Australian National University

ECON2026
Money and Banking

Lecture Notes 6

Monetary Policy
Learning Objectives

- Describe the goals of monetary policy.
- Understand how Central Banks use monetary policy tools to influence the policy rate.
- Trace how the importance of different monetary policy tools has changed over time.
- Explain the role of monetary targeting in monetary policy.

The Goals of Monetary Policy

Six monetary policy goals:

- Price stability
- High employment
- Economic growth
- Stability of financial markets and institutions
- Interest rate stability
- Foreign-exchange market stability

The Goals of Monetary Policy
Price Stability

- Inflation erodes the value of money as a medium of exchange and as a unit of account.
- Most industrial economies have set price stability as a policy goal.
- Problems caused by inflation:
  - Inflation makes prices less useful as signals for resource allocation.
  - Uncertain future prices complicate decisions households and firms have to make.
  - Inflation can also arbitrarily redistribute income.
  - Hyperinflation (inflation in the hundreds or thousands of percent per year) can severely damage an economy's productive capacity.

The Goals of Monetary Policy
High Employment

- High employment, or a low unemployment rate, is another key monetary policy goal.
- Unemployment reduces output and causes financial and personal distress.
- Even under the best economic conditions, some frictional and structural unemployment remain.
    - The tools of monetary policy are ineffective in reducing these types of unemployment.
- Most economists estimate that the natural rate of unemployment is between 5% and 6%.
- Instead, Central Banks attempt to reduce cyclical unemployment associated with business cycle recessions.

The Goals of Monetary Policy

Economic Growth

- Economic growth is an increase in the economy's output of goods and services over time.
- Economic growth provides the only source of sustained real increases in household incomes.
- Economic growth depends on high employment.
- With high unemployment, businesses have unused productive capacity and are much less likely to invest in capital improvements.
- Stable economic growth allows firms and households to plan accurately and encourages long-term investment.

The Goals of Monetary Policy
Stability of Financial Markets and Institutions

- When financial markets and institutions are not efficient in matching savers and borrowers, the economy loses resources.

- The stability of financial markets and institutions makes possible the efficient matching of savers and borrowers.

The Goals of Monetary Policy
Interest Rate Stability

- Like fluctuations in price levels, fluctuations in interest rates make planning and investment decisions difficult for households and firms.
- Central Banks' goal of interest rate stability is motivated by political pressure and a desire for a stable financial environment.
- Sharp interest rate fluctuations cause problems for financial institutions. So, stabilizing interest rates can help to stabilize the financial system.

The Goals of Monetary Policy
Foreign-Exchange Market Stability

- In the global economy, stability in the foreign-exchange value of the local currency is an important monetary policy goal.

- A stable currency simplifies planning for commercial and financial transactions.

- Fluctuations in the currency's value affect the international competitiveness of that country's industries: e.g., a rising Australian dollar makes Australian goods more expensive abroad, reducing exports.

The Goals of Monetary Policy
The Fed's Dual Mandate

- In fact, all these policy goals are related to two broad goals: price stability and maximum employment.
- Many CBs focus primarily on price stability believing attaining that goal will make possible to attain other goals as well.
- The Fed focuses on both price stability and maximum employment. This is called as DUAL MANDATE.
- If the Fed can attain these two goals, it will typically attain its other goals as well.

Monetary Policy Tools

- A Central Bank's three traditional policy tools are:
  - Open market operations
    - Open market operations are the CB's purchases and sales of securities, usually Treasury securities, in financial markets.
  - Discount policy
    - Discount policy is the policy tool of setting the discount rate and the terms of discount lending.
    - Discount window is the means by which the CB makes discount loans to banks.
    - This serves as the channel for meeting the liquidity needs of banks.
  - Reserve requirements
    - Reserve requirement is the regulation requiring banks to hold a fraction of checkable deposits as vault cash or deposits with the CB.

Monetary Policy Tools
Interest on Reserve Balances

- Banks had long complained that the Fed's failure to pay interest on the banks' reserve deposits amounted to a tax.
- Paying interest on reserve balances gives the Fed another monetary policy tool.
- The policy started in 2008.
- By increasing the interest rate, the Fed can increase the level of reserves banks are willing to hold, thus restraining bank lending and the money supply.
- Lowering the interest rate would have the opposite effect.

Policy Rate
The Federal Funds Market

- Policy rate is called as Cash Rate in Australia and as Federal Funds Rate in the US.
- A policy rate is a short-term interest rate that can be DIRECTLY affected by CBs through Monetary Policy tools.
- In the following explanations, we will focus on Federal Funds Market in which the US policy rate (federal funds rate) is determined.
  - Demand and Supply in the Market for Reserves
  - What happens to the quantity of reserves demanded by banks, holding everything else constant, as the federal funds rate changes?
- Excess reserves are insurance against deposit outflows
  - 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})

Monetary Policy Tools

Demand in the Market for Reserves

- When the federal funds rate is above the rate paid on excess reserves, i_{or}, as the federal funds rate decreases, the opportunity cost of holding excess reserves falls and the quantity of reserves demanded rises.

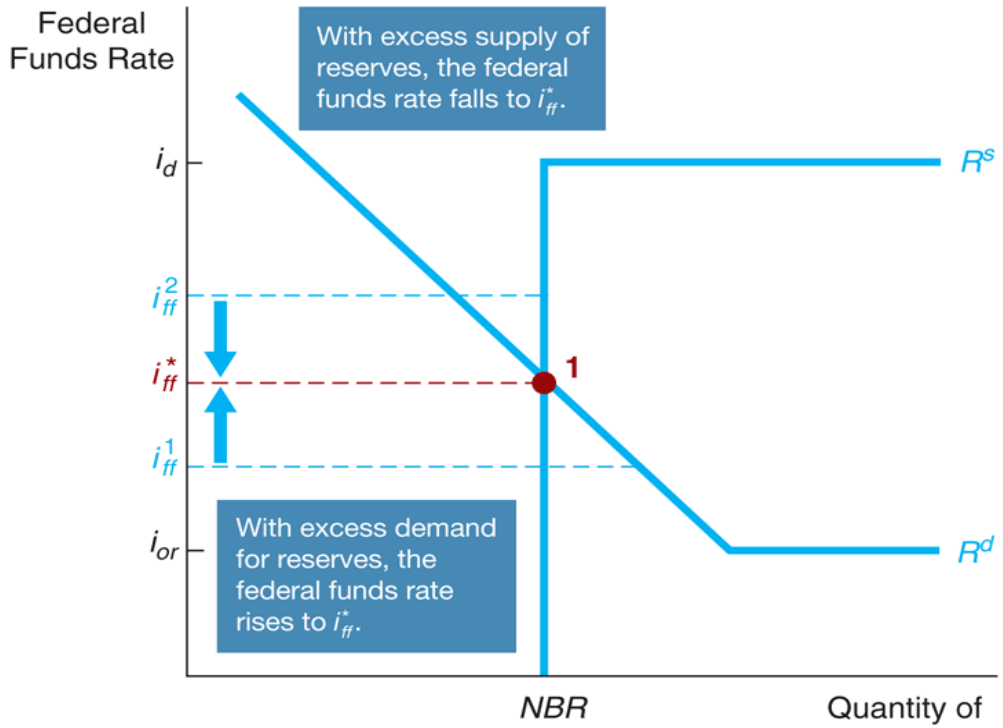
- Downward sloping demand curve that becomes flat (infinitely elastic) at i_{or}

Monetary Policy Tools
Supply in the Market for Reserves

- Two components: non-borrowed and borrowed reserves
- Cost of borrowing from the Fed is the discount rate
- Borrowing from the Fed 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
- As i_{ff} rises above i_d, banks can borrow more and more at i_d, and re-lend at i_{ff}
  - The supply curve is horizontal (perfectly elastic) at i_d

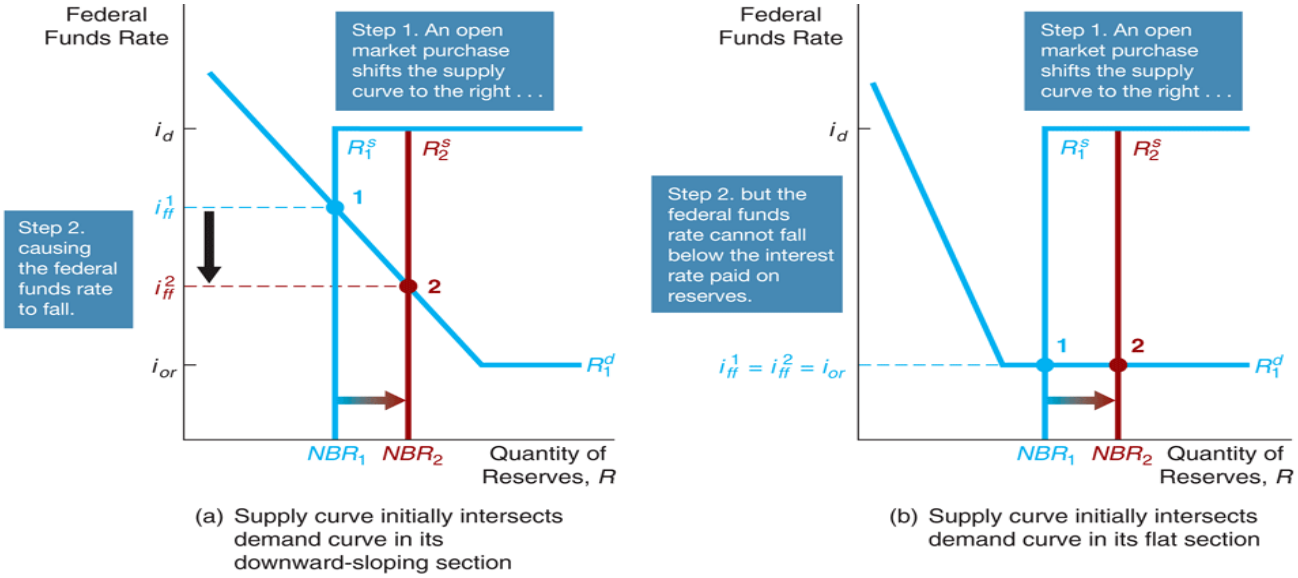
Monetary Policy Tools

Equilibrium in the Market for Reserves



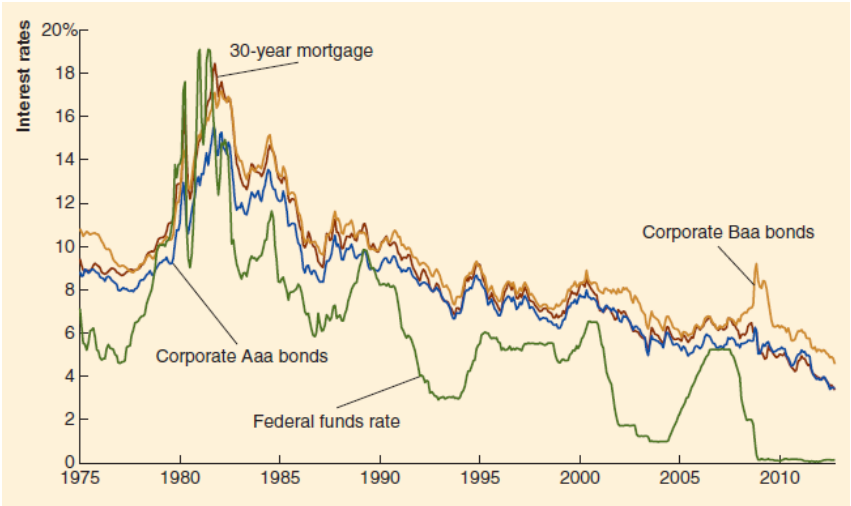
Monetary Policy Tools

Response to an OMO



- 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.

Monetary Policy Tools
OMO and the Fed's Target for the FFR



- The Federal Funds Rate and the Interest Rates on Corporate Bonds and Mortgages
  - The mortgage rate and the corporate bond interest rates generally rise and fall with the federal funds rate.

OMOs

- An open market purchase of Treasury securities causes their prices to increase, and so their yield to decrease. As the monetary base increases, the money supply will expand.
- An open market purchase is an expansionary policy because it reduces interest rates.
- An open market sale has the opposite effects, and so it is called a contractionary policy.

Dynamic vs. Defensive OMOs

- Dynamic open market operations are intended to change monetary policy i.e. changing the policy rate.

- Defensive open market operations are intended to offset temporary fluctuations in the demand or supply for reserves, not to carry out changes in monetary policy.

Monetary Policy Tools

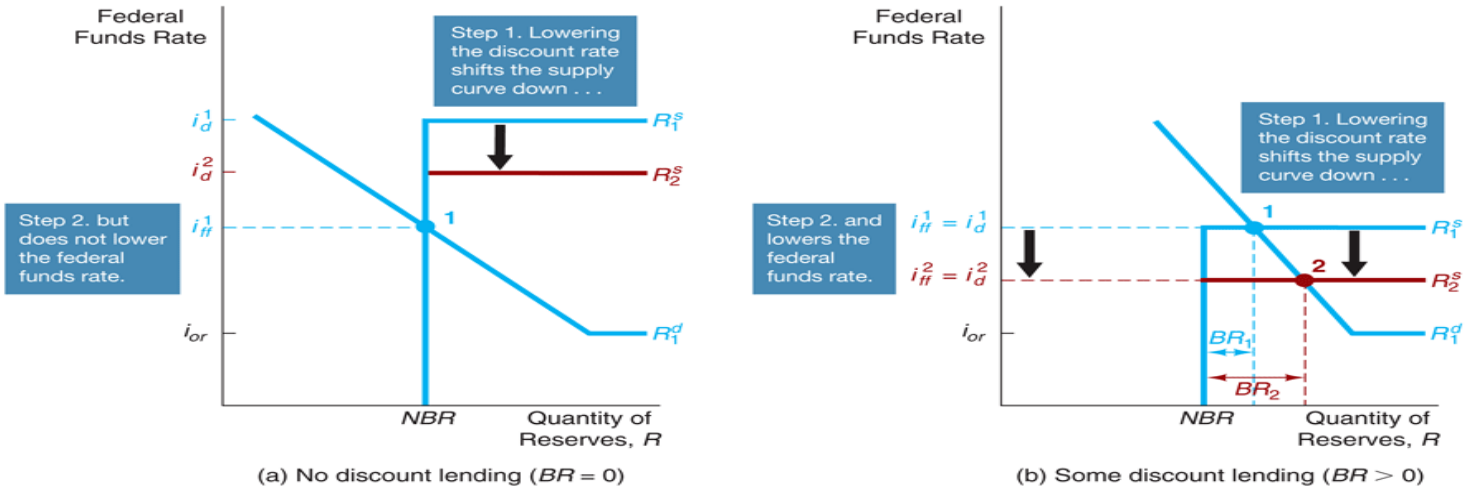
Changes in Discount Rate and Required reserve ratio

- Changes in the Discount Rate
  - Since 2003, the Fed has kept the discount rate higher than the target for the federal funds rate.
  - So, the discount rate is a penalty rate, as banks pay a penalty by borrowing from the Fed rather than from other banks.

- Changes in the Required Reserve Ratio
  - The Fed rarely changes the required reserve ratio.
  - This action will likely carry out offsetting open market operations to keep the target for the federal funds rate unchanged.

Monetary Policy Tools

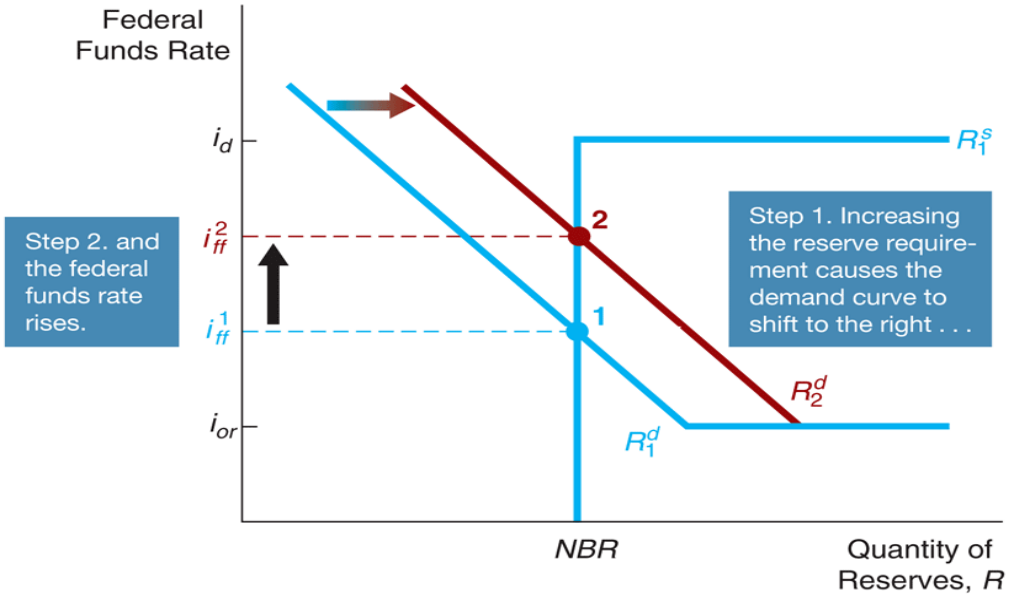
Response to a Change in the Discount Rate



- 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.
- 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

Monetary Policy Tools

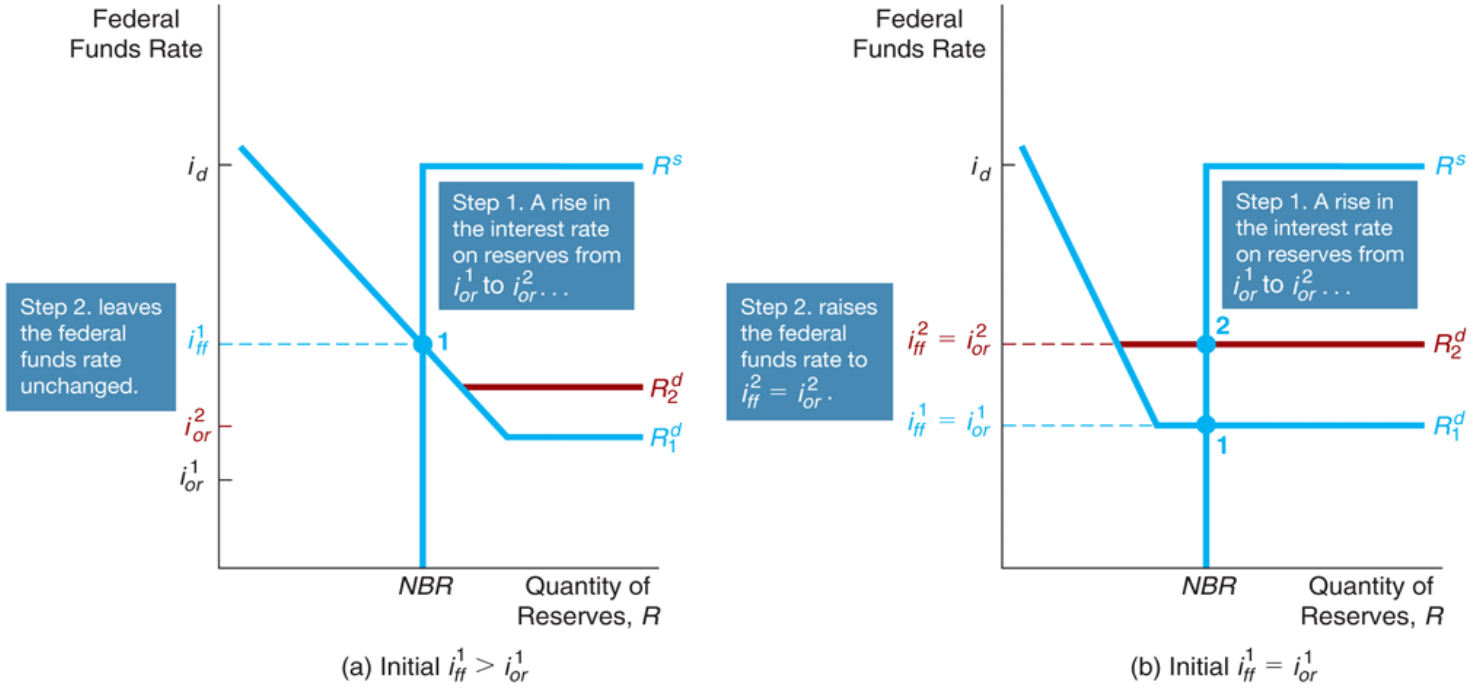
Response to a Change in Required Reserves



- When the Fed raises reserve requirement, the federal funds rate rises and when the Fed decreases reserve requirement, the federal funds rate falls.

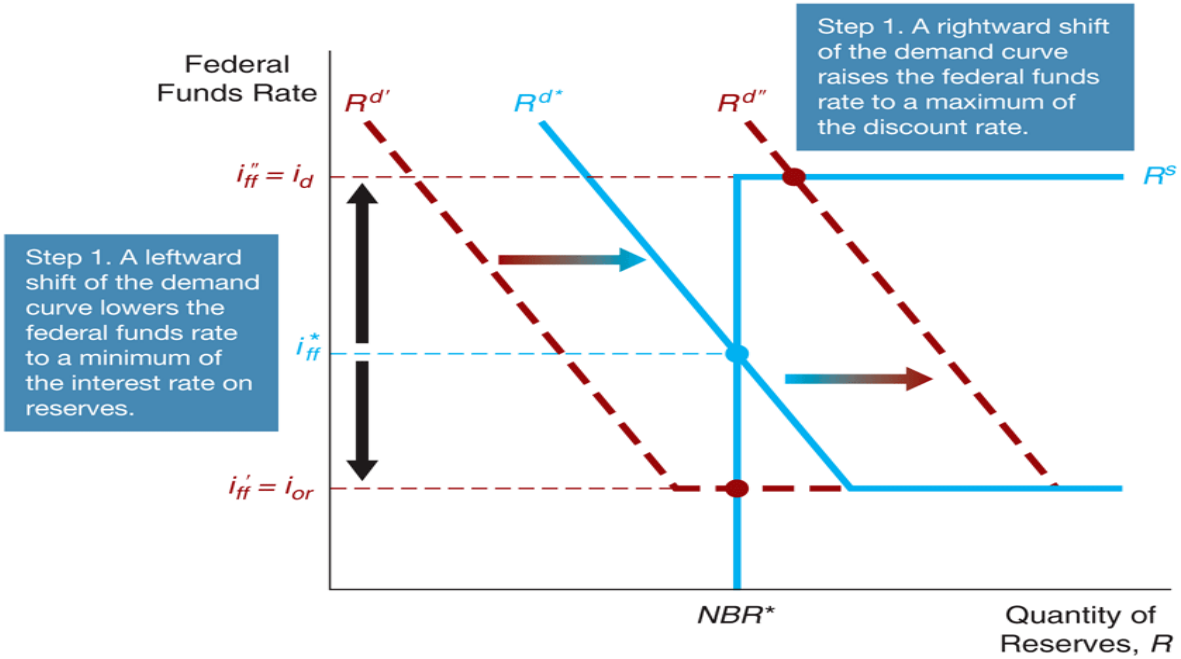
Monetary Policy Tools

Response to a Change in the Interest Rate on Reserves



Monetary Policy Tools

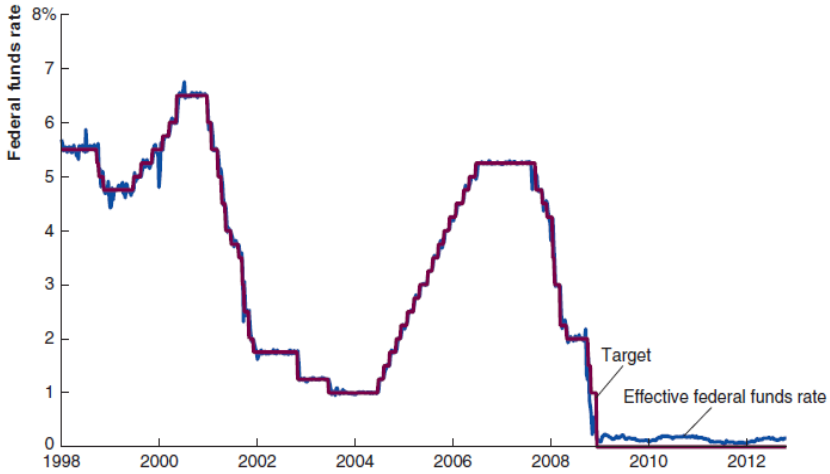
How the Federal Reserve's Operating Procedures Limit Fluctuations in the Federal Funds Rate?



OMO vs. Other Policy Tools

- The benefits of open market operations include control, flexibility, and ease of implementation.
- Discount loans depend in part on the willingness of banks to request the loans and so are not as completely under the CBs control.
- The CB can make both large and small open market operations. Often, dynamic operations require large purchases or sales whereas defensive operations call for small.
- Reversing open market operations is simple for the CB. Discount loans and reserve requirement changes are more difficult to reverse quickly.
- The CB can implement its open market operations with no administrative delays. Changing the discount rate or reserve requirements requires lengthier deliberation.

Why Can't the Fed Always Hits Its Federal Funds Target?



- The Fed (or any other central bank) can only set a target for the federal funds rate (policy rate). The actual federal funds rate is determined by the demand and supply for reserves.
- The New York Fed has done a good job in using open market operations to keep the actual federal funds rate close to the target rate.

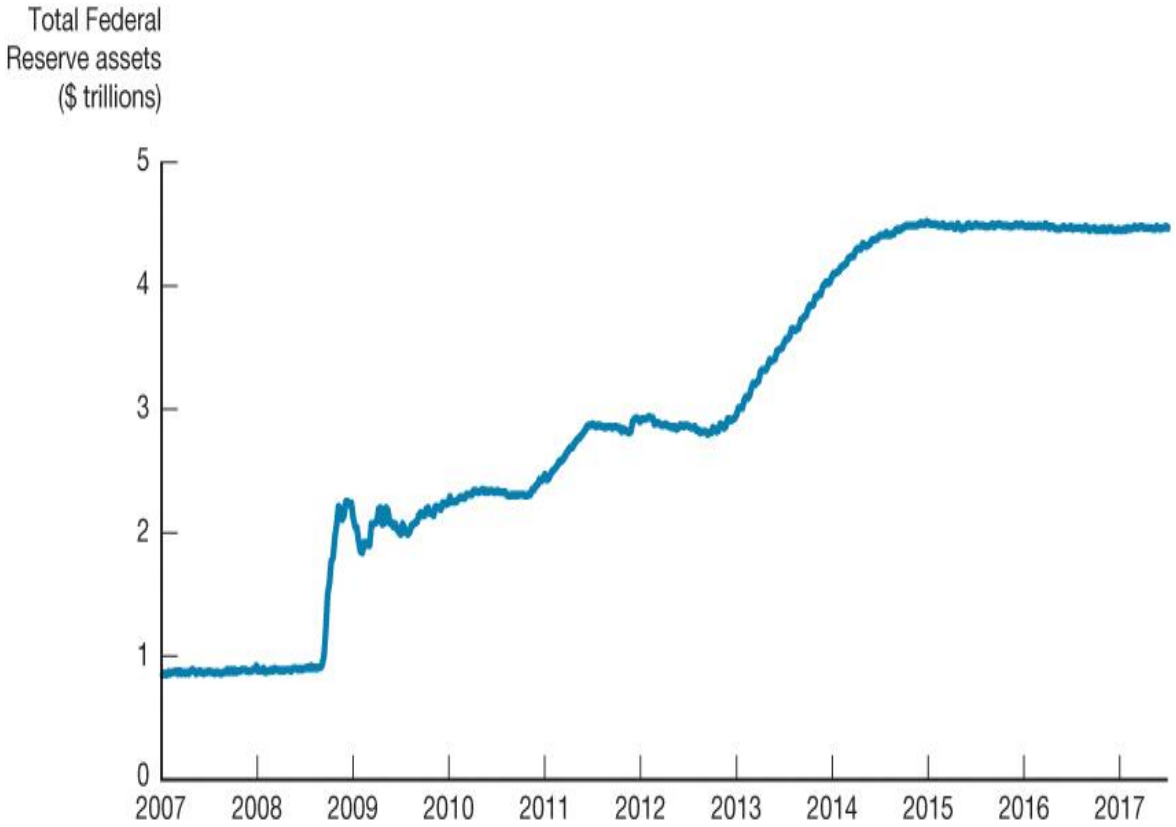
The Failure of Conventional Monetary Policy Tools in a Financial Panic

- 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.

Nonconventional Monetary Policy Tools During the Global Financial Crisis

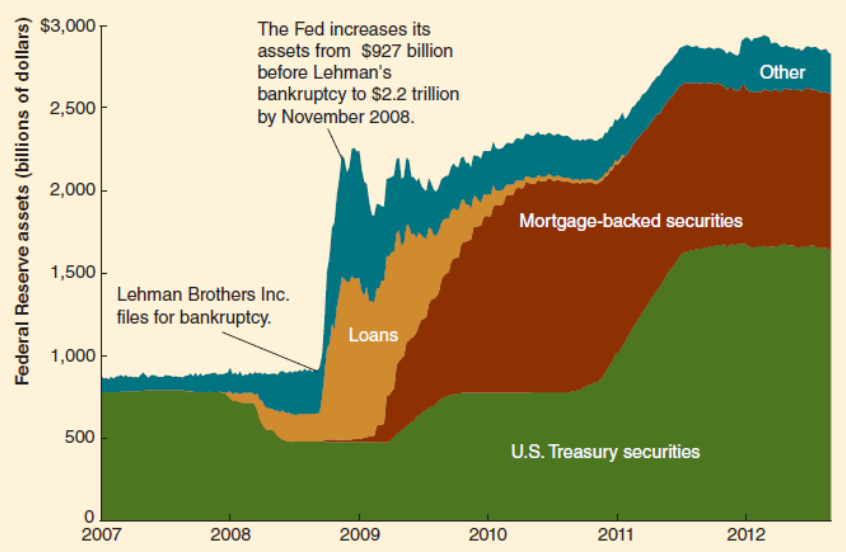
- Liquidity provision (CREDIT EASING): The Federal Reserve implemented unprecedented increases in its lending facilities to provide liquidity to the financial markets.
- Large-scale asset purchases (QUANTITATIVE EASING): During the crisis, the Fed started three new asset purchase programs to lower interest rates for particular types of credit.
- Forward Guidance: By committing to the future policy action of keeping the federal funds rate at zero for an extended period, the Fed could lower the market's expectations of future short-term interest rates, thereby causing the long-term interest rate to fall. (see https://www.afr.com/policy/economy/lowe-admits-embarrassing-error-on-2024-rate-rise-20220503-p5ai9e)
- Negative Interest Rates on Banks' Deposits: Setting negative interest rates on banks' deposits is supposed to work to stimulate the economy by encouraging banks to lend out the deposits they were keeping at the central bank, thereby encouraging households and businesses to spend more. However, there are doubts that negative interest rates on deposits will have the intended, expansionary effect.

The Expansion of the Federal Balance Sheet, 2007–2014



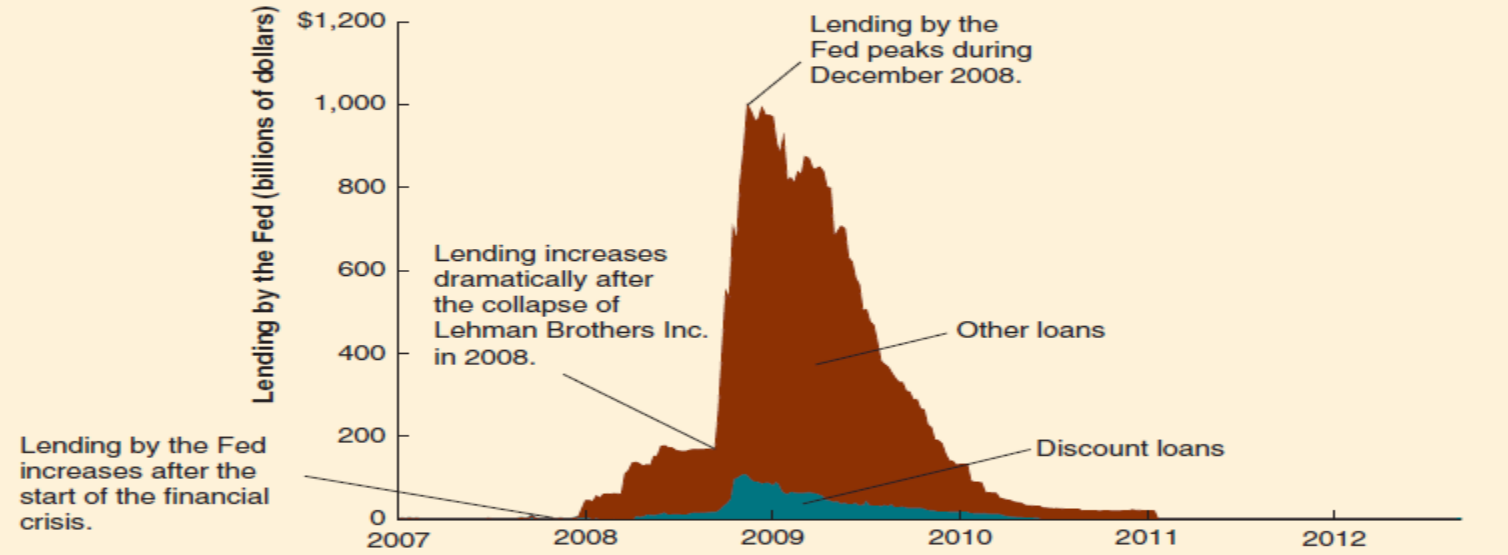
- Recent data

Quantitative Easing



- Federal Reserve Assets 2007-2012
  - After the collapse of Lehman Brothers, the Fed dramatically increased its assets through loans to financial institutions and purchases of assets such as commercial paper and mortgage-backed securities.

Discount Lending during the Financial Crisis of 2007-2009



- During the financial crisis, lending by the Fed increased from just a few hundred million dollars to $993.5 billion in December 2008.

More on the Monetary Policy Tools
Monetary Targeting and Monetary Policy

- The Fed often faces trade-offs in attempting to reach its goals, particularly the goals of high economic growth and low inflation.

- To spur economic growth, the Fed could lower the target for the federal funds rate, which increase the money supply, potentially increasing the inflation rate in the longer run.

- The tools of monetary policy don't allow the Fed to have direct control over real output or the price level.

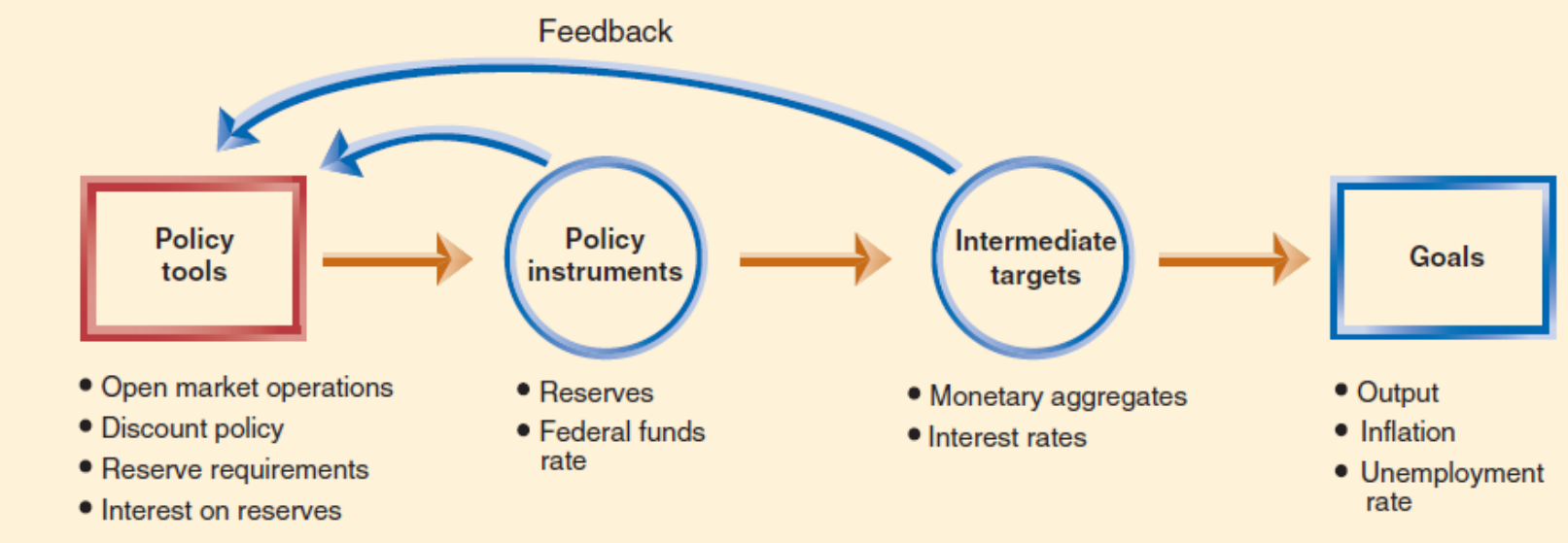
More on the Monetary Policy Tools
Monetary Targeting and Monetary Policy

- The Fed also faces timing difficulties:
  - The information lag refers to the Fed's inability to observe instantaneously changes in economic variables.
  - The impact lag is the time that is required for monetary policy changes to affect output, employment, or inflation.

- One possible solution to those timing problems is for the Fed to use targets to meet its goals.

More on the Monetary Policy Tools

Monetary Targeting and Monetary Policy



- The Fed establishes goals, but it directly controls only its policy tools.
- So it can use targets to help achieve monetary policy goals.

More on the Fed's Monetary Policy Tools

What Happened to the Link Between Money and Prices

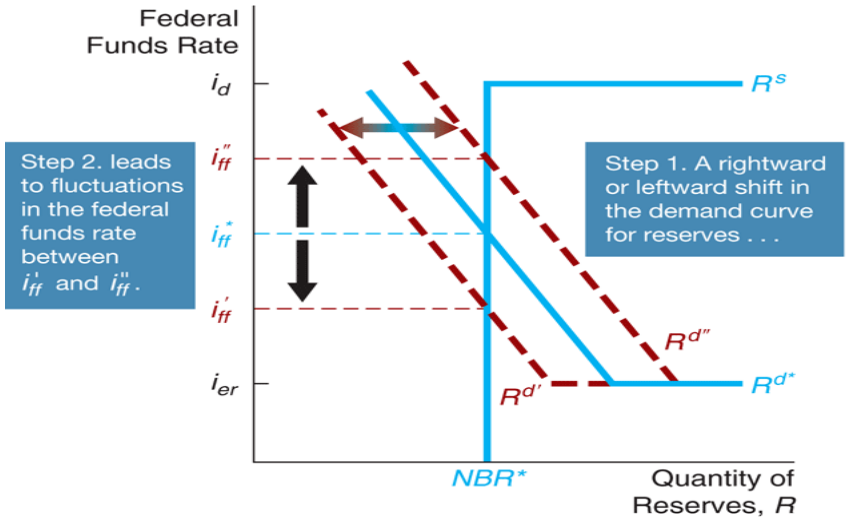
- In the United States, the money supply has grown more rapidly during decades when the inflation rate has been relatively high.
- Prior to 1980, strong evidence supports the link between money and prices in the short run of a year or two.
- The economists who argued this point most forcefully were known as monetarists, notably Nobel laureate Milton Friedman.
- After 1980, the short-run link between the growth of the money supply and inflation broke down.

Period for money growth	Growth in M1	Inflation rate two years later	Period for inflation
Third quarter of 1973 to third quarter of 1975	5.2%	6.3%	Third quarter of 1975 to third quarter of 1977
Third quarter of 1975 to third quarter of 1977	6.4	8.3	Third quarter of 1977 to third quarter of 1979
Third quarter of 1977 to third quarter of 1979	8.6	9.4	Third quarter of 1979 to third quarter of 1981
Third quarter of 1979 to third quarter of 1981	6.1	4.8	Third quarter of 1981 to third quarter of 1983
Third quarter of 1981 to third quarter of 1983	9.2	3.3	Third quarter of 1983 to third quarter of 1985
Third quarter of 1983 to third quarter of 1985	8.1	2.8	Third quarter of 1985 to third quarter of 1987

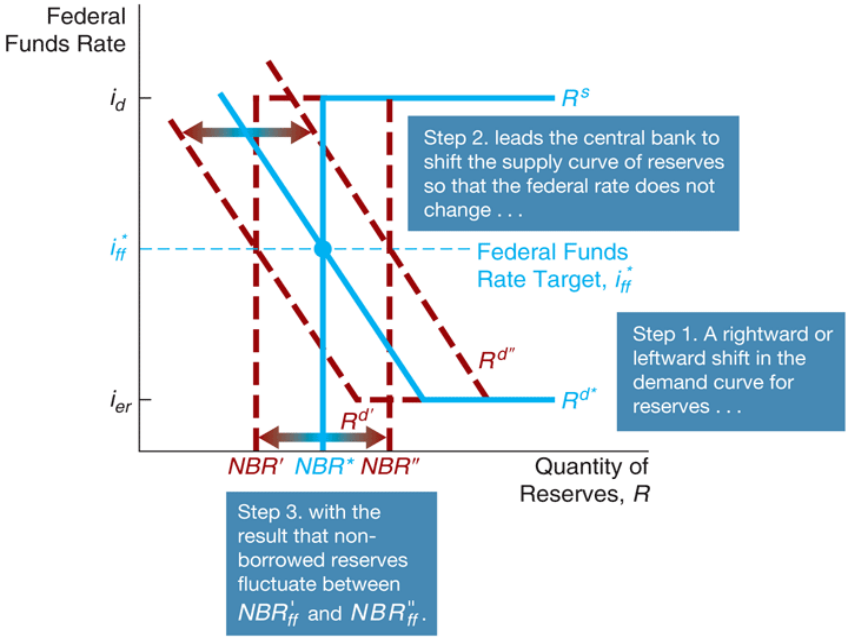
More on the Monetary Policy Tools

Reserves vs. Federal Funds Rate

Targeting on Reserves



Targeting on the Federal Funds Rate



More on the Monetary Policy Tools
Reserves vs. Federal Funds Rate

- The Fed faces a trade-off:
  - It can choose a reserve aggregate for its policy instrument, or it can choose the federal funds rate, but it cannot choose both.
  - Using reserves as the Fed's policy instrument will cause the federal funds rate to fluctuate in response to changes in the demand for reserves.
  - Using the federal funds rate as the policy instrument will cause the level of reserves to fluctuate in response to changes in the demand for reserves.
- By the 1980s, the Fed had concluded that the link between the federal funds rate and its policy goals was closer than the link between the level of reserves and its policy goals.
- So, the federal funds rate has been the Fed's policy instrument for the past 30 years

More on the Monetary Policy Tools

The Taylor Rule: A Summary Measure of Central Bank Policy

- Actual CB deliberations are complex and incorporate many factors about the economy.
- John Taylor of Stanford University has summarized these factors in the Taylor rule.
- Taylor rule is a monetary policy guideline developed by economist John Taylor for determining the target for the federal funds rate.
- The Taylor rule is an estimate of the value of the federal funds rate (after adjustment for inflation) to be consistent with real GDP being equal to potential real GDP in the long run.
- See Taylor Rule

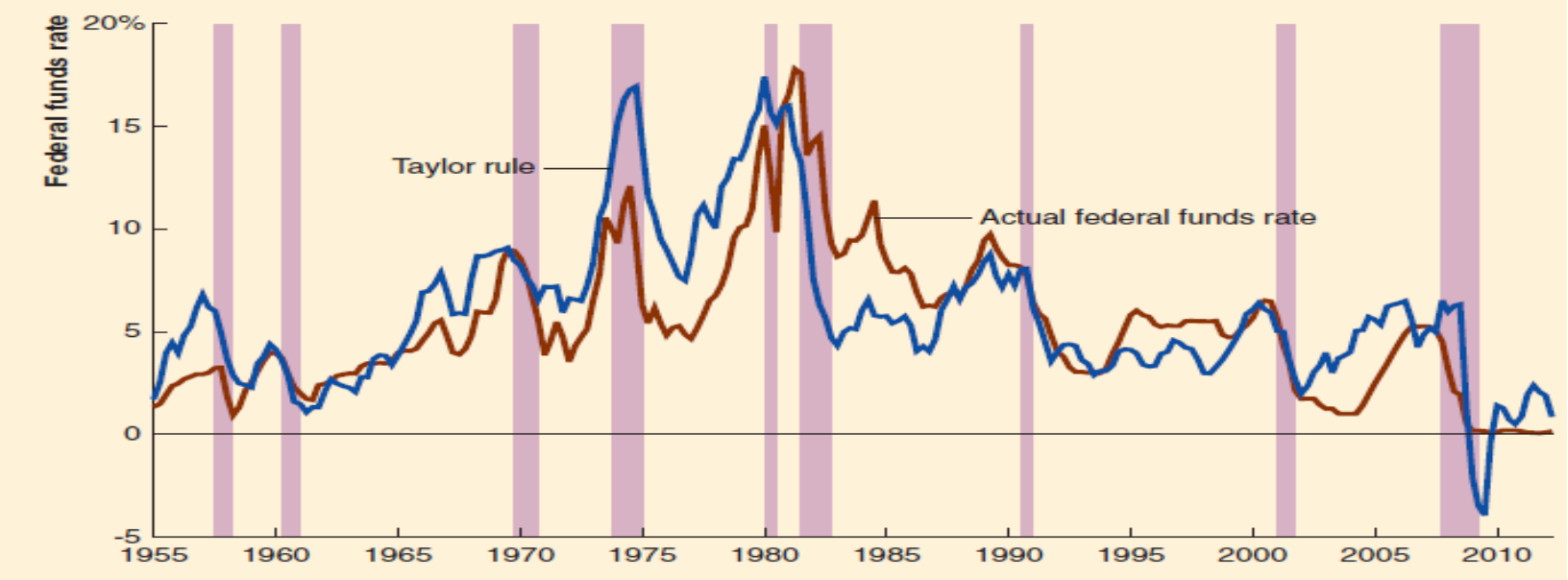
More on the Monetary Policy Tools

The Taylor Rule: A Summary Measure of Fed Policy

- According to the Taylor rule, the Fed should set its current federal funds rate target equal to the current inflation rate, the equilibrium real federal funds rate, and two additional terms.
- The first of these terms is the inflation gap – the difference between current inflation and a target rate; the second is the output gap – the percentage difference of real GDP from potential real GDP.
- The inflation gap and the output gap are each given "weights" that reflect their influence on the federal funds rate target. With weights of one half for both gaps, we have the following Taylor rule:
  - Federal funds target=Current inflation rate + Equilibrium real funds rate + (1/2 x Inflation gap) + (1/2 x Output gap)

More on the Monetary Policy Tools

The Taylor Rule: A Summary Measure of Fed Policy

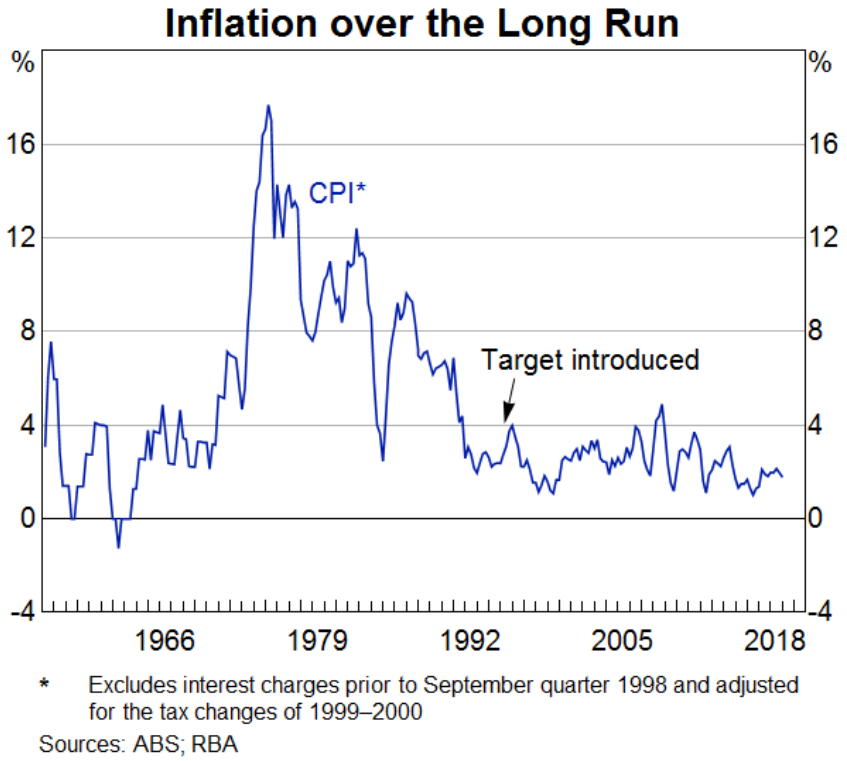


- The blue line shows the level of the federal funds rate according to the Taylor rule.
- The red line shows the target federal funds rate.
- The Taylor rule does a reasonable job of explaining Fed policy during some periods.
- Current Data

More on the Monetary Policy Tools

Inflation Targeting

- With inflation targeting, a central bank publically sets an explicit target for the inflation rate over a period of time.
- The RBA introduced inflation targeting in early 1990s. The Governor and the Treasurer agreed that he appropriate target is 2-3% inflation rate.
- Current Data



More on the Monetary Policy Tools
Inflation Targeting

Arguments in favor of an explicit inflation targeting

- It would draw attention to what the Central Bank can actually achieve in practice.
- It would provide an anchor for inflationary expectations.
- It would help institutionalize effective monetary policy.
- It would promote accountability.
- More Info

Arguments against an inflation targeting

- Rigid numerical targets for inflation diminish flexibility.
- Reliance on uncertain forecasts of future inflation can create problems.
- The focus on inflation may make it more difficult for elected officials to monitor the CB's support for good economic policy overall.
- Uncertainty about future levels of output and employment can impede economic decision making in the presence of an inflation target.

What is next?

- Exchange rates...