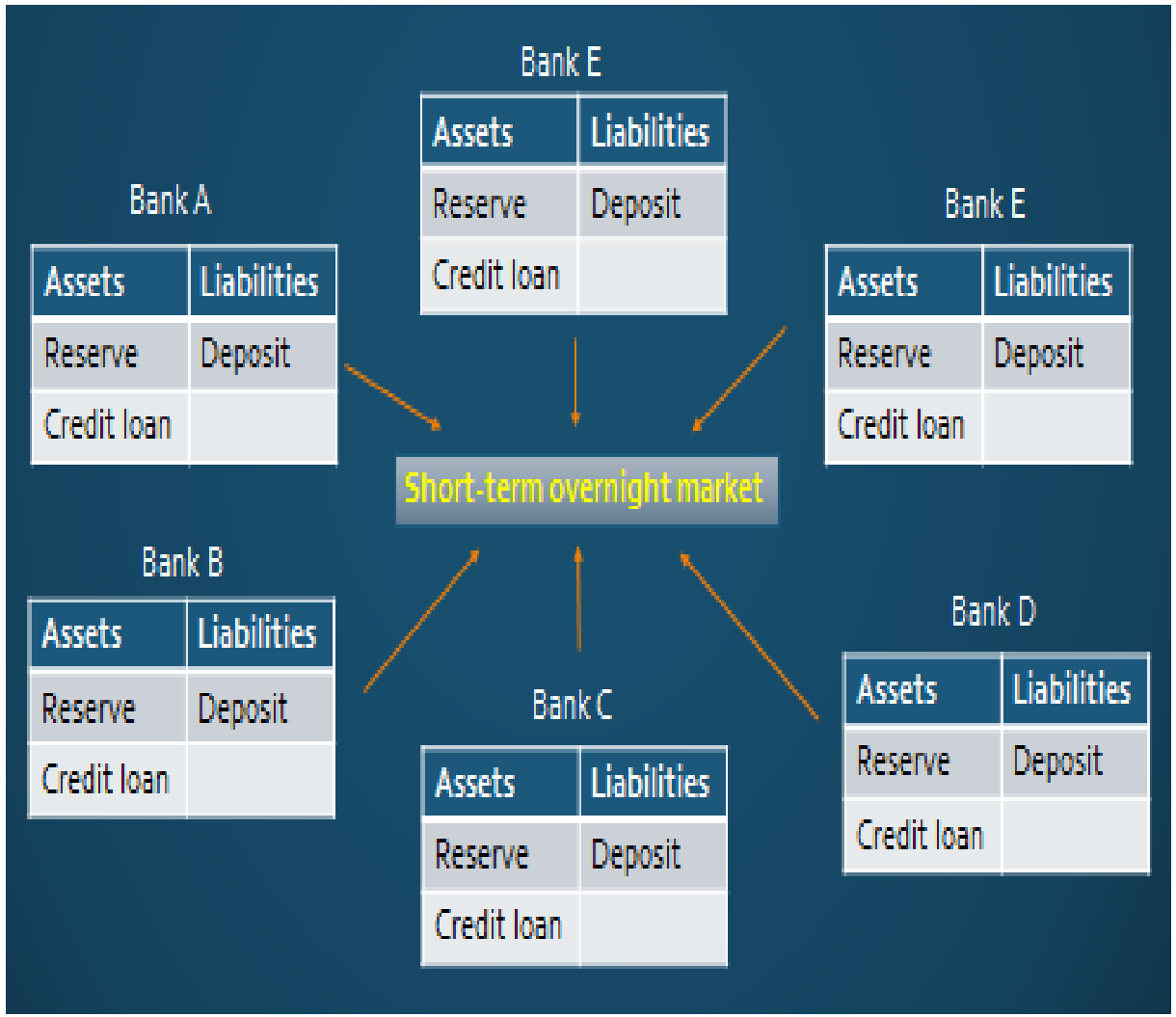
- Monetary operations (Implementations)
- **Model of reserve market: US case**
- Monetary policy tools
  - Conventional policy tools
  - Unconventional policy tools
- International comparisons

Reading: Chapter 16. This chapter examines the tools used by central banks to control the money supply and interest rates



LANDSCAPE OF FINANCIAL TRANSACTIONS

- Financial transactions among market participants occur every single day.
- Banking system acts as an instrumental part for the **netting process**.
- Each bank then maintains their liquidity position for these **interbank settlement** purposes.
- The clearing is centralized at a clearing house established by central bank, through **bank's reserve**.



RESERVE MARKET

- At a given day, some banks might have **abundant liquidity**; meanwhile other banks might have **liquidity shortage**.

- In the US, reserve can be loaned/borrowed across banks in the "**Market for reserves**" – e.g. called **Federal fund market.**

RESERVE MARKET AND FEDERAL FUND MARKET

- Reserve market is an example of the ***Over-The-Counter*** market – i.e. a ***search-based bilateral contract.***
- Financial activities occur in the reserve market have an **overnight term**.
- Interest rate determined in the market is called "**Fed-fund rate**" – i.e. ***an*** overnight short-term interest rate.
  - There are so many overnight short-term (borrowing) markets.
- Fed-fund rate is determined by **demand and supply** in the Market for Reserves.

THE MARKET FOR RESERVES: DEMAND

- How does the Fed-fund rate affect demand for reserves of each individual bank?
  - Required reserve: Inelastic?
  - Excess reserve: behavior?
    - Excess reserves are insurance against deposit outflows – e.g. interbank settlement.
    - The cost of holding these is the interest rate that could have been earned minus the interest rate that is paid on these reserves, i_{or}

THE MARKET FOR RESERVES: DEMAND

- Since 2008, Federal Reserve, including many other central banks, has paid interest on reserves at a level that is set at **a fixed amount below the target interest rate.**
- When the overnight target interest rate is above the rate paid on excess reserves, i_{or}, as the overnight rate decreases, the opportunity cost of holding excess reserves falls and the quantity of reserves demanded rises.
- **Downward sloping demand curve that becomes flat (infinitely elastic) at i_{or}**

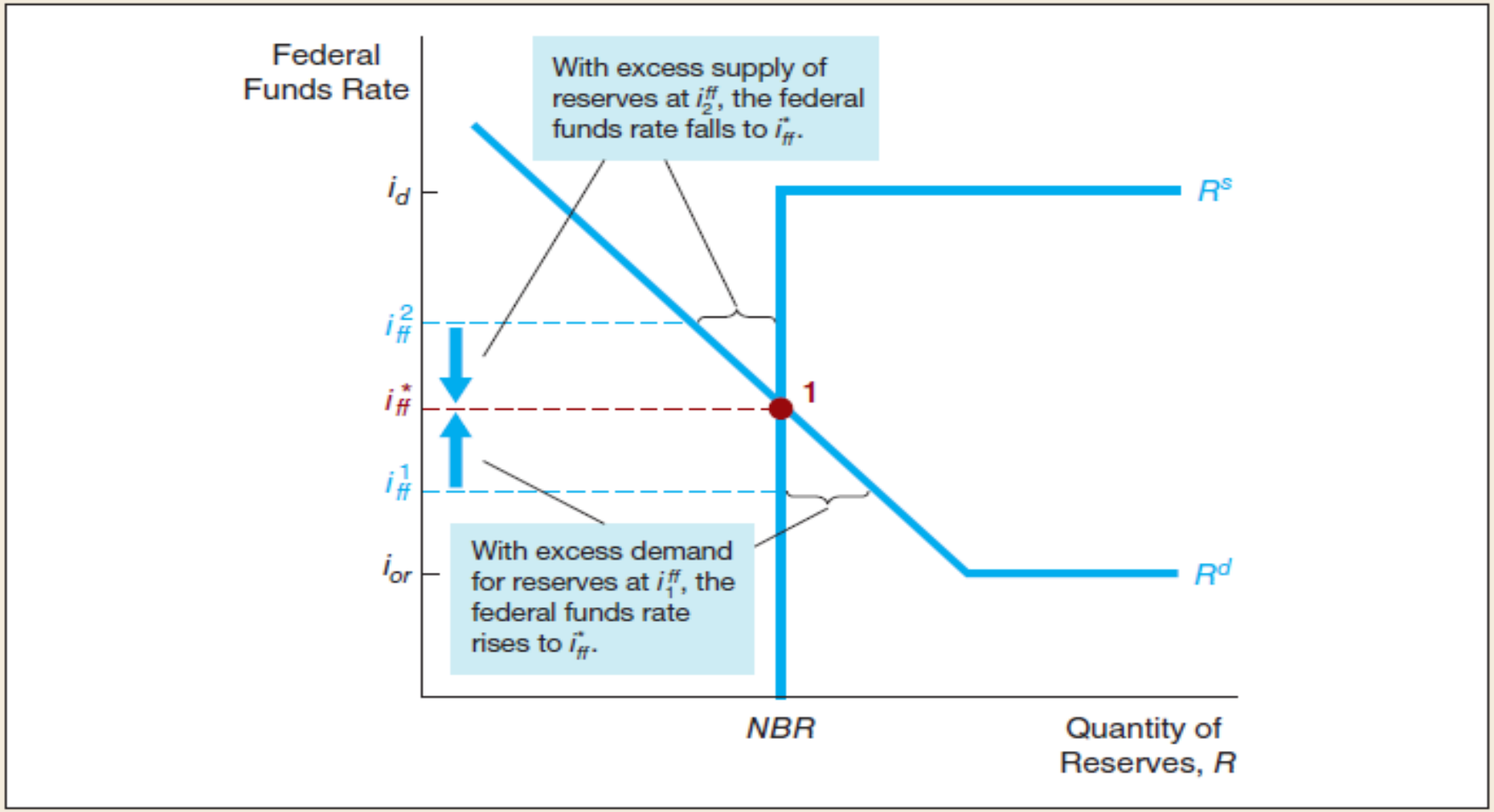
THE MARKET FOR RESERVES: SUPPLY

- **Two components:** non-borrowed and borrowed reserves
- Cost of borrowing from the central bank is the **discount rate**
- Borrowing from the central bank is a substitute for borrowing from other banks
- If $i_{ff} < i_d$, then banks will not borrow from the Fed and borrowed reserves are zero
- The supply curve will be vertical

THE MARKET FOR RESERVES: SUPPLY

- As i_{ff} rises above i_d, banks will borrow more and more at i_d, and re-lend at i_{ff}
- The supply curve is horizontal (perfectly elastic) at i_d

FIGURE 1 EQUILIBRIUM IN THE MARKET FOR RESERVES



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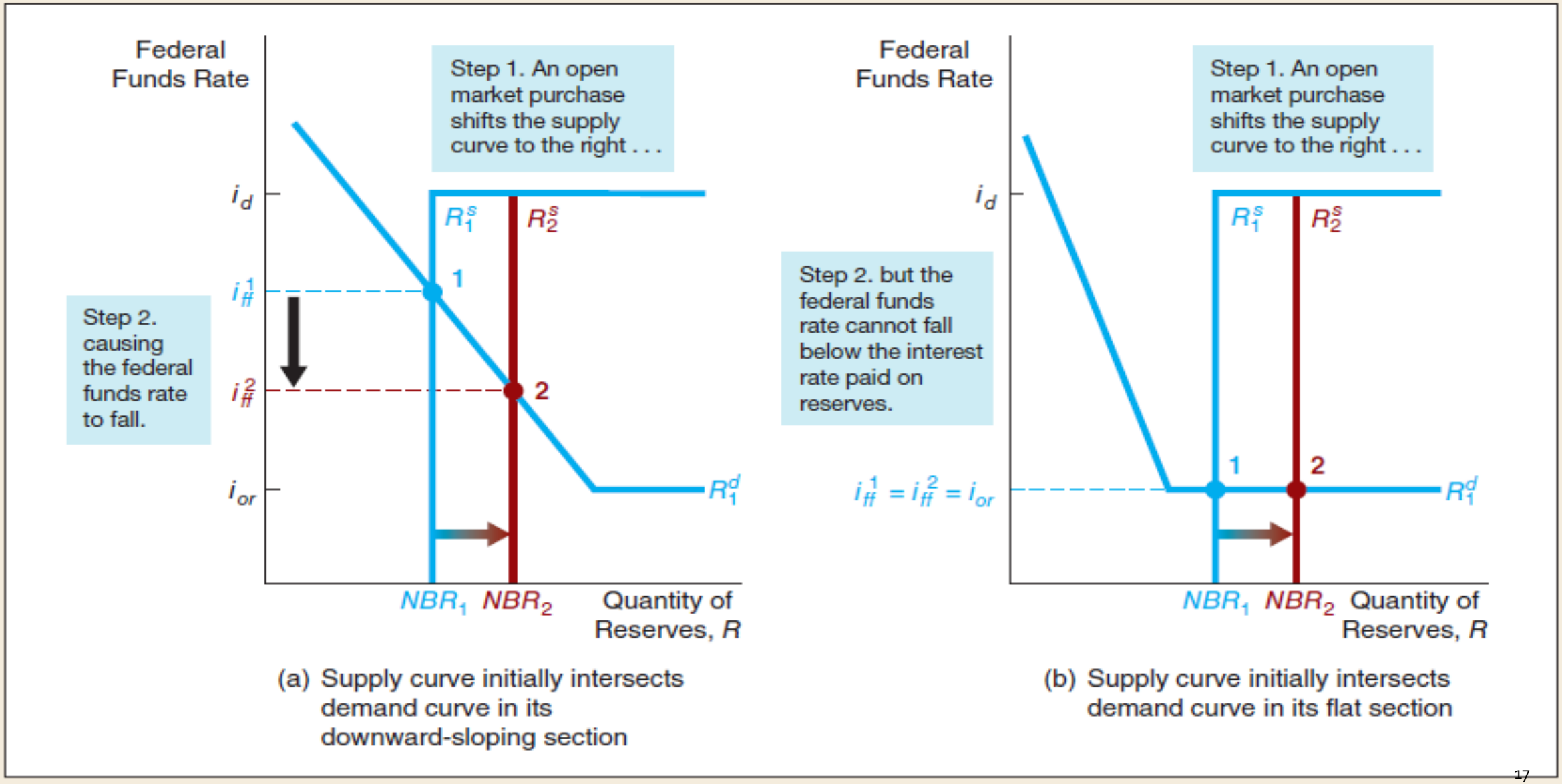
HOW CHANGES IN THE TOOLS OF MONETARY POLICY AFFECT THE FEDERAL FUNDS RATE: OMO

- **OMO** affects supply for reserves – e.g. NBR reserve.
  - Effects of open an market operation **depends on** whether the supply curve initially intersects the demand curve in its downward sloped section versus its flat section.
  - An open market purchase causes the federal funds rate to fall whereas an open market sale causes the federal funds rate to rise (when intersection occurs at the downward sloped section).
  - Open market operations have no effect on the federal funds rate when **intersection occurs at the flat section of the demand curve**.

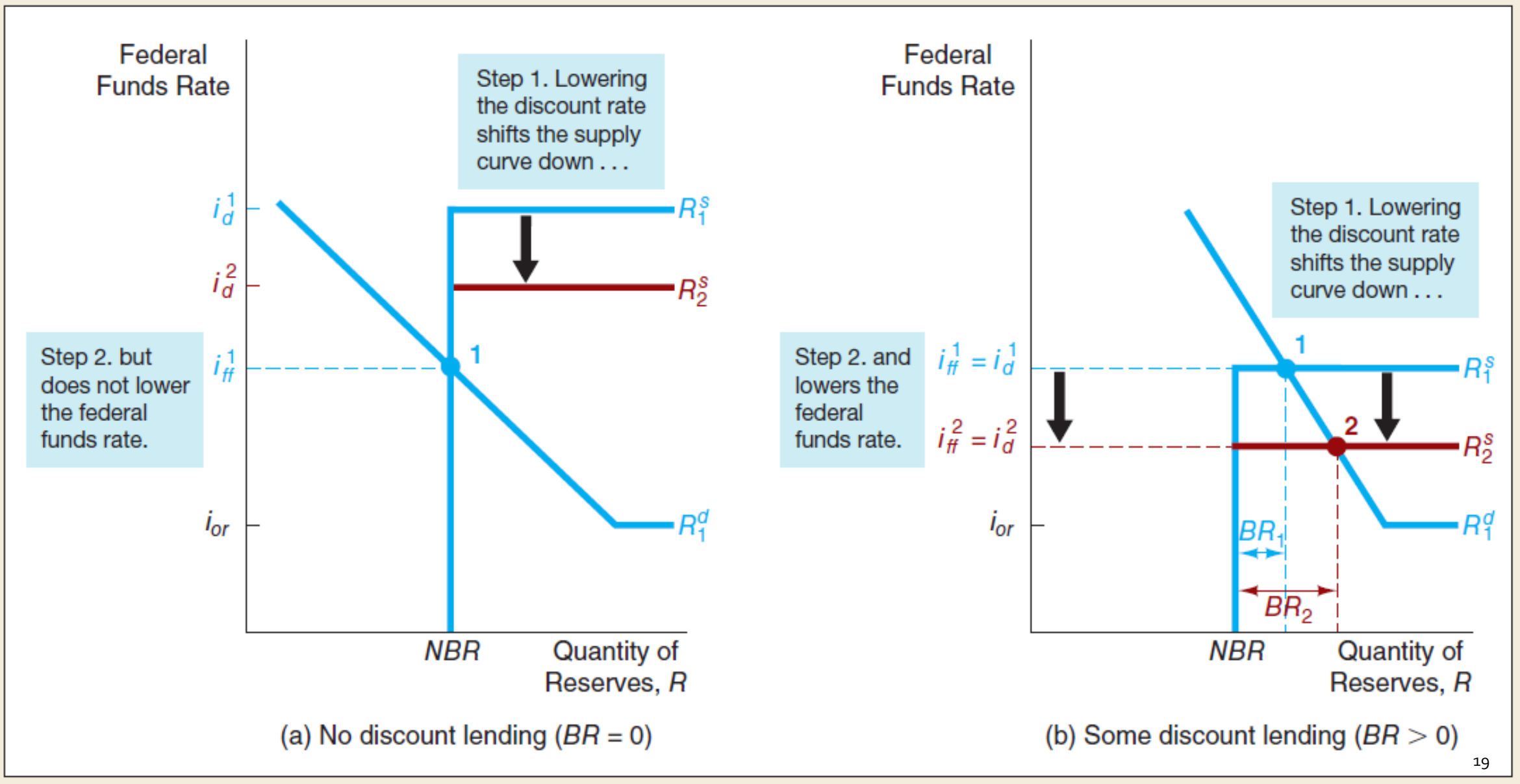
FIGURE 2 RESPONSE TO AN OPEN MARKET OPERATION



HOW CHANGES IN THE TOOLS OF MONETARY POLICY AFFECT THE FEDERAL FUNDS RATE: DISCOUNT RATE

- **Discount rate** affects the ceiling of Fed-fund rate.
  - **Non-binding region:** If the intersection of supply and demand occurs on the vertical section of the supply curve, a change in the discount rate will have no effect on the federal funds rate.
  - **Binding region:** If the intersection of supply and demand occurs on the horizontal section of the supply curve, a change in the discount rate shifts that portion of the supply curve and the federal funds rate may either rise or fall depending on the change in the discount rate.

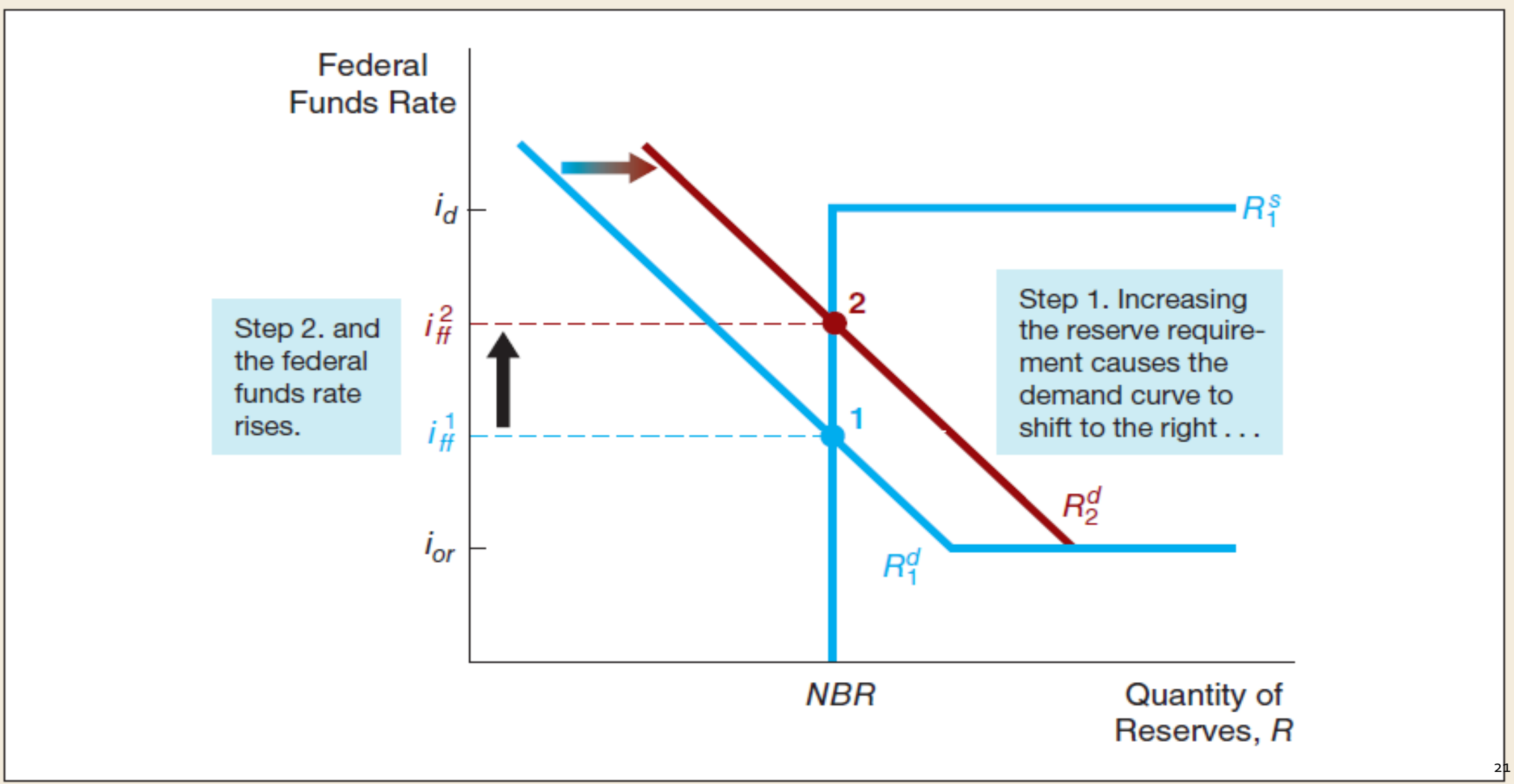
FIGURE 3 RESPONSE TO A CHANGE IN THE DISCOUNT RATE



HOW CHANGES IN THE TOOLS OF MONETARY POLICY AFFECT THE FEDERAL FUNDS RATE: RESERVE REQUIREMENT

- **Reserve requirement** affects demand for reserve.
    - When the Fed raises reserve requirement, the federal funds rate rises and when the Fed decreases reserve requirement, the federal funds rate falls.

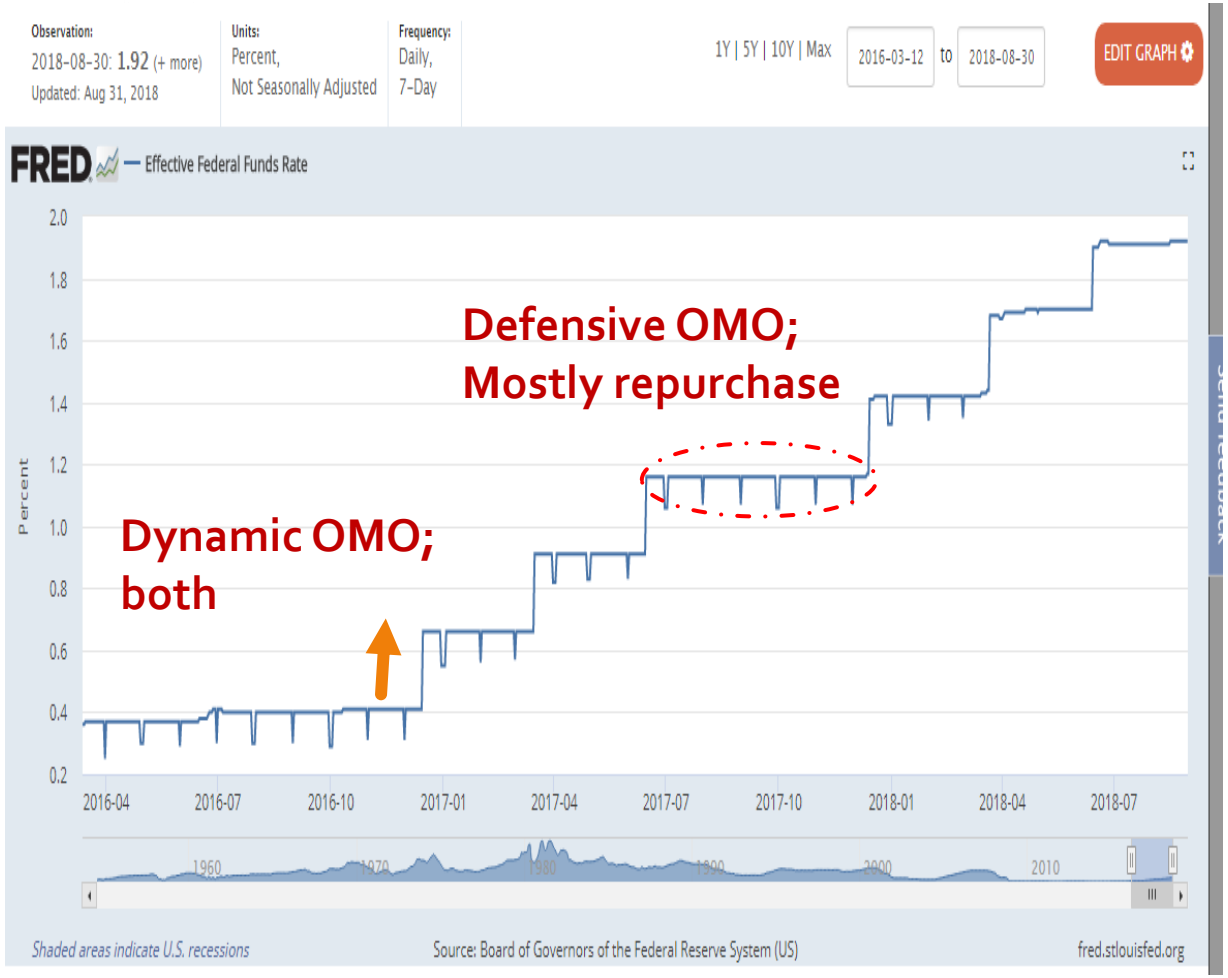
FIGURE 4 RESPONSE TO A CHANGE IN REQUIRED RESERVES



CONVENTIONAL MONETARY POLICY TOOLS

- During normal times, the Federal Reserve uses three tools of monetary policy—open market operations, discount lending, and reserve requirements—to control the money supply and interest rates, and these are referred to as **conventional monetary policy tools.**

OPEN MARKET OPERATIONS

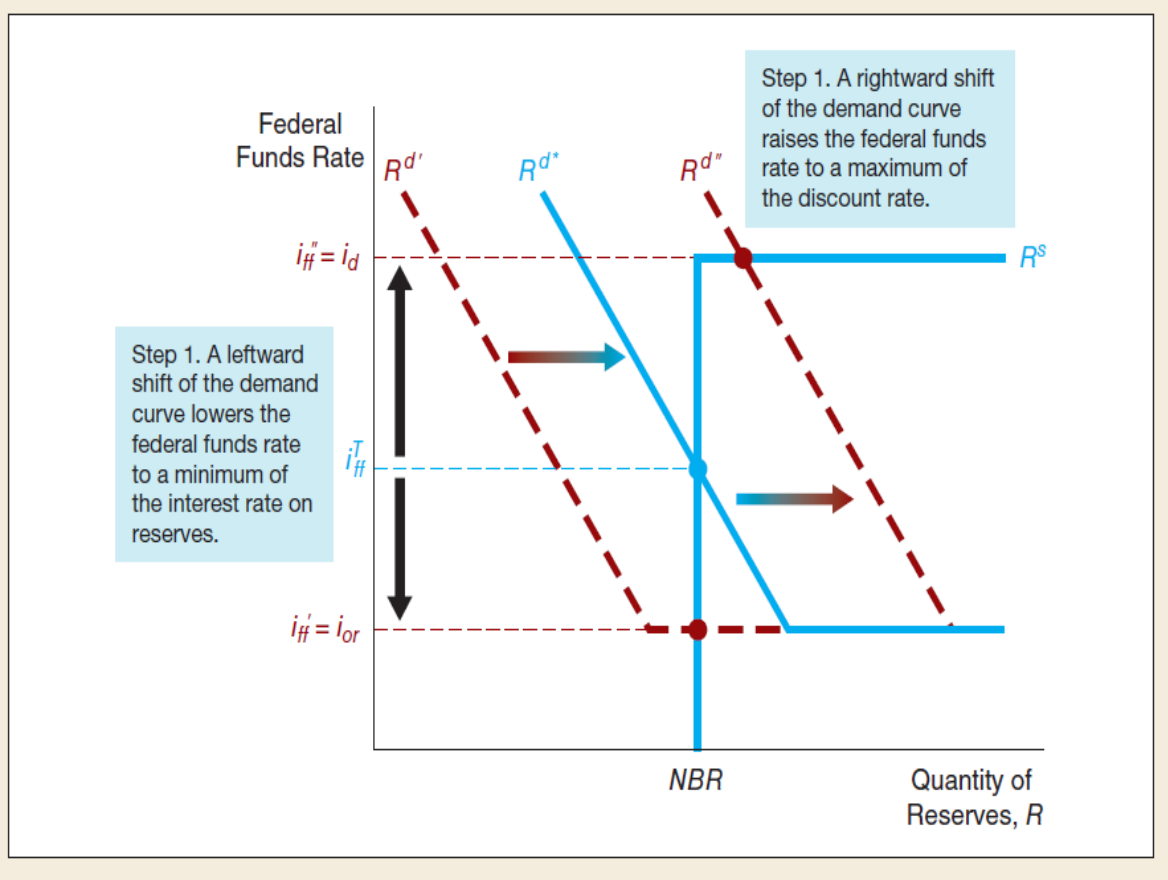


- **Intended outcomes**
  - **Dynamic OMO:** Aim to adjust the rate to the new level.
  - **Defensive OMO:** offset the (daily) fluctuation in demand for Reserves; to ensure the fed fund rate kept within the target range.
- **Nature of transaction**
  - **Outright:** without any agreement to reverse the initial transaction
  - **Repurchase:** with an agreement to reverse the initial transaction

OPEN MARKET OPERATIONS

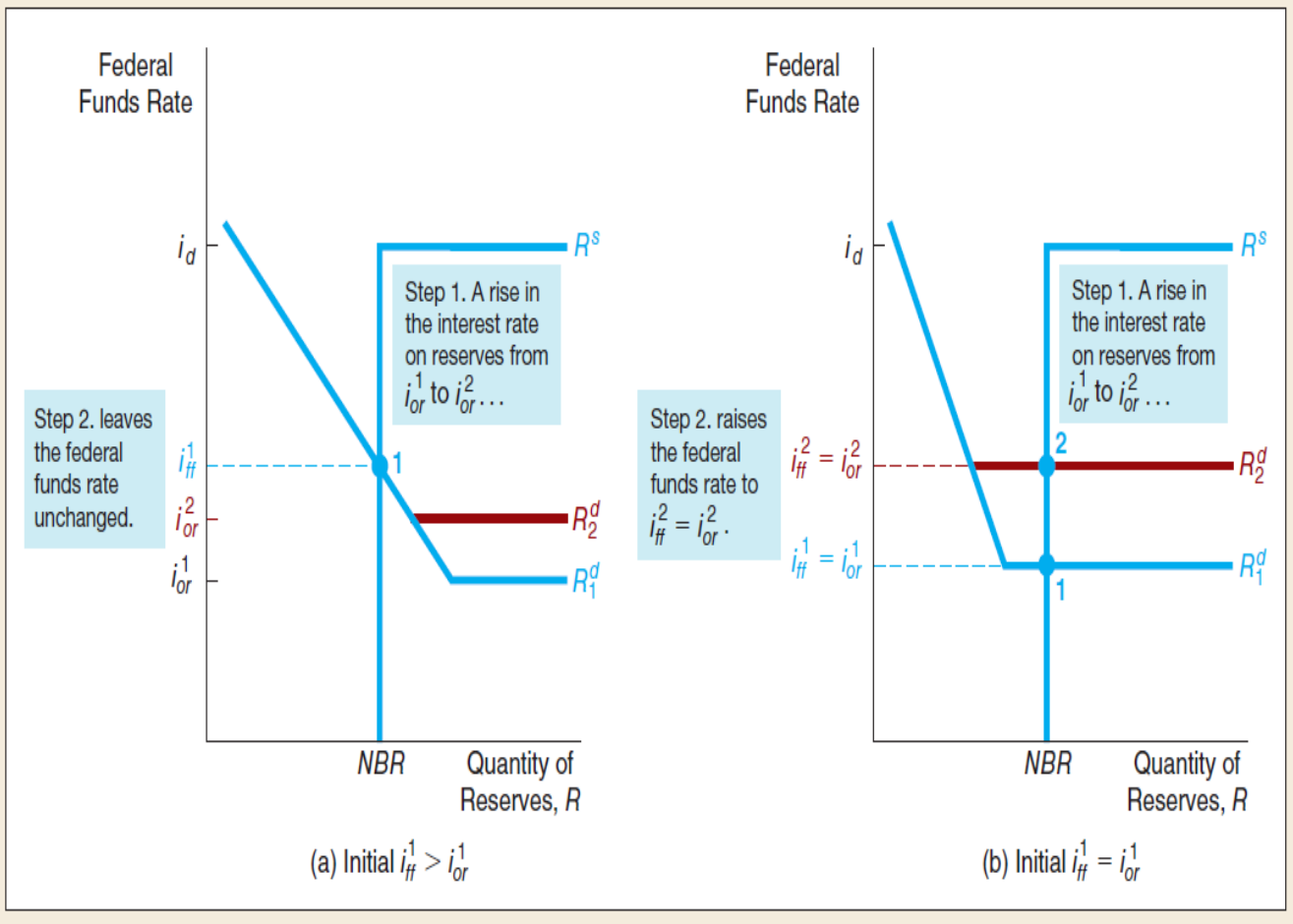
- Counterparties in the OMM transaction are **Primary dealers**.
  - Qualified institutions to engage in the OMO transaction with FED.
- TRAPS (Trading Room Automated Processing System)
  - Bidding/Auction (offers, matched)
- Liquidity will be re-allocated to other players in the lower level of the financial chains.

DISCOUNT POLICY



- Discount window
- **Standing (lending) facility**
  - Primary credit or Lombard facility: collateral-backed loan
  - Penalty rate: Ceiling of Fed-Fund rate
- **Standing (deposit) facility**
  - Limit the volatility of FED fund rate – e.g. **upper and lower bound**.
  - A new instrument for monetary policy

DISCOUNT POLICY



- **Interest rate paid on reserve** affects the floor of FED-fund rate.
  - When the Fed raises the interest rate paid on reserves, **the federal funds rate rises if the initial FED fund rate is equal to the rate paid of reserves.**

DISCOUNT POLICY

- Other forms of credit under discount window.
  - Secondary credit
  - Seasonal credit

- Lender of last resort to prevent financial panics
  - Creates moral hazard problem

RELATIVE ADVANTAGES OF THE DIFFERENT MONETARY POLICY TOOLS

- Open market operations are the dominant policy tool of the Fed since it has **complete control** over the volume of transactions, these operations are flexible and precise, easily reversed and can be quickly implemented.

- The discount rate is less well used since **it is no longer binding for most banks**, can cause liquidity problems, and increases uncertainty for banks. **The discount window remains of tremendous value given its ability to allow the Fed to act as a lender of last resort.**

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- Cross country studies

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ON THE FAILURE OF CONVENTIONAL MONETARY POLICY TOOLS IN A FINANCIAL PANIC

- When the economy experiences a **full-scale financial crisis**, conventional monetary policy tools cannot do the job, for two reasons.
  - First, the financial system seizes up to such an extent that it becomes unable to allocate capital to productive uses, and so investment spending and the economy collapse.
  - Second, the negative shock to the economy can lead to the **zero-lower-bound problem.**

ON THE FAILURE OF CONVENTIONAL MONETARY POLICY TOOLS IN A FINANCIAL PANIC

- Lower Fed-fund rate is hoped to affect **other interest rates** in the market.
  - This works through the **no-arbitrage condition** and **interest rate pass-through**.

- FED wish to push other rates down, but unfortunately, the FED fund rate had reached its lowest point – i.e. zero-lower bound.

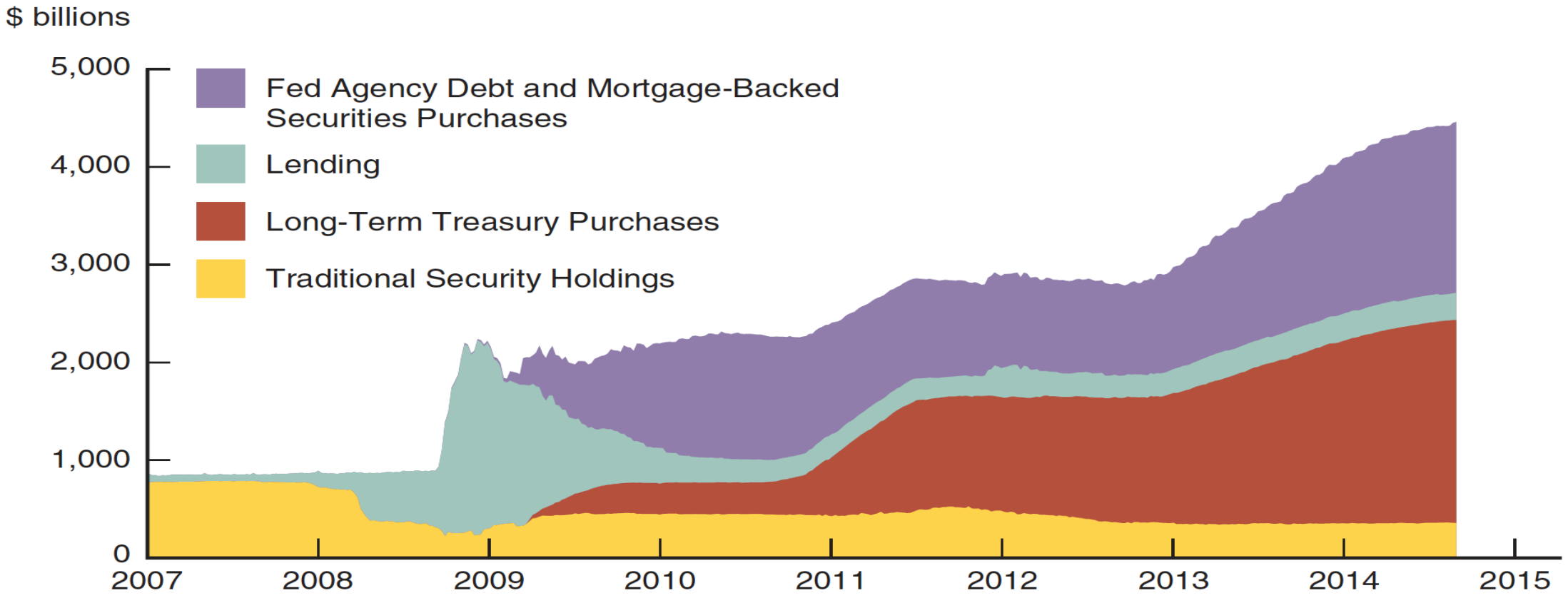
NONCONVENTIONAL MONETARY POLICY TOOLS DURING THE GLOBAL FINANCIAL CRISIS

- **Liquidity provision:** The Federal Reserve implemented unprecedented increases in its lending facilities to provide liquidity to the financial markets
  - Discount Window Expansion
  - Term Auction Facility
  - New Lending Programs

NONCONVENTIONAL MONETARY POLICY TOOLS DURING THE GLOBAL FINANCIAL CRISIS

- **Large-scale asset purchases:** During the crisis the Fed started three new asset purchase programs to **lower interest rates** for particular types of credit:
  - Government Sponsored Entities Purchase Program
  - QE2 (long-term asset purchase)
  - QE3

FIGURE 7 THE EXPANSION OF THE FEDERAL BALANCE SHEET, 2007-2014



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- **International comparisions**

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MONETARY POLICY IMPLEMENTATIONS AROUND THE GLOBE

- Implementation details (operating framework) of monetary policy vary across countries.
- However, the main point is to target/control the short-term interest rate in **a selected market**. (criteria?)
  - Then, central bank **uses the available tools** so that the short-term interest rate remains at the target announced.
  - The rate will transmit its effect to other rates.

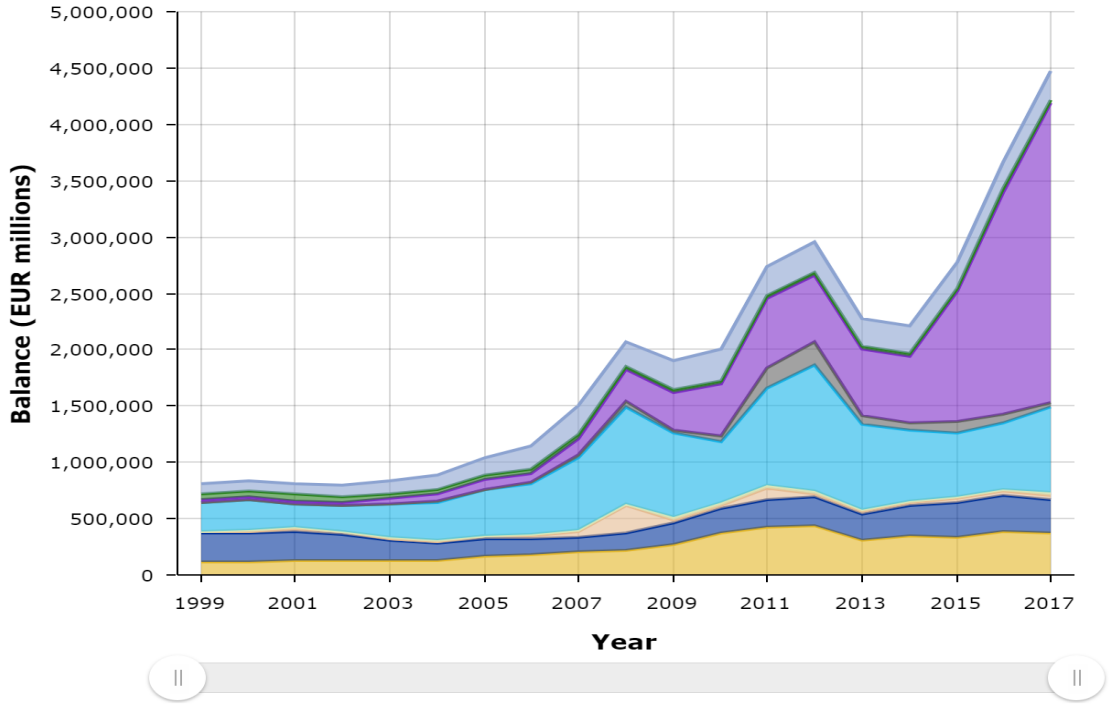
CASE STUDIES 1: EUROPEN CENTRAL BANK

- ECB targets the rate in **Main refinancing operation**
  - Short and Long refinancing term.
  - Provide liquidity to banking sector.
- Use Open market operations
- Standing facilities:
  - Marginal lending facility/marginal lending rate
  - Deposit facility

CASE STUDIES 1: EUROPEN CENTRAL BANK

- Reserve Requirements
  - 2% of the total amount of checking deposits and other short-term deposits
  - Pays interest on those deposits so cost of complying is low

CASE STUDIES 1: EUROPEN CENTRAL BANK



Date		Deposit facility	Main refinancing operations		Marginal lending facility
			Fixed rate tenders Fixed rate	Variable rate tenders Minimum bid rate	
With effect from					
2016	16 Mar.	-0.40	0.00	-	0.25
2015	9 Dec.	-0.30	0.05	-	0.30
2014	10 Sep.	-0.20	0.05	-	0.30
	11 Jun.	-0.10	0.15	-	0.40
2013	13 Nov.	0.00	0.25	-	0.75
	8 May.	0.00	0.50	-	1.00
2012	11 Jul.	0.00	0.75	-	1.50
2011	14 Dec.	0.25	1.00	-	1.75
	9 Nov.	0.50	1.25	-	2.00
	13 Jul.	0.75	1.50	-	2.25
	13 Apr.	0.50	1.25	-	2.00

Brought the official policy rate down to almost 0%, but money and credit did not grow as hypothesized.

ECB then have tried a new framework so called the "Negative interest rate"

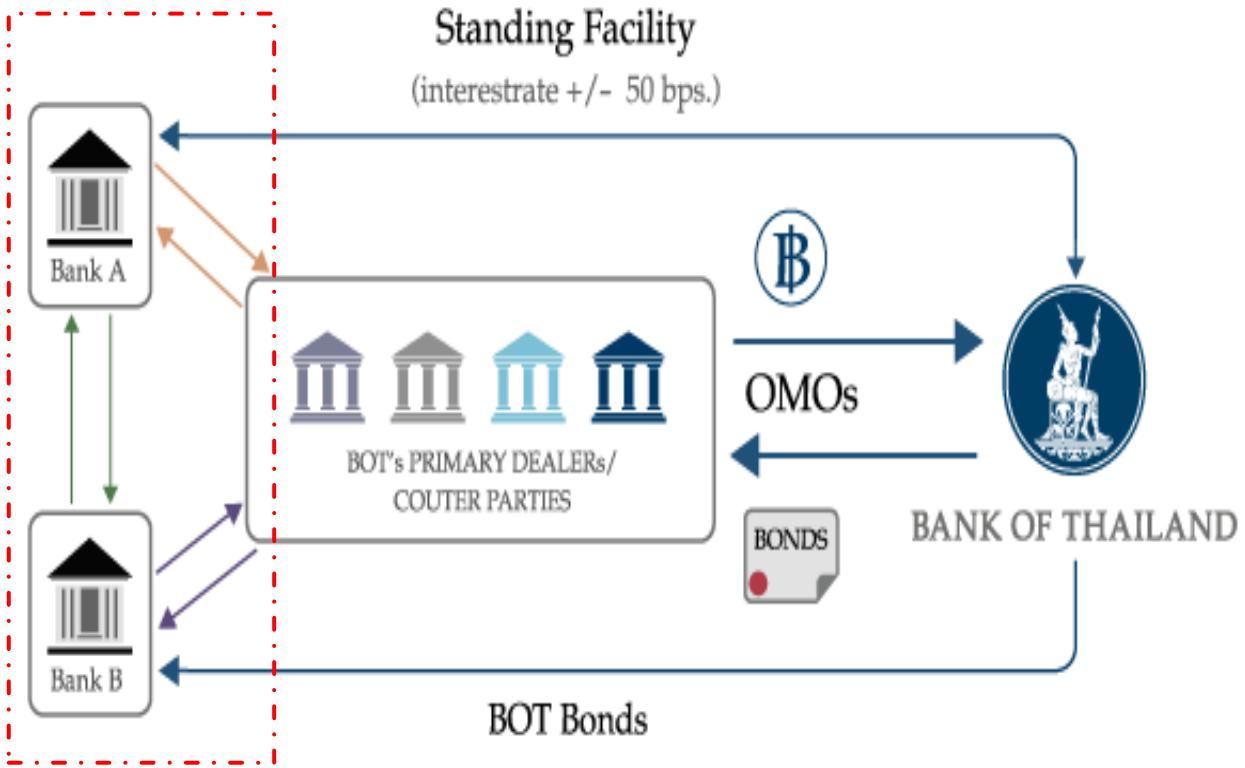
CASE STUDIES 2: THE BANK OF ENGLAND

- BOE targets the official bank rate – i.e., the rate of interest that BOE pays on reserves held by commercial banks at the Bank of England.
- BOE also sets the standing lending facility.
- The operating framework is very similar to FED.
  - Overnight borrowing market (for reserve) should be capped between the official bank rate and the ceiling rate set under the lending facility.

CASE STUDIES 3: BANK OF THAILAND

- Short-term liquidity market: **overnight interbank v.s. Repo-market**
- Bank of Thailand targets **"Rp1D" .**
  - **RP1D =** Interest rate quoted in the **bilateral one-day REPO market**.
  - Repo market: Collateral-backed borrowing market with Repurchase agreement.
  - The term "**Bilateral**" reflects the initiation that is created between BOT and some selected **primary dealer banks**.

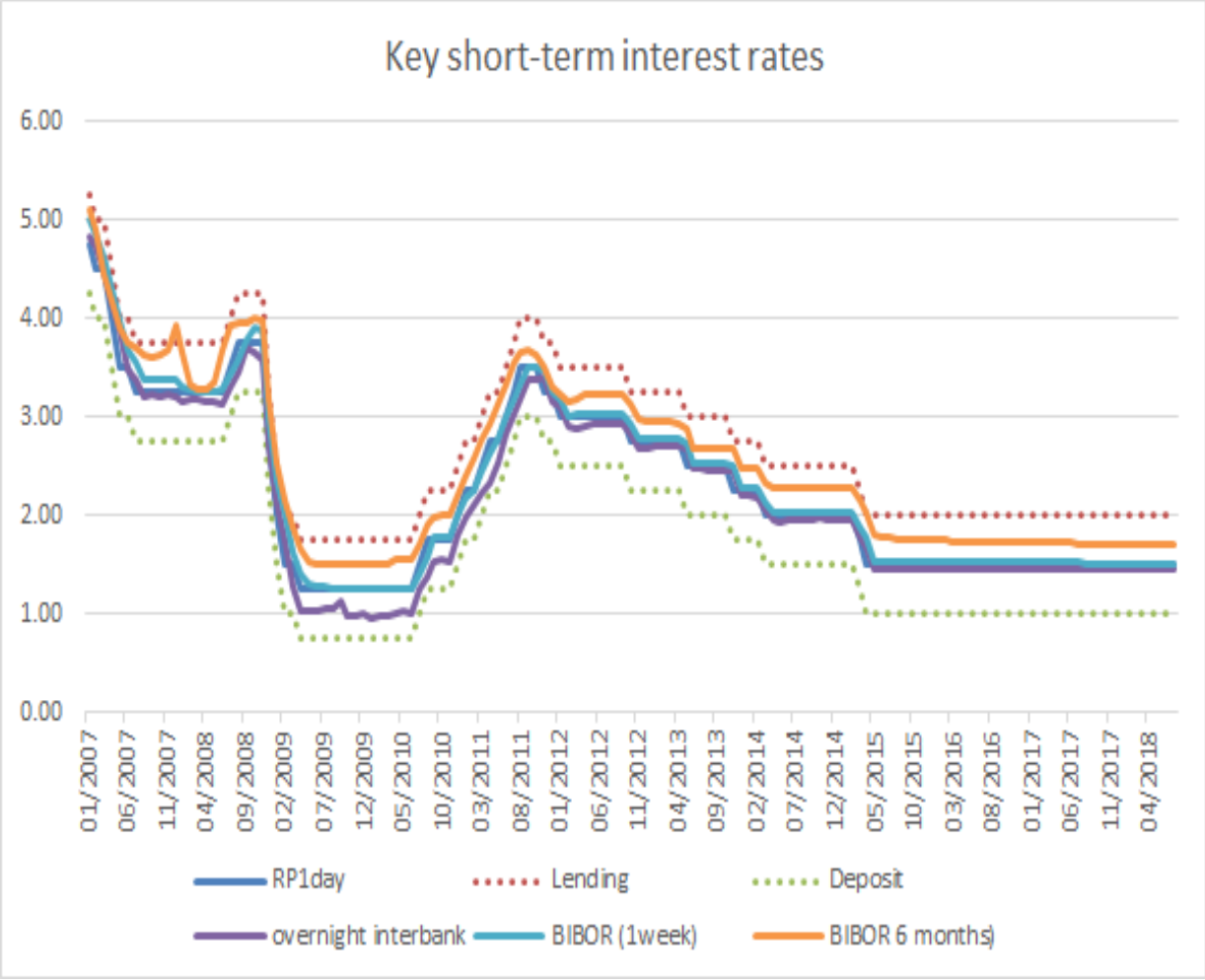
CASE STUDIES 3: BANK OF THAILAND



Private-run REPO

- Other FIs lend/borrow their reserve in the **private-run REPO**.
- Standing facilities available.
  - End-of-the-day settlement: cost +50 bps. above the targeted level w/ collateral required (hair-cut/margin requirement)
  - End-of-the-day excess reserve: earns interest rate (50 bps. Below the targeted level.)

CASE STUDIES 3: BANK OF THAILAND



- Very similar to others, but simply using different target rate.
  - Changed from Rp14day to Rp1day in Jan2007.
  - Thought to be more appropriate in terms of **pass-through**.
  - See the **Interest rates corridor**

CASE STUDIES 3: BANK OF THAILAND

- The same common tools as in the USA/other countries
  - OMO, DISCOUNT polity, Reserve requirement

- OMO-related instrument: **BOT bond and SWAP operations.**