INTERMEDIATE MACROECONOMICS-II

B.A.(H) Economics, Semester-IV

Topic-3: Fiscal & Monetary Policy

Reference: Blanchard, Macroeconomics ($5^{th}ed.$)

CHAPTER 25: Monetary Policy: A Summing Up

Lecture Notes

Shri Ram College of Commerce

2019-20

Monetary Policy: A Summing Up

- In the short run, an increase in money supply leads to a decrease in interest rates and a depreciation of the currency.
- Both of these leads to an increase in the demand for goods and an increase in output.
- In the long run, changes in either the level or the rate of growth of money supply don't have any effect on output or unemployment.
- In the long run, changes in the level of money supply leads to a proportional increase in prices.
- In the long run, changes in the rate of nominal money growth leads to a corresponding change in the inflation rate.

Monetary Policy: A Summing Up

- In the short run, an increase in money supply leads to a decrease in interest rates and a depreciation of the currency.
- Both of these leads to an increase in the demand for goods and an increase in output.
- In the long run, changes in either the level or the rate of growth of money supply don't have any effect on output or unemployment.
- In the long run, changes in the level of money supply leads to a proportional increase in prices.
- In the long run, changes in the rate of nominal money growth leads to a corresponding change in the inflation rate.

Monetary Policy: A Summing Up

- In the short run, an increase in money supply leads to a decrease in interest rates and a depreciation of the currency.
- Both of these leads to an increase in the demand for goods and an increase in output.
- In the long run, changes in either the level or the rate of growth of money supply don't have any effect on output or unemployment.
- In the long run, changes in the level of money supply leads to a proportional increase in prices.
- In the long run, changes in the rate of nominal money growth leads to a corresponding change in the inflation rate.

Monetary Policy: A Summing Up

- In the short run, an increase in money supply leads to a decrease in interest rates and a depreciation of the currency.
- Both of these leads to an increase in the demand for goods and an increase in output.
- In the long run, changes in either the level or the rate of growth of money supply don't have any effect on output or unemployment.
- In the long run, changes in the level of money supply leads to a proportional increase in prices.
- In the long run, changes in the rate of nominal money growth leads to a corresponding change in the inflation rate.

Monetary Policy: A Summing Up

- In the short run, an increase in money supply leads to a decrease in interest rates and a depreciation of the currency.
- Both of these leads to an increase in the demand for goods and an increase in output.
- In the long run, changes in either the level or the rate of growth of money supply don't have any effect on output or unemployment.
- In the long run, changes in the level of money supply leads to a proportional increase in prices.
- In the long run, changes in the rate of nominal money growth leads to a corresponding change in the inflation rate.

Optimal Inflation Rate:

The Costs of Inflation

(1) Shoe-leather costs:
High inflation leads to a higher nominal interest rate, which reflects an increase in the opportunity cost of holding money. Therefore, people hold less money in cash. This leads them to make more(frequent) trips to the bank. So this cost reflects the cost of making more trips to the bank.

(2) Tax distortions:
Tax distortions occur when tax rates do not change automatically with inflation, a concept known as bracket creep. e.g. tax on income is deducted on nominal income and doesn't incorporate inflation effects on real income. An increase in nominal income doesn't ensure an increase in real income (due to inflation effect).

Optimal Inflation Rate:

The Costs of Inflation

(1) Shoe-leather costs:
High inflation leads to a higher nominal interest rate, which reflects an increase in the opportunity cost of holding money. Therefore, people hold less money in cash. This leads them to make more(frequent) trips to the bank. So this cost reflects the cost of making more trips to the bank.

(2) Tax distortions:
Tax distortions occur when tax rates do not change automatically with inflation, a concept known as bracket creep. e.g. tax on income is deducted on nominal income and doesn't incorporate inflation effects on real income. An increase in nominal income doesn't ensure an increase in real income (due to inflation effect).

Optimal Inflation Rate:

The Costs of Inflation

(1) Shoe-leather costs:
High inflation leads to a higher nominal interest rate, which reflects an increase in the opportunity cost of holding money. Therefore, people hold less money in cash. This leads them to make more(frequent) trips to the bank. So this cost reflects the cost of making more trips to the bank.

(2) Tax distortions:
Tax distortions occur when tax rates do not change automatically with inflation, a concept known as bracket creep. e.g. tax on income is deducted on nominal income and doesn't incorporate inflation effects on real income. An increase in nominal income doesn't ensure an increase in real income (due to inflation effect).

(3) Money illusion:
The cost of inflation associated with the notion that people make systematic mistakes in assessing nominal versus real changes, leading people to make incorrect decisions. While comparing the rate of interests across time-periods, people tends to compare nominal interest rates rather than real interest rates.

(4) Inflation variability:
Higher inflation is typically associated with more variable inflation (more fluctuation in price levels). This makes financial assets such as bonds, which promise fixed nominal payments in the future, riskier.

(3) Money illusion:
The cost of inflation associated with the notion that people make systematic mistakes in assessing nominal versus real changes, leading people to make incorrect decisions. While comparing the rate of interests across time-periods, people tends to compare nominal interest rates rather than real interest rates.

(4) Inflation variability:
Higher inflation is typically associated with more variable inflation (more fluctuation in price levels). This makes financial assets such as bonds, which promise fixed nominal payments in the future, riskier.

Optimal Inflation Rate

The Benefits of Inflation

(1) Seignorage:
This refers to the creation of money (which is the ultimate source of inflation). The government can create money by the virtue of selling bonds. The revenue from money created then allow the government to borrow less from the public or to raise taxes to finance its spendings.

(2) Negative Interest Rates:
An economy with a higher average inflation rate has more scope to use monetary policy to fight a recession. An economy with a low average inflation rate may find itself unable to use monetary policy to return output to the natural level of output[1].

[1] Please refer to the example mentioned under this section in your reading.

Optimal Inflation Rate

The Benefits of Inflation

(1) Seignorage:
This refers to the creation of money (which is the ultimate source of inflation). The government can create money by the virtue of selling bonds. The revenue from money created then allow the government to borrow less from the public or to raise taxes to finance its spendings.

(2) Negative Interest Rates:
An economy with a higher average inflation rate has more scope to use monetary policy to fight a recession. An economy with a low average inflation rate may find itself unable to use monetary policy to return output to the natural level of output[1].

[1] Please refer to the example mentioned under this section in your reading.

(3) Money Illusion Revisited:
Consider the following two situations.
(i) Inflation is 4% and somebody's wage increases by 1% in dollar terms.
(ii)Inflation is 0%, and the wage is decreased by 3% in dollar terms.
Both leads to the same decrease in the real wage, namely, 3%. There is some evidence, however, that many people will accept the real wage cut more easily in the first case than in the second. Therefore, the presence of inflation allows for these downward real-wage adjustments more easily than no inflation.

The Optimal Inflation Rate: The Current Debate

- Those who aim for small but positive inflation argue that some of the costs of positive inflation can be avoided, and the benefits are worth keeping.
- Those who aim for zero inflation argue that this amounts to price stability, which simplifies decisions and eliminates money illusion.
- Today, most central banks in developed countries appear to be aiming for low but positive inflation, between 2% and 3%.

The Optimal Inflation Rate: The Current Debate

- Those who aim for small but positive inflation argue that some of the costs of positive inflation can be avoided, and the benefits are worth keeping.
- Those who aim for zero inflation argue that this amounts to price stability, which simplifies decisions and eliminates money illusion.
- Today, most central banks in developed countries appear to be aiming for low but positive inflation, between 2% and 3%.

The Optimal Inflation Rate: The Current Debate

- Those who aim for small but positive inflation argue that some of the costs of positive inflation can be avoided, and the benefits are worth keeping.
- Those who aim for zero inflation argue that this amounts to price stability, which simplifies decisions and eliminates money illusion.
- Today, most central banks in developed countries appear to be aiming for low but positive inflation, between 2% and 3%.

The Design of Monetary Policy

Money Growth Targets

Until the 1990s, monetary policy in the US and other OECD countries was typically conducted as follows:

- The central bank chose a target rate for nominal money growth corresponding to the inflation rate it wanted to achieve in the medium run. e.g. To achieve an inflation rate of 4% and nominal rate of growth of output was 3%, the central bank chose a target rate of nominal money growth of 7%.
- In the short run, the central bank allowed for deviations of nominal money growth from the target.
- To communicate to the public both what it wanted to achieve in the medium run and what it intended to do in the short run, the central bank announced a range for the rate of nominal money growth it intended to achieve.

The Design of Monetary Policy

Money Growth Targets

Until the 1990s, monetary policy in the US and other OECD countries was typically conducted as follows:

- The central bank chose a target rate for nominal money growth corresponding to the inflation rate it wanted to achieve in the medium run. e.g. To achieve an inflation rate of 4% and nominal rate of growth of output was 3%, the central bank chose a target rate of nominal money growth of 7%.
- In the short run, the central bank allowed for deviations of nominal money growth from the target.
- To communicate to the public both what it wanted to achieve in the medium run and what it intended to do in the short run, the central bank announced a range for the rate of nominal money growth it intended to achieve.

The Design of Monetary Policy

Money Growth Targets

Until the 1990s, monetary policy in the US and other OECD countries was typically conducted as follows:

- The central bank chose a target rate for nominal money growth corresponding to the inflation rate it wanted to achieve in the medium run. e.g. To achieve an inflation rate of 4% and nominal rate of growth of output was 3%, the central bank chose a target rate of nominal money growth of 7%.
- In the short run, the central bank allowed for deviations of nominal money growth from the target.
- To communicate to the public both what it wanted to achieve in the medium run and what it intended to do in the short run, the central bank announced a range for the rate of nominal money growth it intended to achieve.

Money Growth and Inflation Revisited: The design of monetary policy around nominal money growth is based on the assumption that there is a close relationship between inflation and nominal money growth. But the following graph shows no tight relation between M1 growth and inflation.

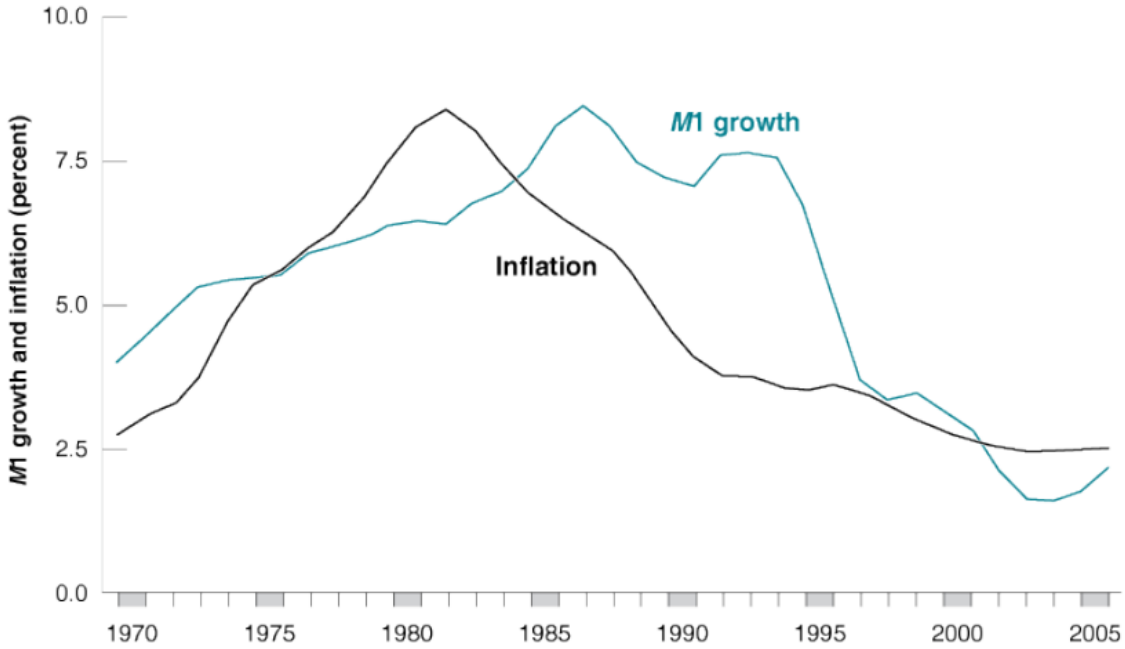

Figure: *M1* Growth and Inflation: 10-Year Averages since 1970

M1: Currency with the public + Deposit money of the public.
M2: **M1** + Saving deposits with Post office saving banks.

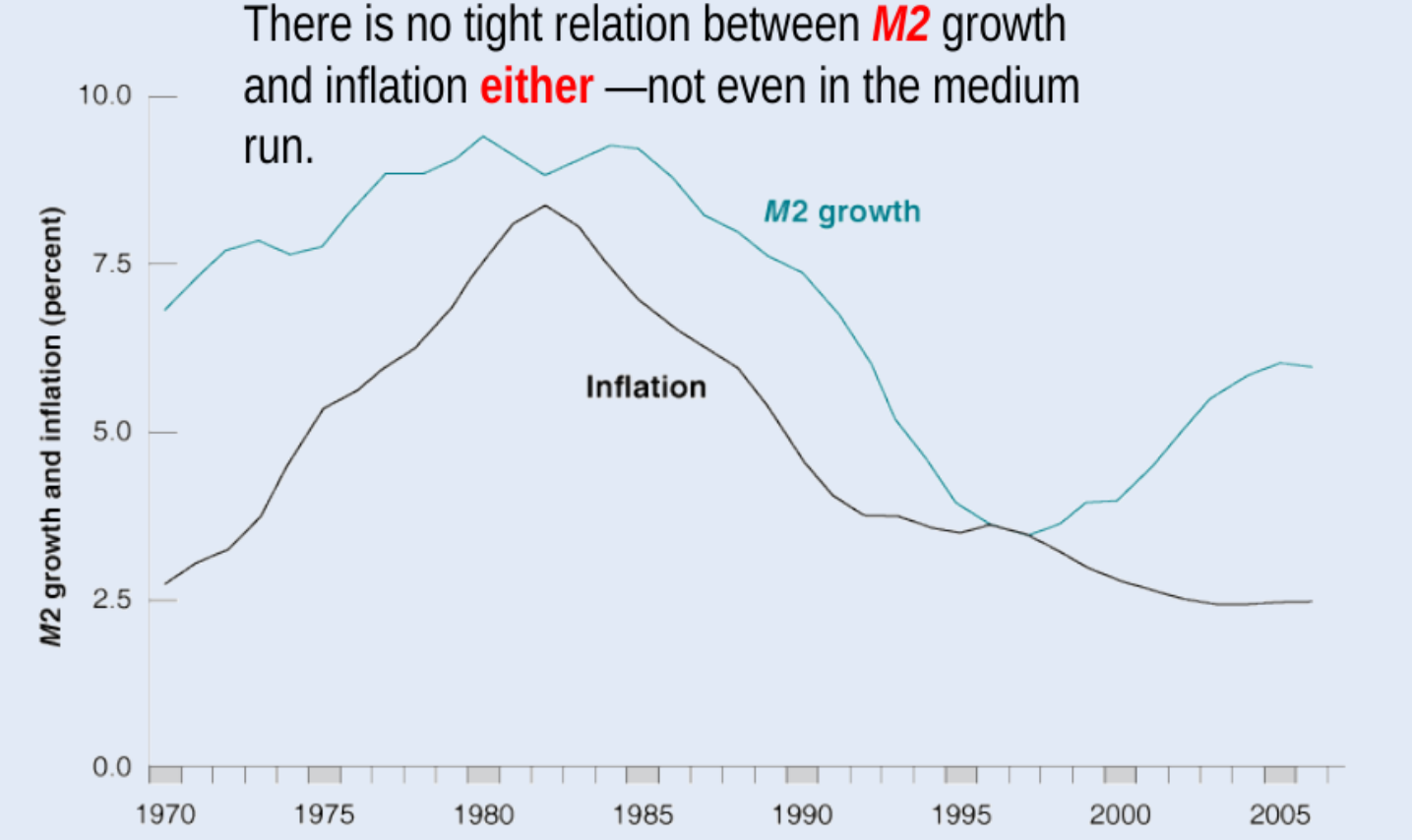

Figure: *M2* Growth and Inflation: 10-Year Averages since 1970

- The relation between M1 (or M2) growth and inflation is not tight because of shifts in the demand for money.
- When people reduce their bank account balances and move to money market funds, there is a negative shift in the demand for money.
- Frequent and large shifts in money demand create serious problems for central banks in using money growth as a target for monetary policy.

- The relation between M1 (or M2) growth and inflation is not tight because of shifts in the demand for money.
- When people reduce their bank account balances and move to money market funds, there is a negative shift in the demand for money.
- Frequent and large shifts in money demand create serious problems for central banks in using money growth as a target for monetary policy.

- The relation between M1 (or M2) growth and inflation is not tight because of shifts in the demand for money.
- When people reduce their bank account balances and move to money market funds, there is a negative shift in the demand for money.
- Frequent and large shifts in money demand create serious problems for central banks in using money growth as a target for monetary policy.

Inflation Targeting

- In many countries, central banks have decided that the achievement of a low inflation rate is their primary goal, both in the short run and in the medium run. This is known as inflation targeting.
- Note, however, that the assumption that inflation targeting eliminates deviations of output from its natural level is too strong, for two reasons:
  (i) The central bank cannot always achieve the rate of inflation it wants in the short run.
  (ii) Like all other macroeconomic relations, the Phillips curve relation does not hold exactly. e.g. Inflation increases even when unemployment is at the natural rate of unemployment.

Inflation Targeting

- In many countries, central banks have decided that the achievement of a low inflation rate is their primary goal, both in the short run and in the medium run. This is known as inflation targeting.
- Note, however, that the assumption that inflation targeting eliminates deviations of output from its natural level is too strong, for two reasons:
  (i) The central bank cannot always achieve the rate of inflation it wants in the short run.
  (ii) Like all other macroeconomic relations, the Phillips curve relation does not hold exactly. e.g. Inflation increases even when unemployment is at the natural rate of unemployment.

Interest Rate Rules

- Since it is the interest rate that directly affects spending, it has been suggested (by Taylor) that the central bank should choose an interest rate rather than a rate of nominal money growth.
- Let π_t be the rate of inflation, and π^* be the target rate of inflation.
  Let i_t be the nominal interest rate, and i^* be the target nominal interest rate.
  Let u_t be the unemployment rate, and u_n be the natural unemployment rate.

Interest Rate Rules

- Since it is the interest rate that directly affects spending, it has been suggested (by Taylor) that the central bank should choose an interest rate rather than a rate of nominal money growth.
- Let π_t be the rate of inflation, and π^* be the target rate of inflation. Let i_t be the nominal interest rate, and i^* be the target nominal interest rate.
  Let u_t be the unemployment rate, and u_n be the natural unemployment rate.

Taylor Rule

- Taylor argued that the central bank should follow the following rule:

$$i_t = i^* + a(\pi_t - \pi^*) - b(u_t - u_n)$$

where, a and b are positive coefficients.

- If $\pi_t - \pi^*$, and $u_t - u_n$, then the central bank should set i_t equal to its target value, i^*. This way the economy can ensure both inflation at the targeted rate, and unemployment rate at the natural rate.
- If inflation is higher than the target $(\pi_t > \pi^*)$, the central bank should increase the nominal interest rate i_t above i^*. This higher interest rate will increase unemployment, and this increase in unemployment will lead to a decrease in inflation.

Taylor Rule

- Taylor argued that the central bank should follow the following rule:

$$i_t = i^* + a(\pi_t - \pi^*) - b(u_t - u_n)$$

  where, a and b are positive coefficients.
- If $\pi_t - \pi^*$, and $u_t - u_n$, then the central bank should set i_t equal to its target value, i^*. This way the economy can ensure both inflation at the targeted rate, and unemployment rate at the natural rate.
- If inflation is higher than the target $(\pi_t > \pi^*)$, the central bank should increase the nominal interest rate i_t above i^*. This higher interest rate will increase unemployment, and this increase in unemployment will lead to a decrease in inflation.

Taylor Rule

- Taylor argued that the central bank should follow the following rule:

$$i_t = i^* + a(\pi_t - \pi^*) - b(u_t - u_n)$$

  where, a and b are positive coefficients.
- If $\pi_t - \pi^*$, and $u_t - u_n$, then the central bank should set i_t equal to its target value, i^*. This way the economy can ensure both inflation at the targeted rate, and unemployment rate at the natural rate.
- If inflation is higher than the target $(\pi_t > \pi^*)$, the central bank should increase the nominal interest rate i_t above i^*. This higher interest rate will increase unemployment, and this increase in unemployment will lead to a decrease in inflation.

- The coefficient a reflect how much the central bank cares about inflation. The higher a is, the more the central bank will increase the interest rate in response to inflation, the more the economy will slow down, the more unemployment will increase, and the faster inflation will return to the target inflation rate.
- If unemployment is higher than the natural rate of unemployment ($u_t > u_n$), the central bank should decrease the nominal interest rate.
- The coefficient b reflect how much the central bank cares about unemployment. The higher b is, the more the central bank will be willing to deviate from target inflation to keep unemployment close to the natural rate.

- The coefficient a reflect how much the central bank cares about inflation. The higher a is, the more the central bank will increase the interest rate in response to inflation, the more the economy will slow down, the more unemployment will increase, and the faster inflation will return to the target inflation rate.
- If unemployment is higher than the natural rate of unemployment ($u_t > u_n$), the central bank should decrease the nominal interest rate.
- The coefficient b reflect how much the central bank cares about unemployment. The higher b is, the more the central bank will be willing to deviate from target inflation to keep unemployment close to the natural rate.

- The coefficient a reflect how much the central bank cares about inflation. The higher a is, the more the central bank will increase the interest rate in response to inflation, the more the economy will slow down, the more unemployment will increase, and the faster inflation will return to the target inflation rate.
- If unemployment is higher than the natural rate of unemployment ($u_t > u_n$), the central bank should decrease the nominal interest rate.
- The coefficient b reflect how much the central bank cares about unemployment. The higher b is, the more the central bank will be willing to deviate from target inflation to keep unemployment close to the natural rate.

The Fed in Action

- **The Mandate of the Fed:**
  The mandate of the Federal Reserve System was defined in the **Humphrey-Hawkins Act**, passed by Congress in 1978.
- Act required the FED to maintain long-run growth of the monetary and credit aggregates commensurate with the economy's long-run potential to increase production, to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates.

The Fed in Action

- **The Mandate of the Fed:**
  The mandate of the Federal Reserve System was defined in the **Humphrey-Hawkins Act**, passed by Congress in 1978.
- Act required the FED to maintain long-run growth of the monetary and credit aggregates commensurate with the economy's long-run potential to increase production, to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates.

- **Organization of the Fed:**
  The Federal Reserve System is composed of three parts:
  (i)A set of 12 Federal Reserve Districts.
  (ii)The Board of Governors.
  (iii)The Federal Open Market Committee (FOMC) and the Open Market Desk.
- The Federal Open Market Committee (FOMC) is made of twelve members:
  Seven members of the Board of Governors of the Federal Reserve System; president of the FRB of New York; and four of the remaining eleven Reserve Bank presidents, who serve one-year terms on a rotating basis.

- **Organization of the Fed:**
  The Federal Reserve System is composed of three parts:
  (i)A set of 12 Federal Reserve Districts.
  (ii)The Board of Governors.
  (iii)The Federal Open Market Committee (FOMC) and the Open Market Desk.
- The Federal Open Market Committee (FOMC) is made of twelve members:
  Seven members of the Board of Governors of the Federal Reserve System; president of the FRB of New York; and four of the remaining eleven Reserve Bank presidents, who serve one-year terms on a rotating basis.

The Instruments of Monetary Policy

- **Reserve Requirements:** The minimum amount of reserves that banks must hold in proportion to checkable deposits. With this instrument, the Fed can affect the volume of lending by banks.
- **Lending to Banks:** The Fed sets the discount rate (the rate at which the Fed lends to commercial banks) and controls the volume of its lending to commercial banks. Thus, the Fed can affect the interest rates in the economy as well as the volume of bank lending.

The Instruments of Monetary Policy

- **Reserve Requirements:** The minimum amount of reserves that banks must hold in proportion to checkable deposits. With this instrument, the Fed can affect the volume of lending by banks.
- **Lending to Banks:** The Fed sets the discount rate (the rate at which the Fed lends to commercial banks) and controls the volume of its lending to commercial banks. Thus, the Fed can affect the interest rates in the economy as well as the volume of bank lending.

- **Open-market operations:** The purchase and sale of government bonds in the open market is the main instrument of U.S. monetary policy (e.g., Large Scale Asset Purchase strategy). It is convenient and flexible. Thus the Fed can affect the interest rates as well as the volume liquidity and bank lending in the economy.
- **The Implementation of Policy**
  (i) The most important monetary policy decisions are made at meetings of the FOMC.
  (ii) Fed staff prepares forecasts and simulations of the effects of different monetary policies on the economy, and identifies the major sources of uncertainty.
  (iii) The conduct of open-market operations between FOMC meetings are left to the Open Market Desk.

Does the Fed have an inflation target, or follow an interest rate rule?

- Alan Greenspan, the chairman of the Fed until 2006, never specifically stated an inflation target, nor has his successor, Ben Bernanke.
- The evidence strongly shows that the Fed has, in fact, an implicit inflation target of about $2-3\%$. It is also clear that the Fed adjusts the federal funds rate in response both to the inflation rate and to deviations of unemployment from the natural rate.

Does the Fed have an inflation target, or follow an interest rate rule?

- Alan Greenspan, the chairman of the Fed until 2006, never specifically stated an inflation target, nor has his successor, Ben Bernanke.
- The evidence strongly shows that the Fed has, in fact, an implicit inflation target of about $2-3\%$. It is also clear that the Fed adjusts the federal funds rate in response both to the inflation rate and to deviations of unemployment from the natural rate.

Does it matter that the Fed has neither an explicit inflation target nor an explicit interest rate rule?

- Many economists say: Do not argue with success. They argue that the record of monetary policy under both Alan Greenspan and Ben Bernanke has been good.
- Other economists are more skeptical. They argue that it is unwise to have monetary policy depend so much on one individual, that the next Chairman of the Fed may not be able to achieve the same mix of credibility and flexibility.

Does it matter that the Fed has neither an explicit inflation target nor an explicit interest rate rule?

- Many economists say: Do not argue with success. They argue that the record of monetary policy under both Alan Greenspan and Ben Bernanke has been good.
- Other economists are more skeptical. They argue that it is unwise to have monetary policy depend so much on one individual, that the next Chairman of the Fed may not be able to achieve the same mix of credibility and flexibility.

The following graph reflects that in 1990–1991, and again in 2001, the Fed dramatically decreased the federal funds rate to reduce the depth and length of the recession.

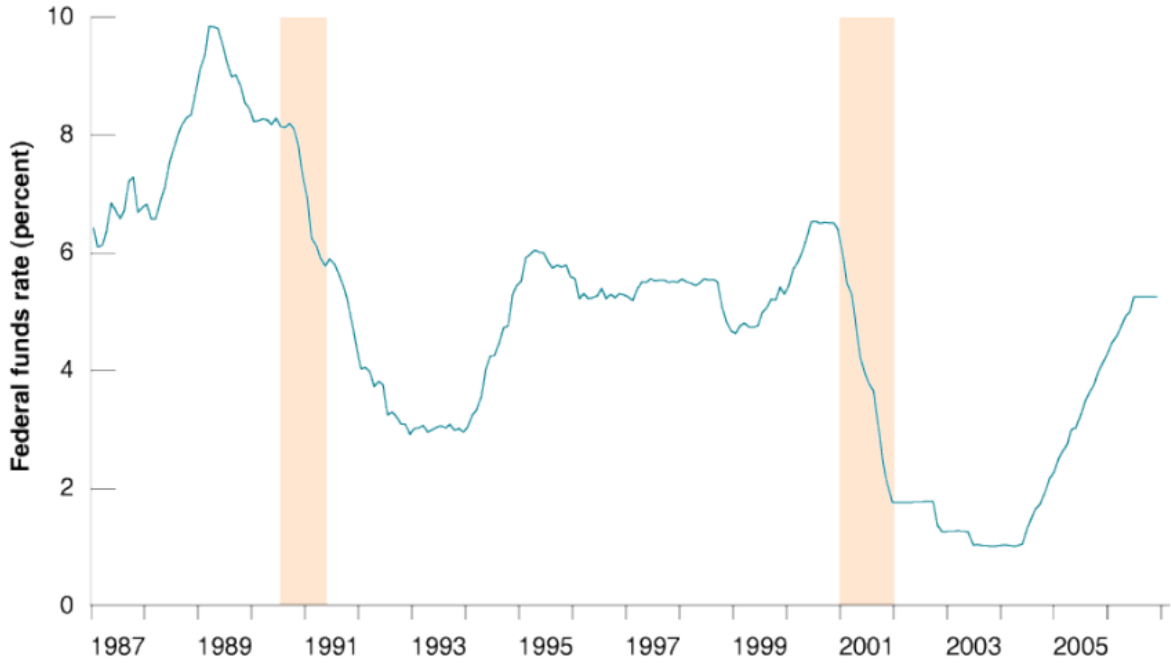

Figure: The Federal Funds Rate since 1987