

## TA Info

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**Office Hours:** Mondays, 1–2 PM (Zoom, see Canvas for link)  
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**Midterm 2 on Tuesday during lecture!** See email for room assignments (same as for first exam)  
**Review Session Monday!** 5-7PM, Social Sciences 6203

## Dictionary (not comprehensive)

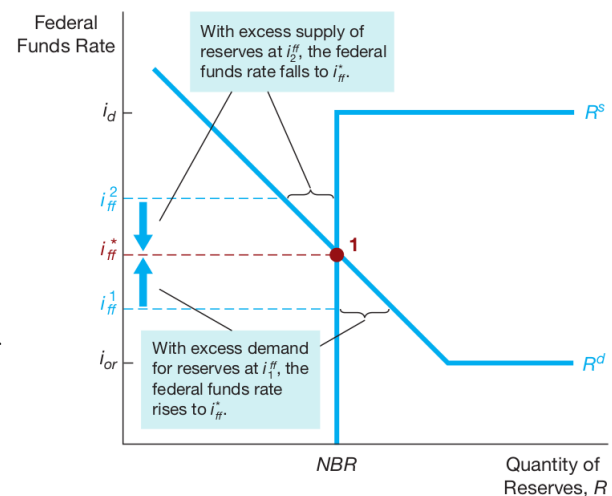
- BR - Borrowed reserves
- CD - Certificate of deposit
- CPI - Consumer price index
- FOMC - Federal Open Market Committee
- FDIC - Federal Deposit Insurance Corporation
- LSAP - Large scale asset purchases
- MB - Monetary base (bank reserves + cash in circulation)
- $MB_n$  - Non-borrowed monetary base
- MS - Money supply (M1)
- MBS - Mortgage-backed securities
- OMO - Open-market operations
- RR - Required reserves,  $rr$  - required reserve ratio
- SIFIs - Systemically Important Financial institutions
- QE - quantitative easing
- ZLB - Zero lower bound
- ZIRP - Zero interest rate policy

## Tools of Monetary Policy

The interest rate of most interest to the Fed is the Fed Funds Rate (overnight interest rate between banks). To hit its target rate, the Fed has 4 main tools:

1. The total amount of non-borrowed reserves by OMO
2. The interest rate it charges on discount loans
3. The interest rate it pays banks on reserves at the Fed.
4. The required reserve ratio

By choosing these, the Fed can manipulate the market for reserves to hit its Fed Funds target. ->



## Supply shifters

1. The fed can buy (sell) T-Bills to increase (decrease) non-borrowed reserves in the market (vertical part of reserves supply).
2. The fed can increase (decrease) the discount rate to raise (lower) the horizontal portion of reserves supply (borrowed reserves)

## Demand shifters

1. The Fed can increase (decrease) the required reserve ratio which would increase (decrease) the amount of reserves banks want to hold at all interest rates (Up to a point. If banks already hold a lot of excess reserves, this may not have much effect).
2. Fed can increase (decrease) the interest on reserves, increasing (decreasing) the lowest rate banks would lend at (IOR can be negative, but if it goes too negative, banks will hold reserves in vault cash rather than in their Fed account.)

## Other Monetary Policy Tools

### Large scale asset purchases

The Fed classically conducts its open market operations by buying short-term T-bills. However, during the financial crisis, the Fed bought a large number of other assets (quantitative easing) such as longer term T-Bills (targetting longer-term interest rates) and mortgage-backed securities (propping up the housing market).

### Expectations management

The Fed can also influence interest rates simply by giving **forward guidance**. That is, the Fed can announce it's future intended policies and commit to follow through with them. (Remember, longer-term interest rates depend partially on expectations of future rates.)

For example: The Fed's announcement last week that they would soon begin tapering open market purchases. They announced a *future* change in policy, not an immediate one.

## Goals of the Central Bank

Congress has given the Fed a **dual mandate**. That is, the Fed should attempt to

1. Maintain price stability, and
2. Maintain full employment

These two goals are supposed to be equally important for the Fed.

This contrasts with the **hierarchical mandates** of many other central banks. General central banks with a hierarchical mandate must focus primarily on *price stability*.

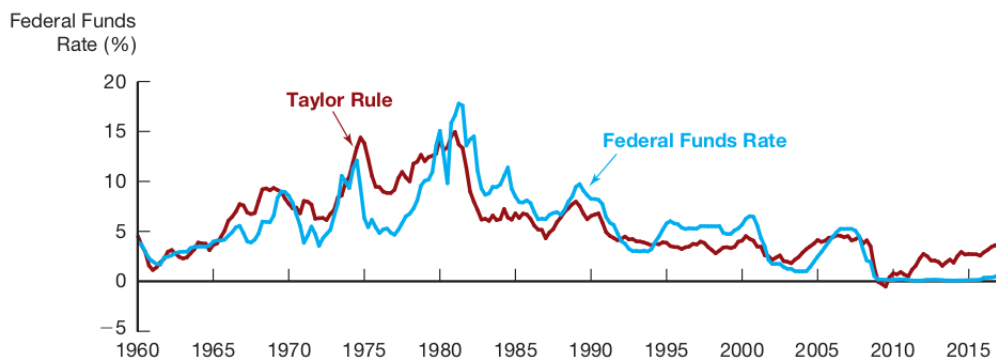
### Taylor Rule

A proposed way for the Fed to meet it's dual mandate is to target the Fed Funds rate using a **Taylor Rule**:

$$\begin{aligned} \text{Taylor Rule Fed Funds Target} = & \text{current inflation rate} + \text{long-run real fed funds rate} \\ & + \frac{1}{2} \times \text{inflation gap} + \frac{1}{2} \times \text{output gap} \end{aligned}$$

The 1/2 weight on each of inflation and output gap indicates equal weight on the two mandates (price stability and full employment). A hawk (someone worried more about price stability) might put more weight on the inflation gap term, and a dove (someone more concerned with full employment) might put more weight on the output gap.

Another advantage of the Taylor rule is that it makes expectations management very easy for the Fed because everyone knows exactly the rule the Fed uses to target interest rates. This can also be a disadvantage though, tying the Fed's hands with a policy that may not work well in all situations. From 1980 until 2010, the actual Fed Funds Target roughly followed the Taylor Rule.



## Exercises

1. Under the standard Taylor rule, what should be the target Federal Funds Rate if inflation is 1%, the inflation target is 2%, the equilibrium real fed funds rate is 2%, and output is 2% below potential output?
  - (a) 1.5%
  - (b) 2.5%
  - (c) 4.5%
  - (d) -1.5%
2. How should the Fed reach if it wants to push the Fed Funds Rate **down**?
  - (a) Open market sales; higher discount rate
  - (b) Open market sales; lower discount rate
  - (c) Open market purchases; higher discount rate
  - (d) Open market purchases; lower discount rate
3. On Friday, 23 October 2015, the Bank of China announced it was lowering the required reserve ratio by 50 basis points. What will be the effect of such a policy change?
  - (a) Shift the demand for reserves to the left and thus lower the interbank lending rate.
  - (b) Shift demand for reserves to the right and thus lower the interbank lending rate.
  - (c) Shift demand for reserves to the right and thus increase the interbank lending rate.
  - (d) Shift demand for reserves to the left and thus increase the interbank lending rate.
4. What will happen if the Fed pushes the supply of non-borrowed reserves too far to the right?
  - (a) The equilibrium will lie on the horizontal portion of demand for reserves.
  - (b) The equilibrium will lie on the horizontal portion of the supply of reserves.
  - (c) The equilibrium rate would be zero.
  - (d) The equilibrium rate would be equal to the discount rate.