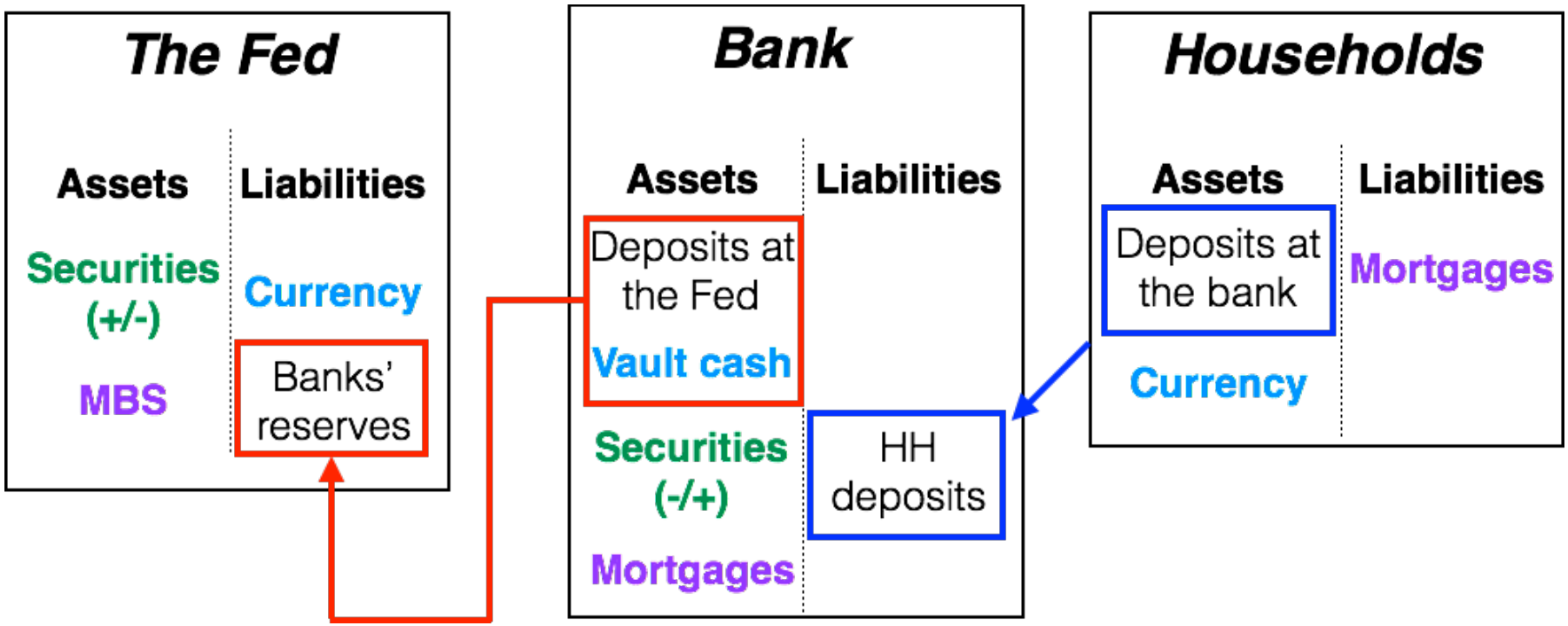
W16: Monetary Policy

- Fed's balance sheet
- Monetary policy instruments
- Fed Funds rate
- Conduct of monetary policy
- Present day policy challenges and unconventional monetary policy

Reading: Ch.8 pg. 190-192; Ch.14 pg. 350-355, 358-363, 366-367; notes

HW10: due 04/29

Balance Sheets of the Fed, Banks, and HHs



Monetary Policy Instruments

- **Monetary policy instrument** is a variable that the Fed can directly control or closely target

- What is the Fed's main monetary policy instrument?

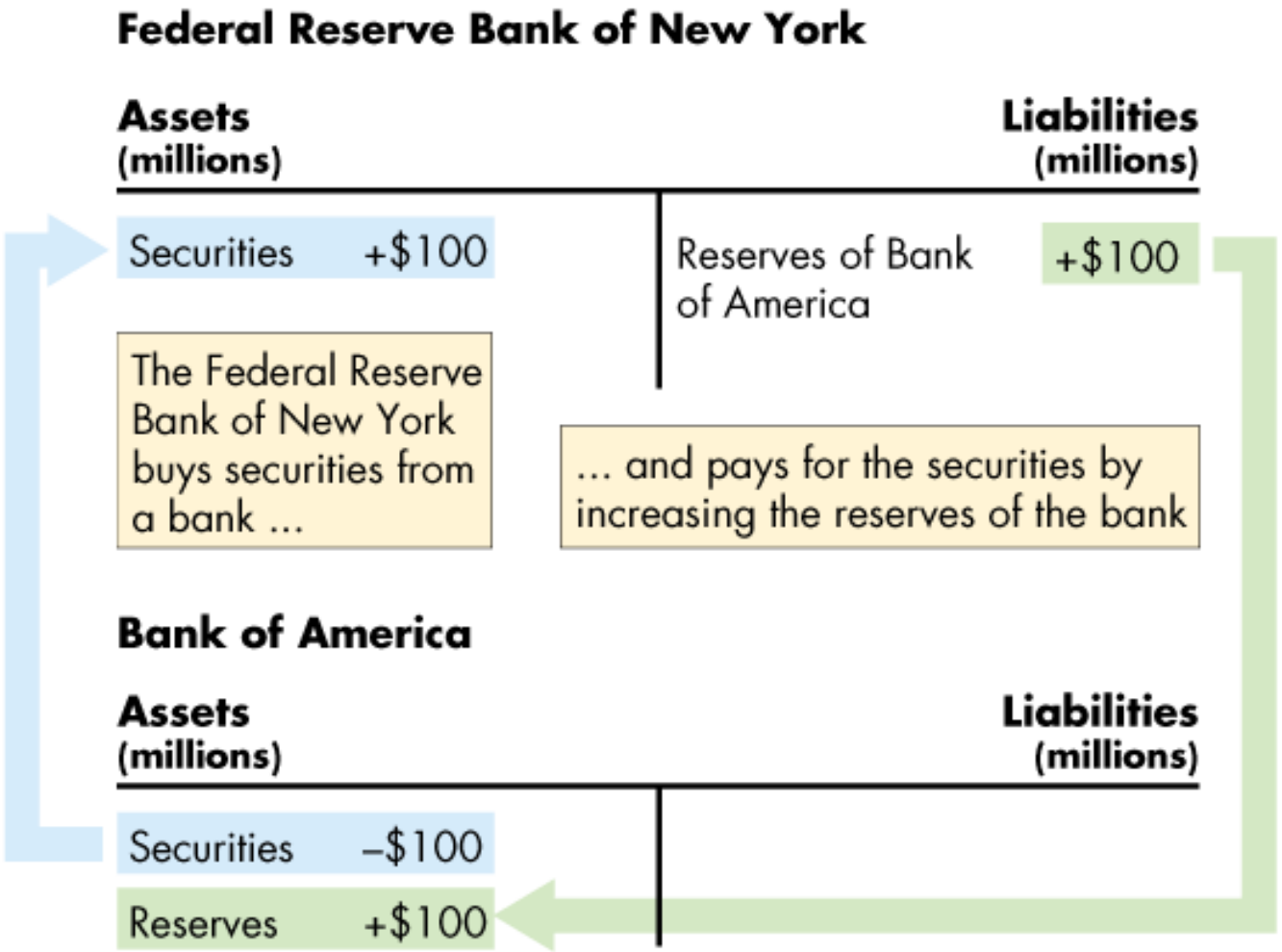
  - ✓ ***Federal Funds Rate (FFR)* –** the interest rate at which banks borrow and lend overnight from other banks
  - ✓ The Fed sets a target for the FFR and then takes actions to keep it close to its target
  - ✓ The same instrument is used by the most major central banks in the world

- How does the Fed change the FFR?

The Conduct of Monetary Policy

- The Fed uses open market operations to adjust the quantity of monetary base, which in turn, adjusts FFR
  - *Monetary base = Currency + Reserves of depositary institutions*
- *Open market operation* is a purchase/sale of government securities by the Fed from/to a commercial bank or the public
- Open market operations influence banks' reserves

Example: Open Market Purchase



Example: Open Market Purchase

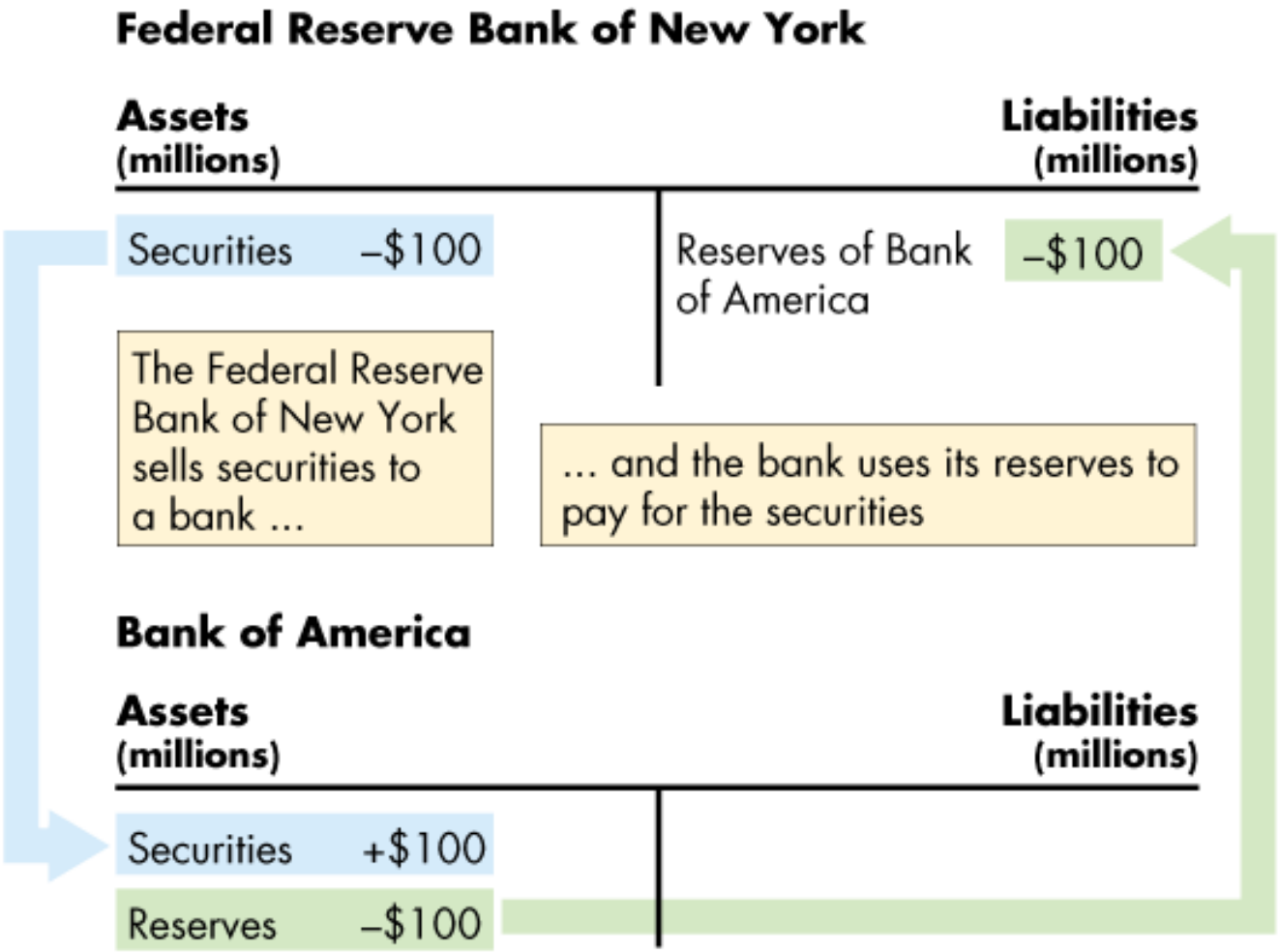
- An open market purchase increases the monetary base
- Now banks have higher excess reserves:

Excess reserves = *Actual reserves(⇧) – Required reserves*

- They can lend these excess reserves to households and firms
- When a loan is made, a bank deposits money into the lender's account
- Now the lender can go shopping with that money

- OM purchases stimulate the economy, thus, they are expansionary
- OM purchases "create" money (this is what we called printing money)

Example: Open Market Sale



Example: Open Market Sale

- An open market sale decreases the monetary base
- Now banks have lower excess reserves:

Excess reserves = *Actual reserves(↓) – Required reserves*

- They can't make as many loans as before

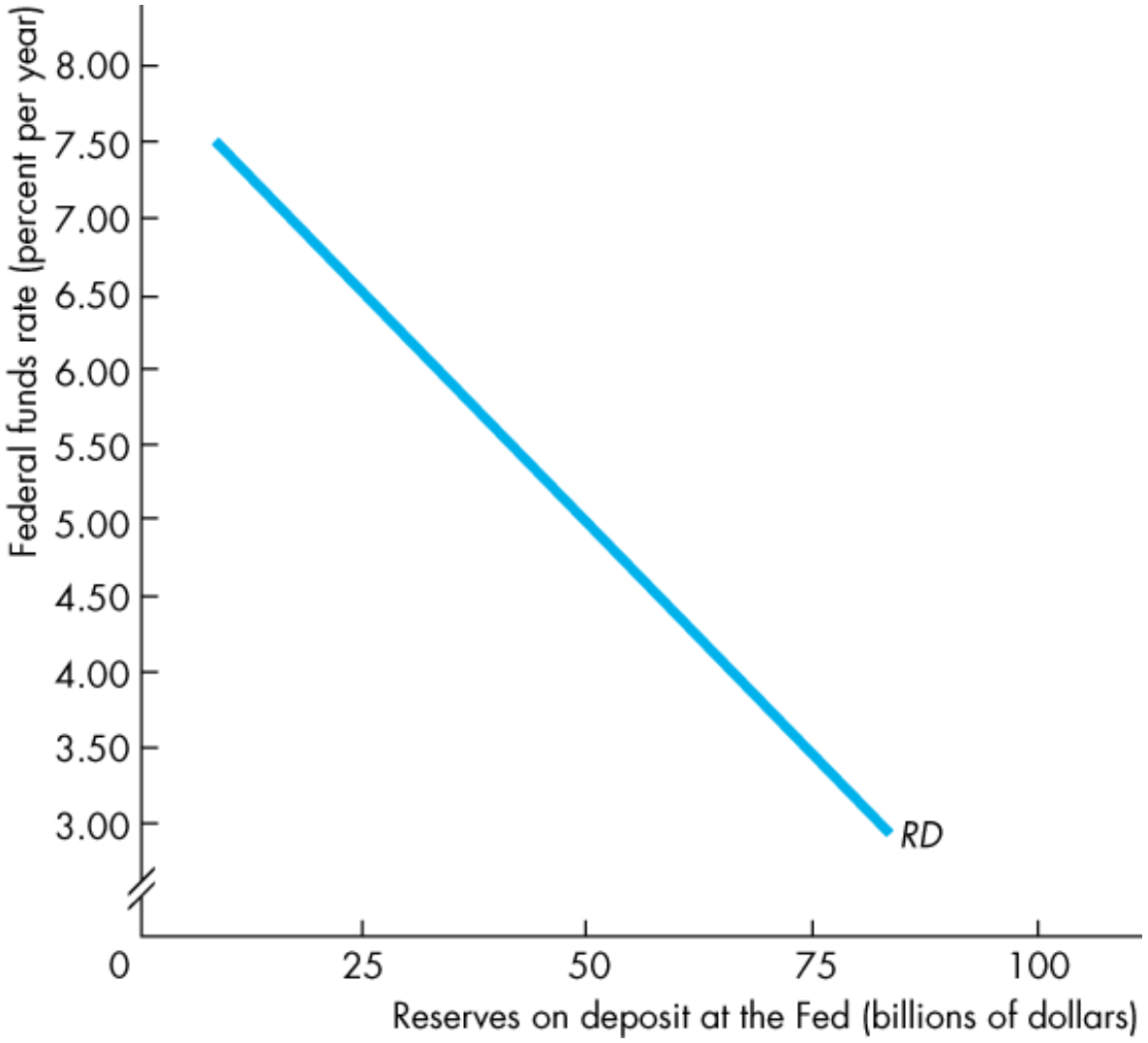
↓

- OM sales slow down the economy, thus, they are contractionary
- OM sales take money out of circulation

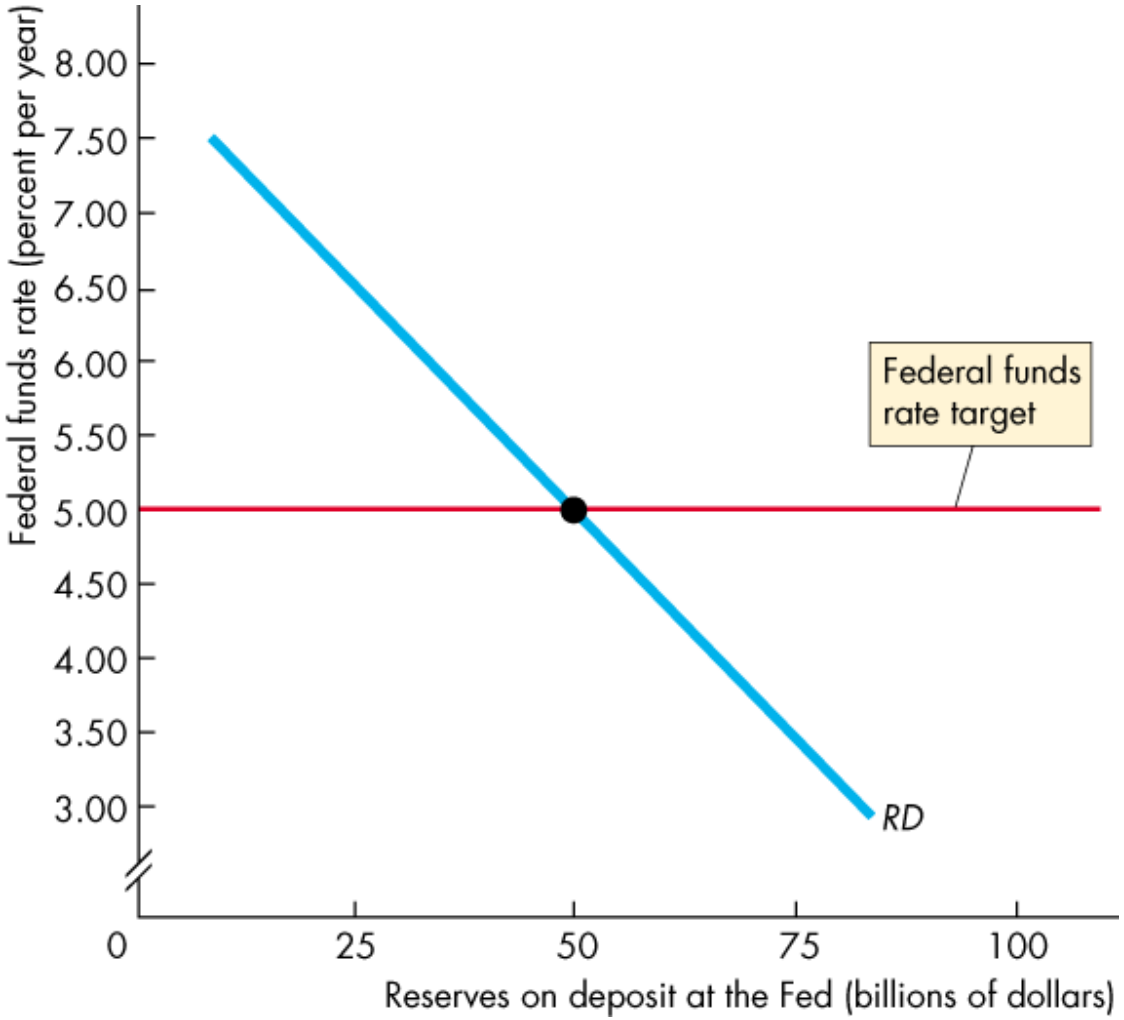
Demand for Reserves

- Recall that we said that the Fed does OMOs in order to adjust the Fed Funds Rate (FFR)
- How do OMOs affect the FFR?
- Let's examine the market for bank reserves:
  - *Banks hold reserves so they can make payments to depositors*
  - *But holding excess reserves is costly because a bank can earn interest (FFR) by lending these excess reserves to other banks*
  - *The higher the FFR, the more tempting it is for a bank to hold less reserves*
  - *Thus, the quantity of reserves demanded decreases as the FFR goes up*
  - ***I.e., the demand for reserves is downward sloping***

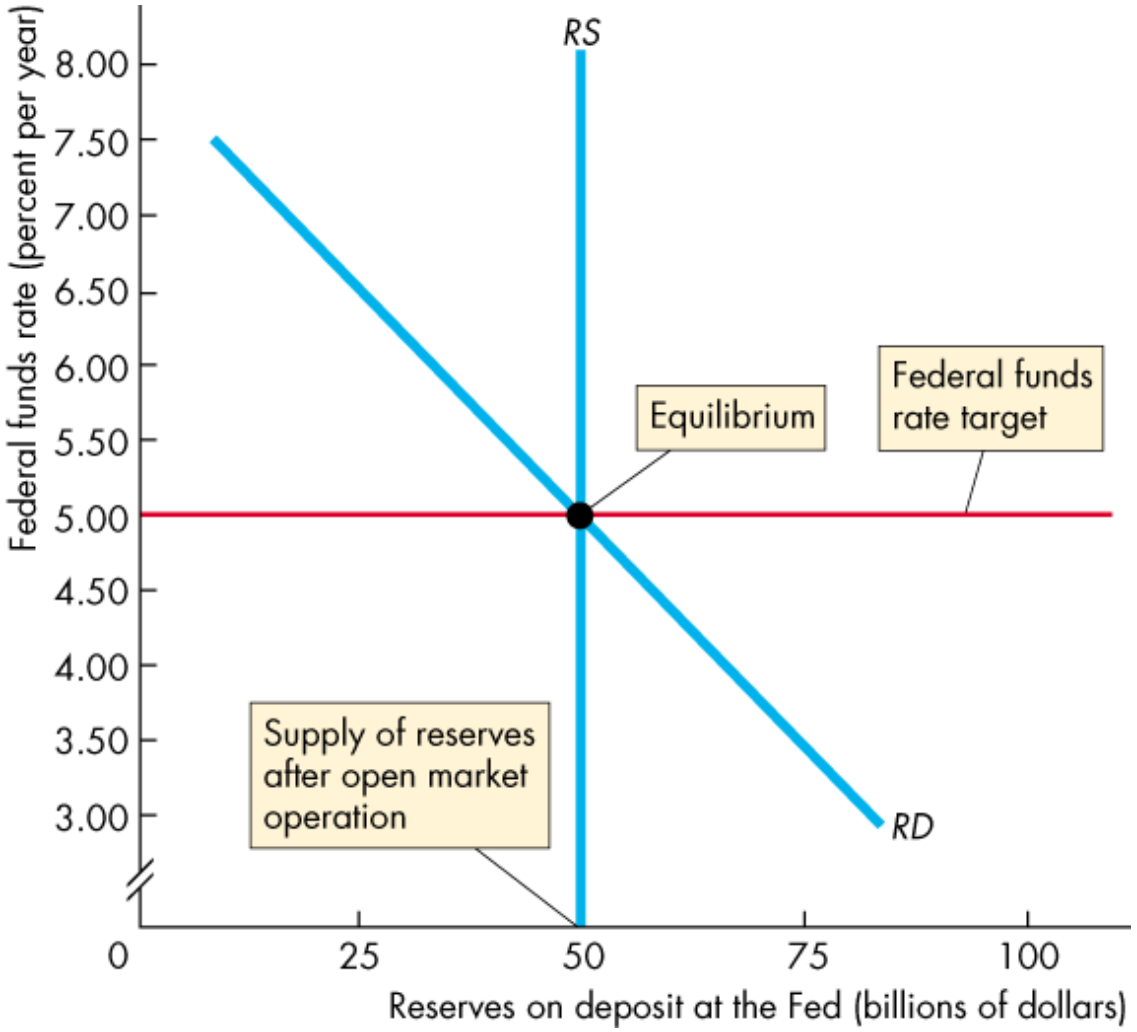
Demand for Reserves



The Conduct of Monetary Policy



The Conduct of Monetary Policy



Monetary Policy Transmission

- When the Fed lowers the FFR target, it buys securities in an open market:
  - The quantity of money and the supply of loanable funds increase
  - Consumption expenditure, investment, and net exports increase
  - Aggregate demand increases
  - Real GDP grows and the inflation rate increases

- When the Fed raises the FFR target, it sells securities in an open market and the ripple effects go in the opposite direction

When Do We Want the FFR target to Increase?

- **If the inflation rate is above the Fed's comfort zone or expected to move above it**, the Fed considers raising the FFR target

- **If the unemployment rate is below the natural unemployment rate**, labor shortage might put pressure on wage rates to rise, which might feed into inflation. The Fed considers raising the FFR target

- **If the output gap is positive**, it is an inflationary gap and the inflation rate will most likely accelerate. The Fed considers raising the FFR target

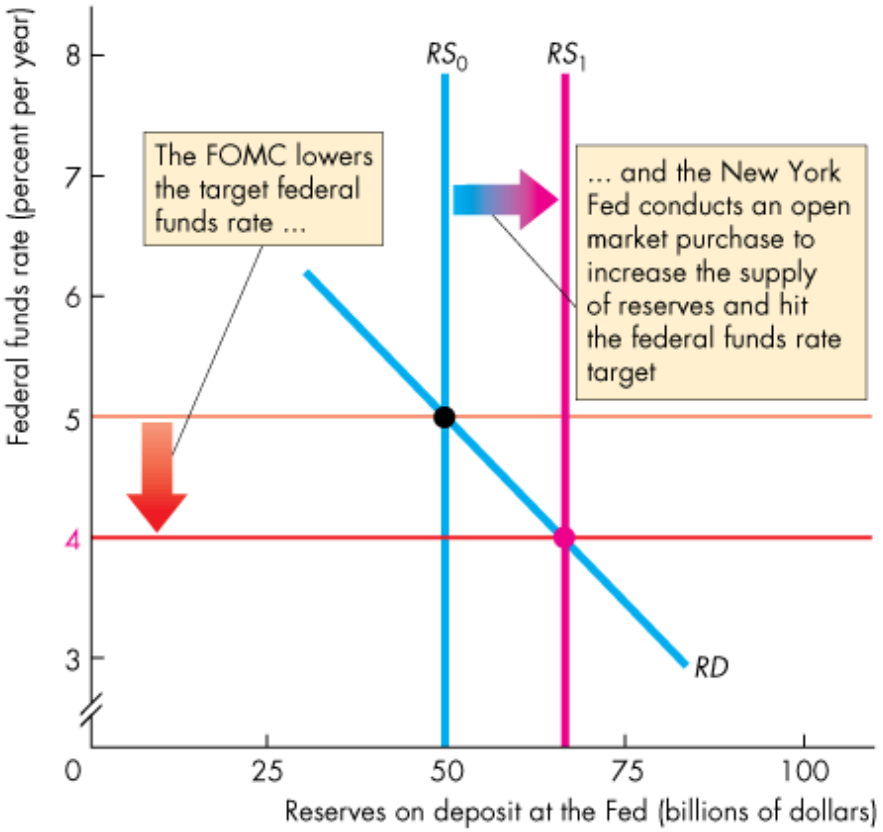
When Do We Want the FFR target to Decrease?

- **If the inflation rate is below the Fed's comfort zone or expected to move above it**, the Fed considers lowering the FFR target

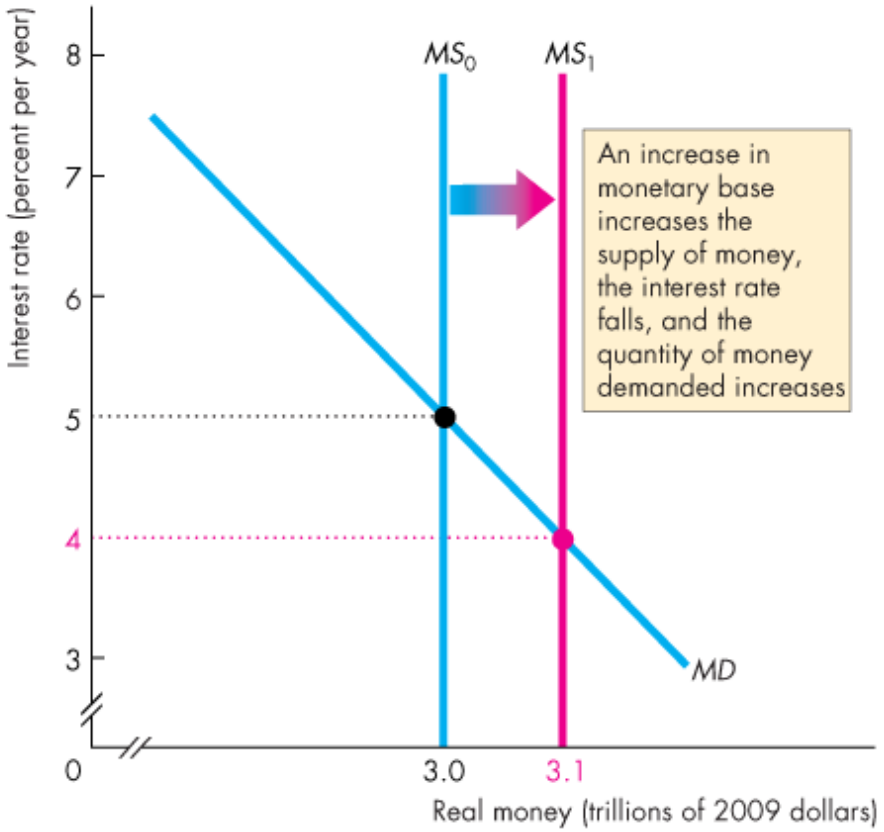
- **If the unemployment rate is above the natural unemployment rate**, labor surplus might put pressure on wage rates to fal, which might feed into lower than expected inflation. The Fed considers lowering the FFR target

- **If the output gap is negative**, it is an recessionary gap and the inflation rate will most likely ease. The Fed considers lowering the FFR target

Example: Expansionary Policy

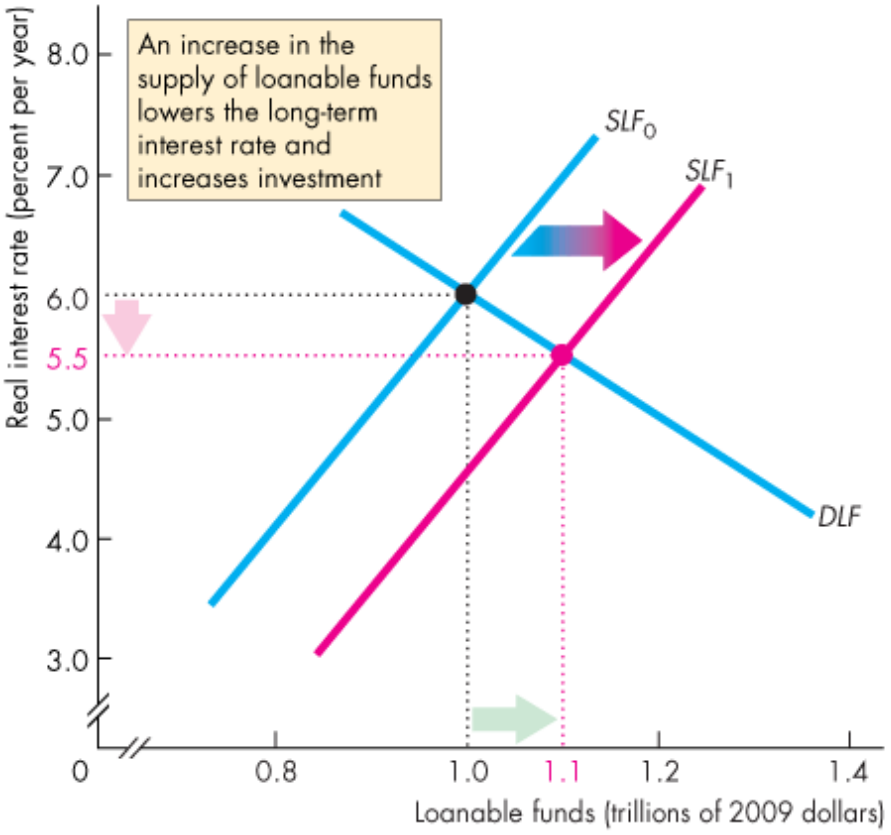


(a) The market for bank reserves

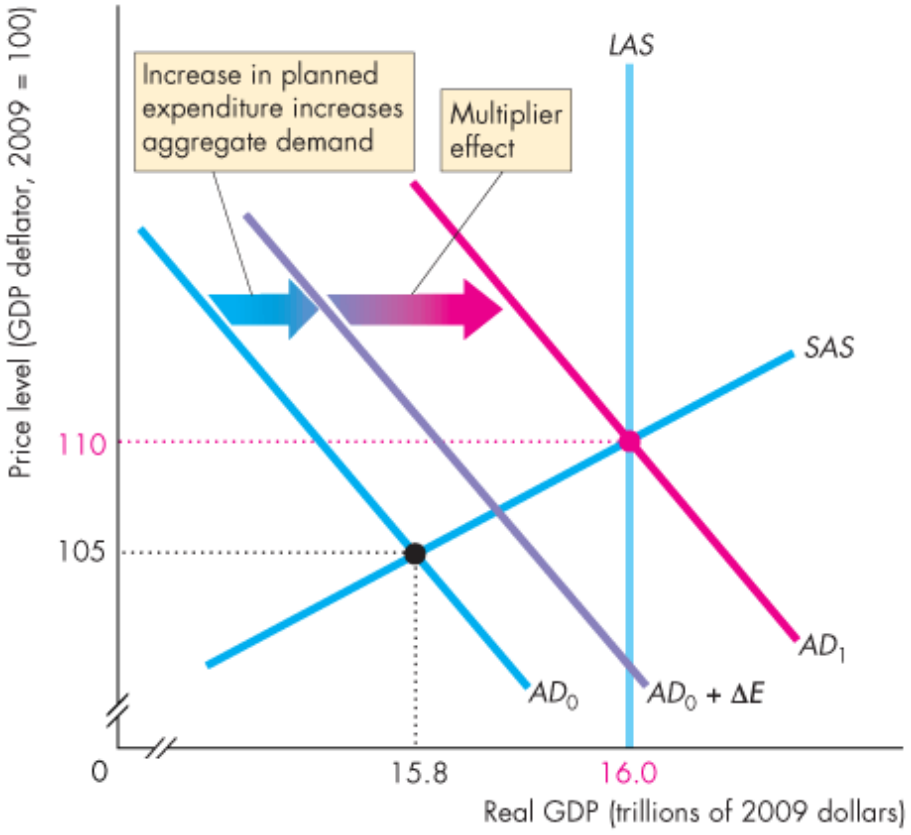


(b) Money market

Example: Expansionary Policy

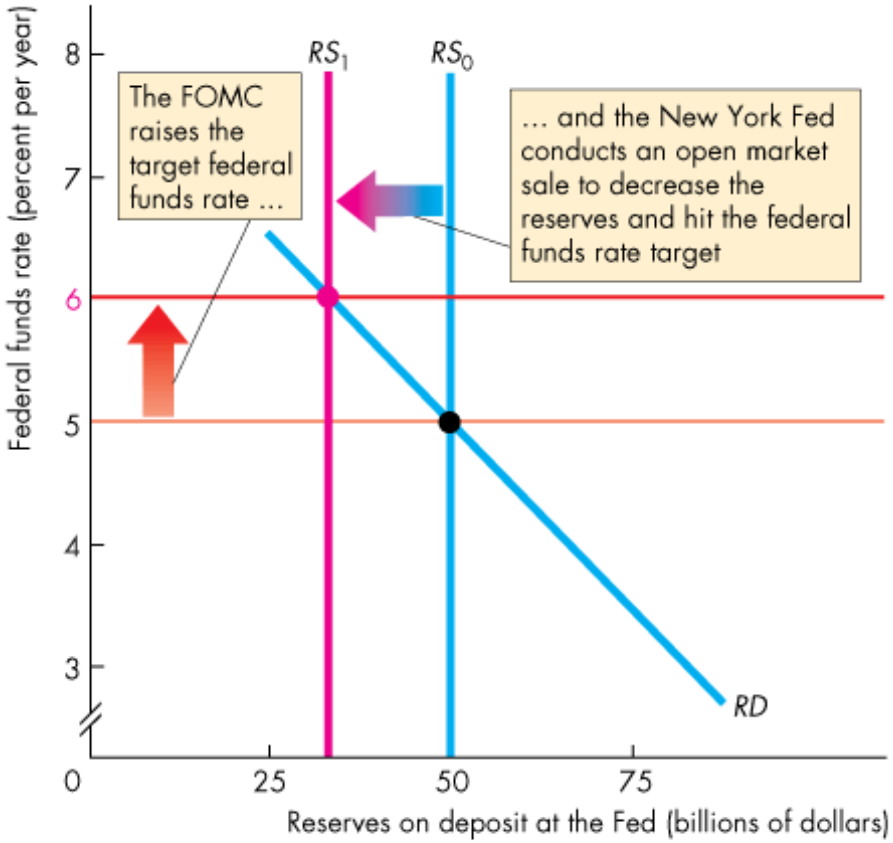


(c) The market for loanable funds



(d) Real GDP and the price level

Example: Contractionary Policy



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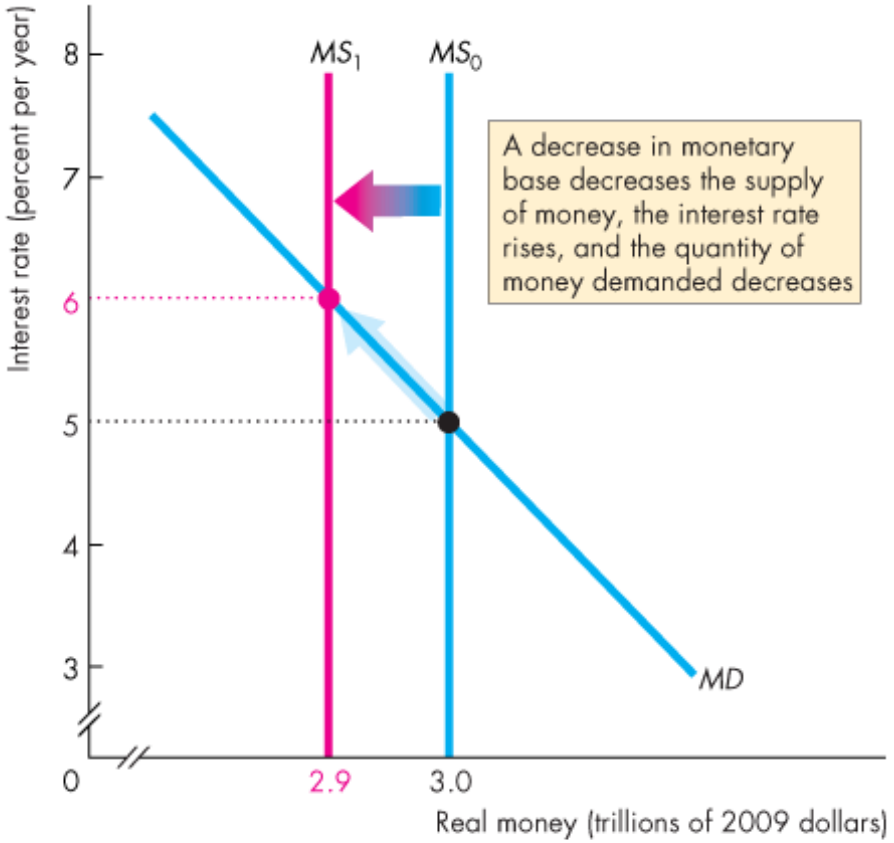
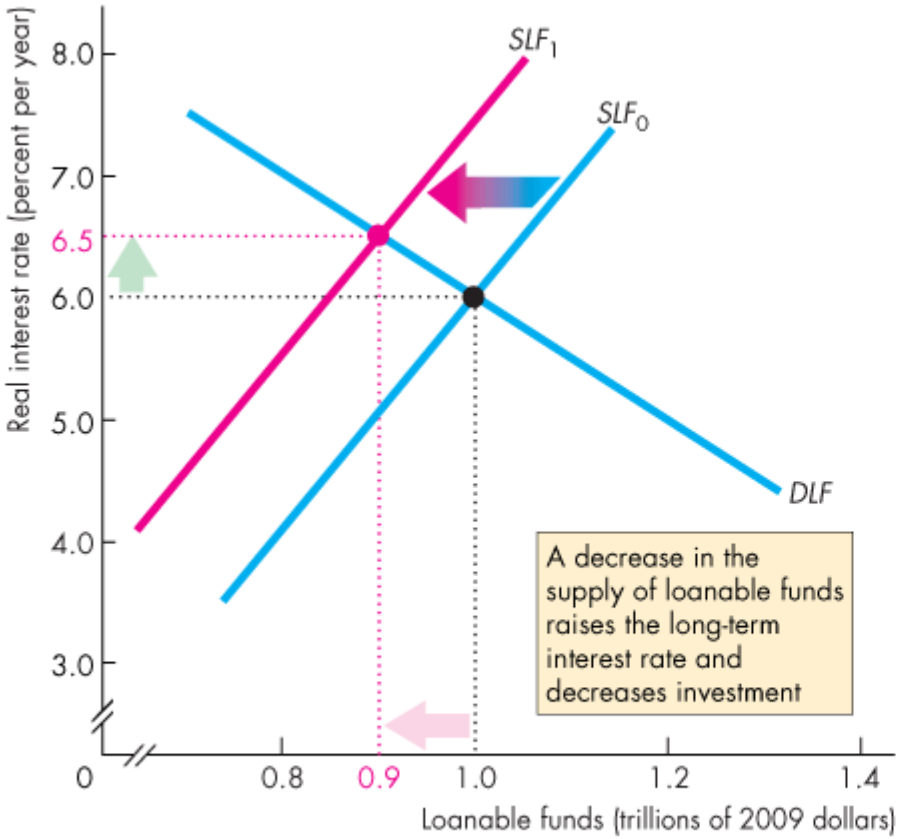


(b) Money market

Example: Contractionary Policy



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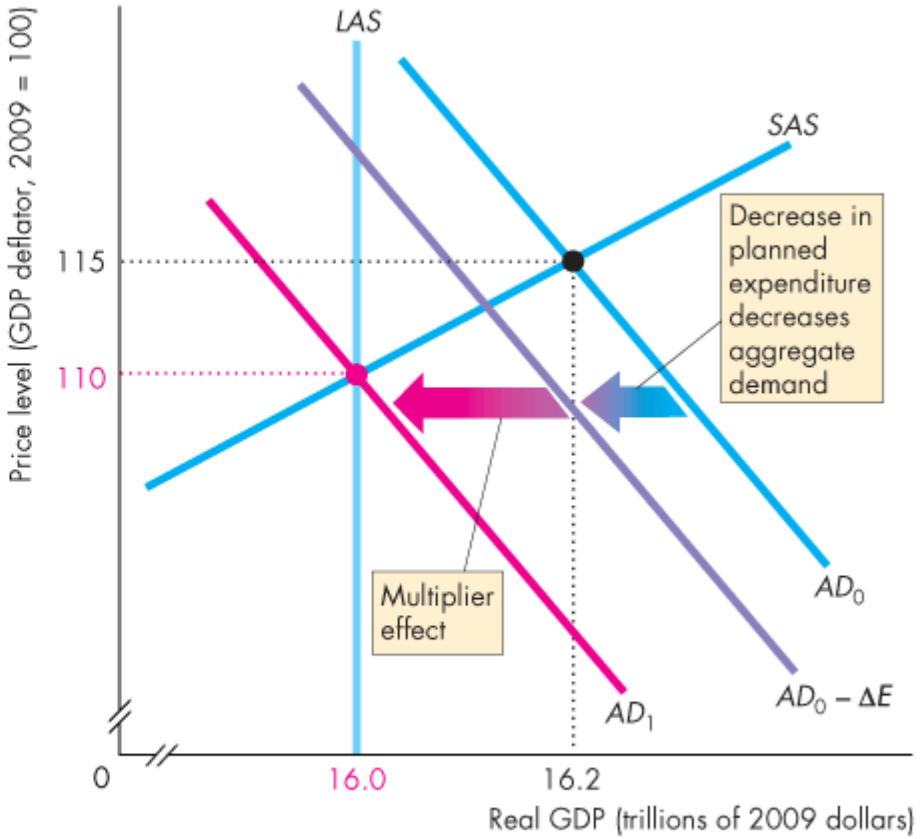


(d) Real GDP and the price level

Taylor Rules

- Taylor rule is a formula for setting the target for the FFR:

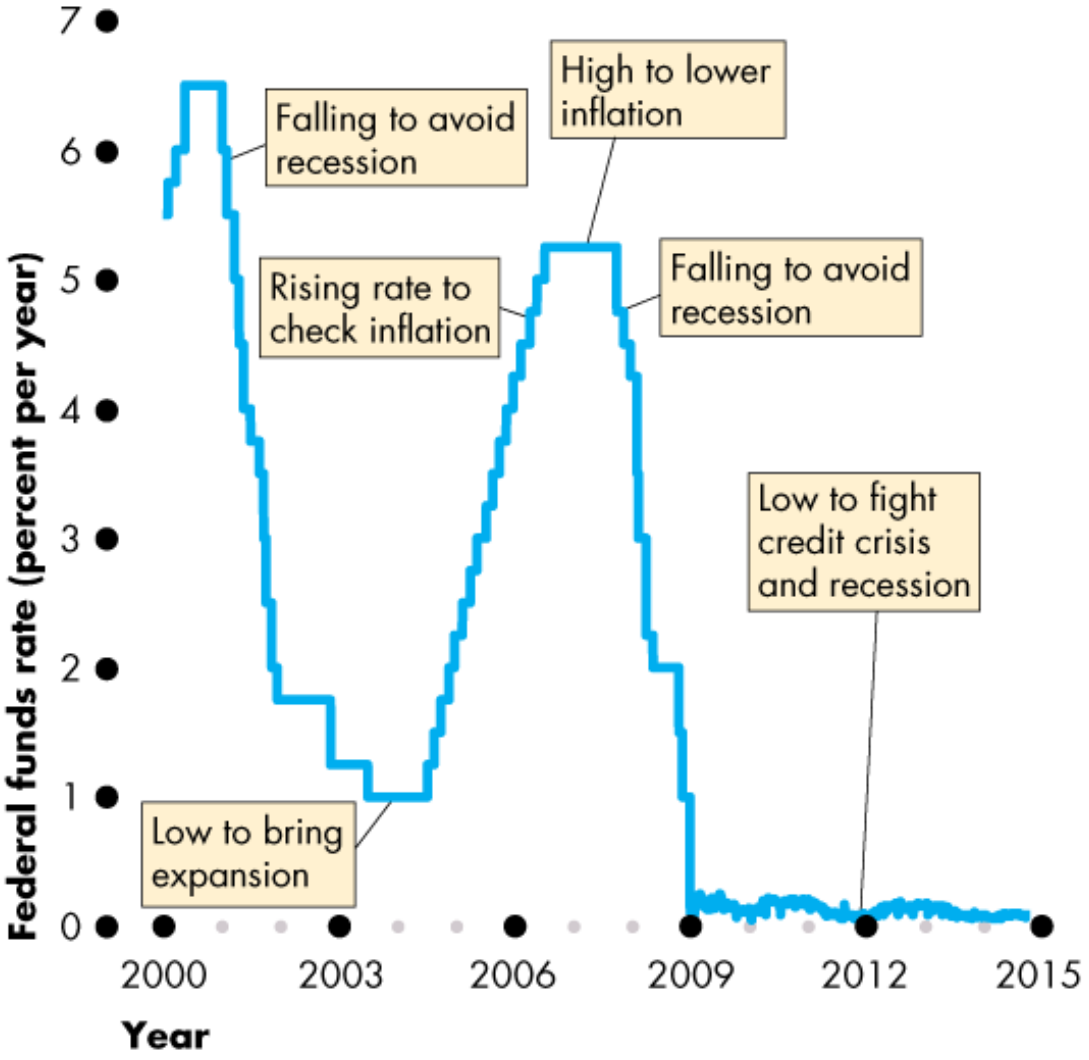
$$FFR = 1 + 1.5\pi + 0.5GAP$$

  - If inflation is above its target or when economy is above full employment => high FFR, i.e. “tight” monetary policy
  - In the opposite situation => low FFR, i.e. “easy” monetary policy

- Taylor rules decrease uncertainty, and with less uncertainty market participants are more willing to make long-term commitments

- The Fed does not explicitly follow the Taylor rule, but the rule provides a fairly accurate summary of US monetary policy under Paul Volcker and Alan Greenspan

Time Series of the Federal Funds Rate



Other Monetary Policy Instruments

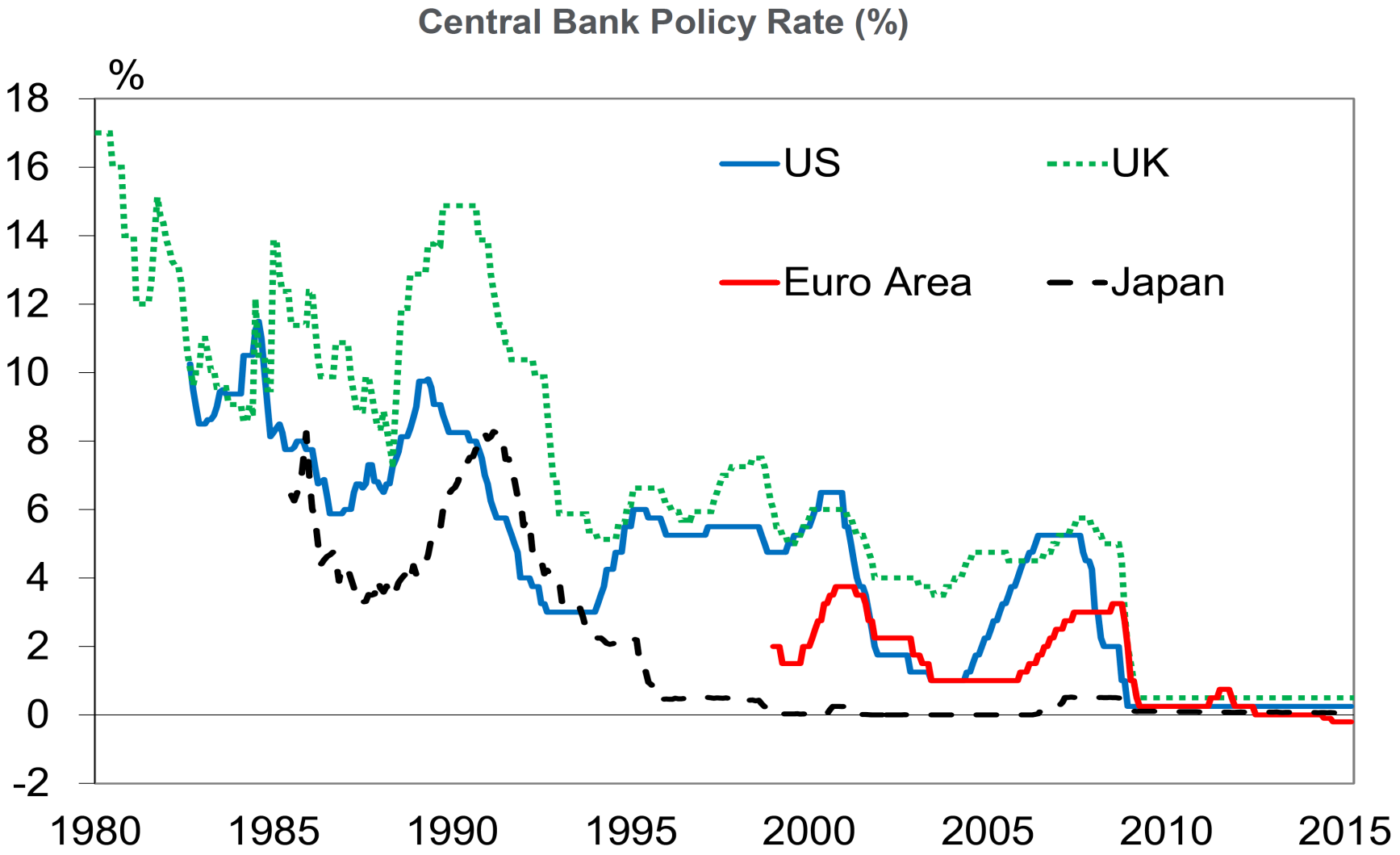
Last Resort Lender:

- The Fed is the **lender of last resort**, which means the Fed stands ready to lend reserves to depository institutions that are short of reserves
- It lends reserves at the **discount window rate**
- Discount window rate is a monetary policy the instrument

Required Reserve Ratio:

- The Fed sets the **required reserve ratio**, which is the minimum percentage of deposits that a depository institution must hold as reserves
- The Fed rarely changes the required reserve ratio
- This instrument is not popular

Important Issue 1: Zero Lower Bound



Important Issue 1: Zero Lower Bound

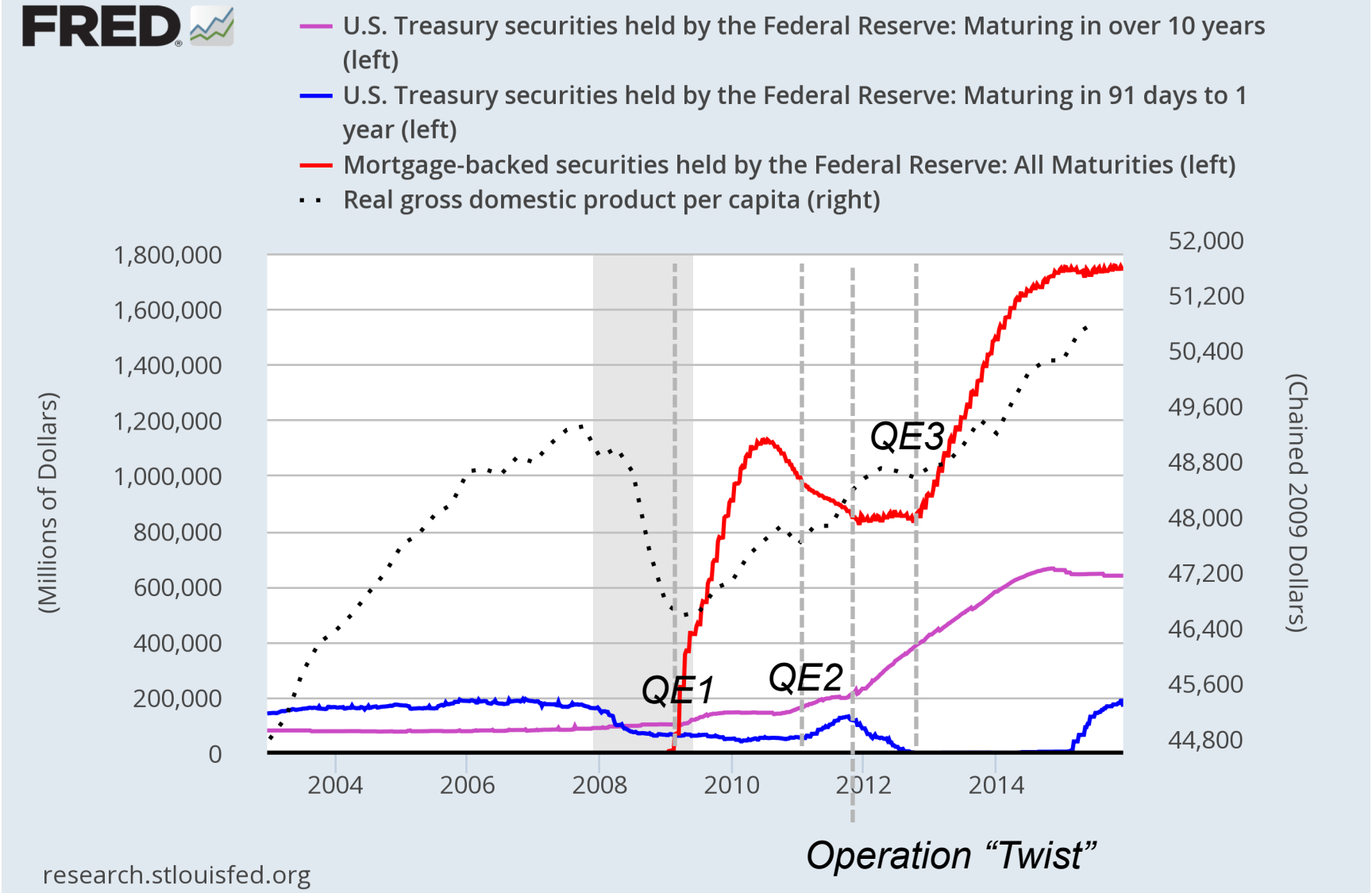
- What if the economy still needs an expansion but the FFR is already at zero?
- The Fed cannot use its usual policy instrument to stimulate the economy
- This situation is sometimes called the “liquidity trap”
- Deflation might happen
- FFR can’t be negative, so what should the Fed do?
- As of right now, there is no exact policy prescription…

Zero Lower Bound: Solutions?

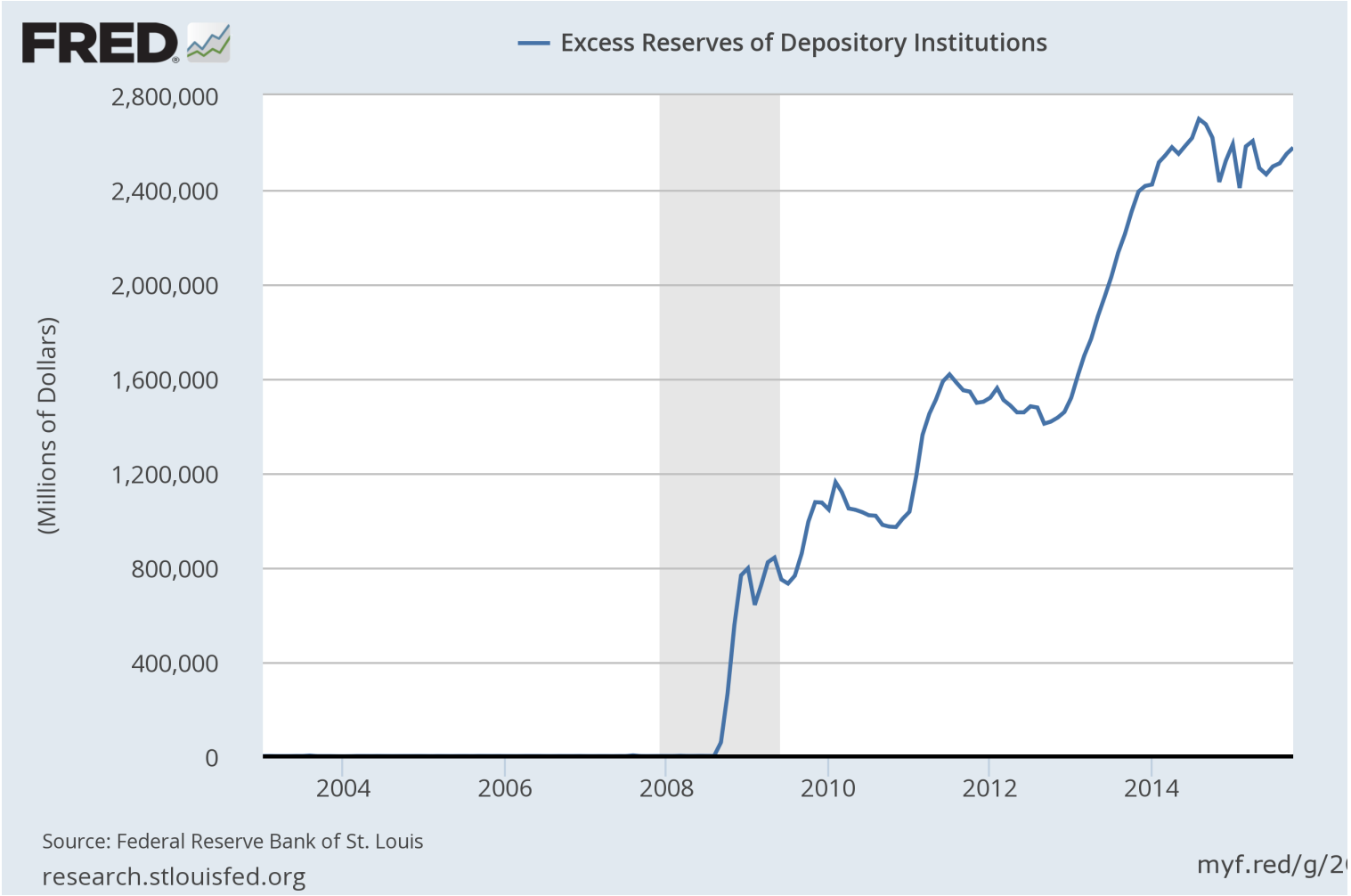
- The Fed implements “Forward guidance” policy – Central Bank promises to keep interest rates lower for a longer period than signaled by traditional Taylor Rules:
  - ✓ Before the 2008 crisis, the Fed rarely communicated its policy plans to the public
  - ✓ One example of this action is Yellen’s speech last week where she said that the Fed will be most likely raising interest rate, but they will stay very low for some time
- Lesson from Japan:
  - ✓ Announce an inflation target that guarantees a period of above-normal inflation
  - ✓ Depreciate the currency
  - ✓ Support the depreciation, to the extent necessary, through direct intervention in foreign-exchange markets: print money and buy foreign currencies or assets
- Friedman: “helicopter drops” to avoid deflation – Ben Bernanke (ex-chair)

Unconventional Monetary Policy

Unconventional Monetary Policy



Important Issue 2: Banks' Excess Reserves



Important Issue 2: Excess Reserves

- Why don't commercial banks lend out their excess reserves, even though it would be beneficial for the whole economy?

- Need to know:

  - How did the trade-offs between holding excess reserves and not holding excess reserves change during and after the crisis?

  - Is it much less costly to hold excess reserves now relatively to 10 years ago?

Important Issue 3: Systemic Risk

- Systemic risk is the risk of collapse of an entire financial system or entire market
  - High interlinkages and interdependencies in a system or market
  - A failure of a single entity or cluster of entities can cause a cascading failure, which could potentially bankrupt or bring down the entire system or market
- But if a bank knows that it is “Too Big To Fail” (TBTF), i.e. it will get a bailout in case of a failure, why should it care how much risk it creates?
- “Too Interconnected To Fail” (TICTF) is a more appropriate term
  - Pre - 2008 financial crisis, some of the most important investment banks were small in terms of assets, but they were highly connected to everybody else in the financial system, i.e. they had a lot of other banks depend on them

Important Issue 3: Systemic Risk

- The subprime mortgage crisis brought back a long-gone discussion of the **macroprudential policy** with regards to the financial sector
- Macroprudential policy measures are policy measures directed towards preventing and mitigating the systemic risk
- Some of the macroprudential tools are:

✓ **Countercyclical capital requirement**:
Capital requirement is the amount of capital a bank or other financial institution has to hold (the ratio of equity to debt)

✓ **Constraint on financial leverage**:
Leverage is buying more of an asset by using borrowed funds – could be very risky

✓ **Liquidity coverage ratio:**
How much liquid assets should a bank hold?

Videos Explaining Monetary Policy Tools

https://www.youtube.com/watch?v=HdZnOQp4SmU

https://www.youtube.com/watch?v=rcPEkmstDek

Extra Credit Assignment

- Watch the HBO movie “Too Big To Fail”. It’s awesome!
- I will have a simple question(s) about it on the final worth 5 points towards your grade
- It is not a documentary but it is based on true events, so you won’t be bored watching it
- I *won’t* ask super detailed questions like “What did Ben Bernanke was eating while he was talking to Hank Paulson?”
- More of a general idea type of questions to see if you understand what and why happened during the 2008 financial crisis
- Also, the names of the major bank(s) that caused/escalated the crisis and participated in the solution (it will be very clear once you watch the movie)
- You can find it on Youtube, Amazon Prime, HBO go. Contact me if you have difficulty finding the movie

Conclusion

- Thank you everybody for participating in this class!
- Your feedback and questions challenged me to become a better instructor
- I hope this class was as exciting to you as it was to me!