Economics 302
Intermediate Macroeconomic Theory and Policy
(Spring 2007)

Lectures 12-13

October 13-15

Outline

- How the Fed controls the money supply
  - old version
  - new version
- The demand for money, currency and checking deposits
- How the Fed traditionally conducts monetary policy
- Lags in the effect of monetary policy
- Accounting for recent changes

Fed Control of the Money Supply

- Fed directly controls Money Base
- The money supply consists of currency (CU) and checking deposits (D) that individuals and firms hold at banks.
- The money supply *M* is therefore defined as:

  M = CU + D

  - Let's refer to balance sheets

TABLE 14.1 FINANCIAL RELATIONSHIPS (BALANCE SHEETS) BETWEEN THE BANKS, THE FED, THE GOVERNMENT, AND THE PRIVATE SECTOR

PRIVATE NONFINANCIAL		BANKS		FED		GOVERNMENT	
ASSETS	LIABILITIES	ASSETS	LIABILITIES	ASSETS	LIABILITIES	ASSETS	LIABILITIES
Currency (CU)					Currency (CU)		
Deposits (D)			Deposits (D)				
Bonds (B)		Bonds (B)		Bonds (B)			Bonds (B)
		Reserves (RE)			Reserves (RE)		
	Loans	Loans					

Fed Control of the Money Base

- The Fed controls the money supply by selling bonds to, or by purchasing bonds from, the banks, and the public (open market operations, or “OMO’s”
- The monetary base (M_B) is defined as currency plus reserves:

$$M_B = CU + RE$$

  - The Fed does not try to exercise separate control of reserves and currency.

Monetary Base/Money Supply Link

Reserve requirements.

- RE = rD

Currency demand.

- CU = cD

- From the definition of the money supply:

  M = CU + D = cD + D = (1+c)D

  M_B = CU + RE = cD + rD = (c+r)D

- Dividing *M* by M_B, we get (*m*)

$$M = \frac{1+c}{r+c} M_B, m \equiv \frac{1+c}{r+c} \qquad (14.5)$$

Excess and Borrowed Reserves

- In the US, the reserve requirement for banks is10 percent.
- Banks always keep some **excess reserves.**
- The amount of excess reserves has typically been small because banks *didn't use to receive interest on their reserve balances at the Fed.*
- Banks can also increase their reserves by borrowing reserves from the Fed.
  - Bank reserves borrowed from the Fed are called **borrowed reserves.**
  - The Fed has traditionally provided loans to troubled banks.

Excess Reserves and Borrowed Reserves

- The Fed usually makes loans to banks at the borrowing “window” of one of the 12 District Federal Reserve Banks.
  - The interest rate on the borrowings is called the **discount rate**.
  - The discount rate used to be below Fed Funds rate. Now above.
  - Fed now pays interest on excess reserves.

New M_B/Money Supply Link

Reserves now depend on R_{RES}.

- RE = řD

Currency demand.

- CU = cD

- From the definition of the money supply:

  M = CU + D = cD + D = (1+c)D

  M_B = CU + RE = cD + řD = (c+ř)D

- Dividing *M* by M_B, we get a variable *m*

$$M = \frac{1+c}{\breve{r}+c} M_B$$

Distinguishing between Monetary and Fiscal Policies

- Fiscal policy is defined as bond-financed changes in government expenditures and taxes.
  - The monetary base and the money supply remain unchanged, and bonds are issued if government spending increases or taxes are reduced.

Distinguishing between Monetary and Fiscal Policies

- Monetary policy is defined as a change in the monetary base matched by a change in government bonds in the opposite direction.
  - This exchange of money for bonds is an *open-market operation*.
  - Note that open-market operations do not affect government purchases (*G*), transfers (*F*), interest payments (*Q*), or taxes (*T*). Hence, open-market operations do not affect fiscal policy.

The Demand for Money

- Three motives in people's demand for money:
- **transactions motive,**
- **precautionary motive,**
- **speculative motive.**

The Transactions Demand for Money: An Inventory Theory

- Families and businesses hold currency and keep funds in their checking accounts for the same reason stores keep inventories of goods for sale.
  - Because income is received periodically and expenditures occur every day, it is necessary to hold a stock of currency and checking deposits.
  - This inventory theory of the demand for money falls into the category of **transactions motive.**

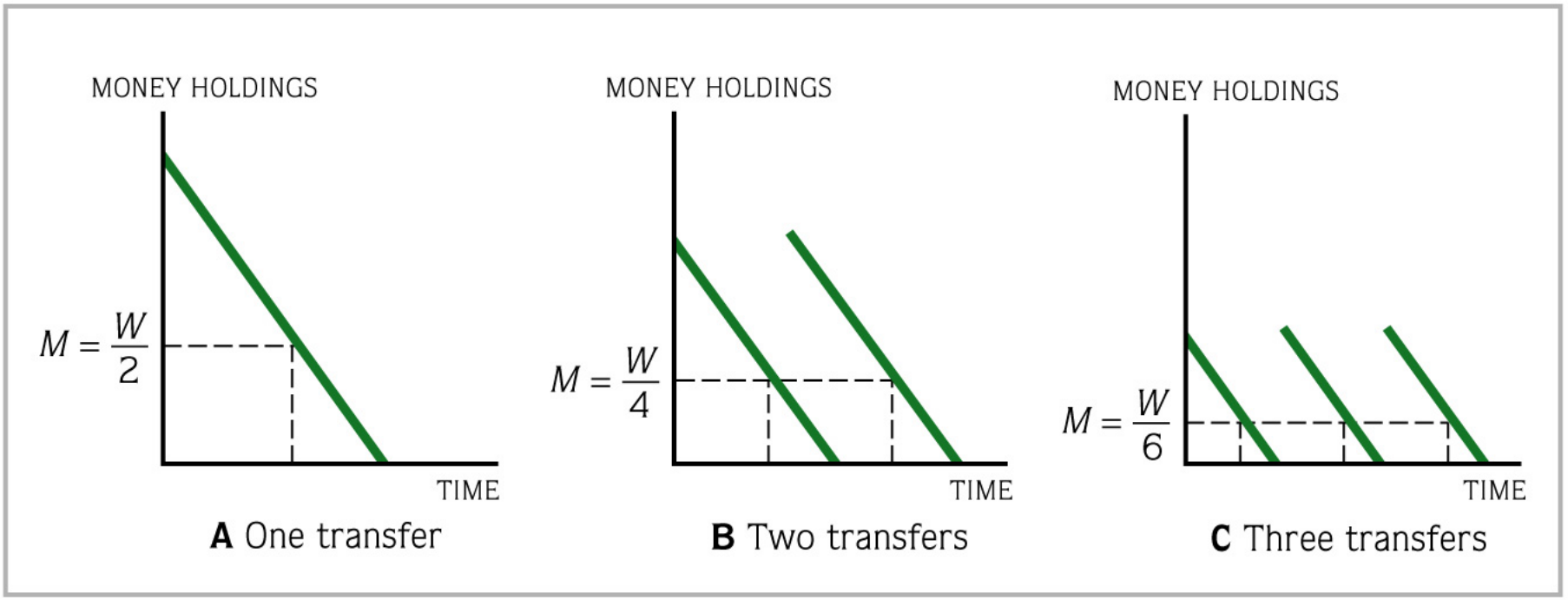

FIGURE 14.1 Three Alternative Money Management Strategies

Inventory Theoretic Approach

$$\frac{kW}{2M} = R_0 M$$

$$\frac{kW}{2R_0} = M^2$$

$$M = \sqrt{\frac{kW}{2R}}$$

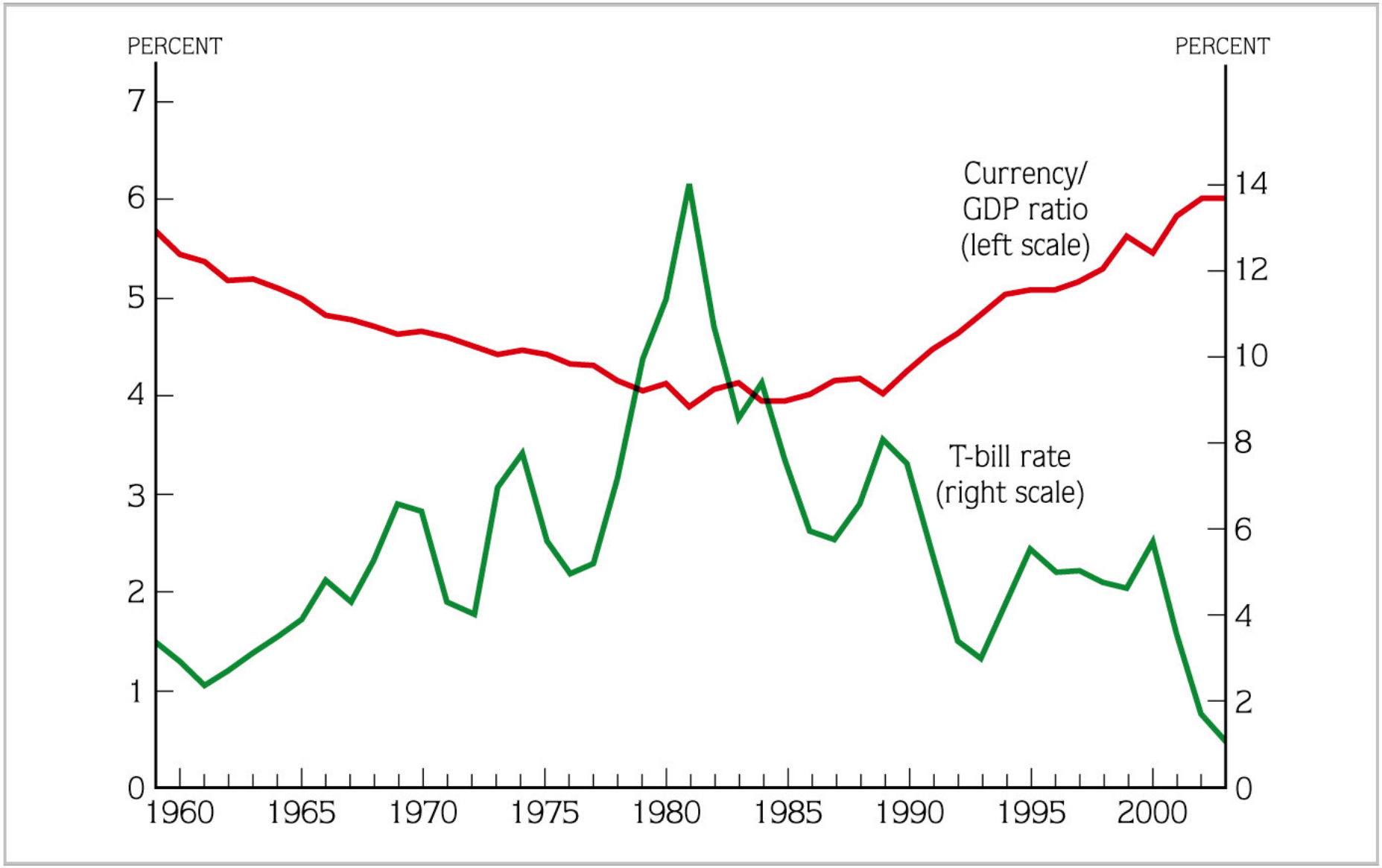

FIGURE 14.2 Currency Divided by GDP

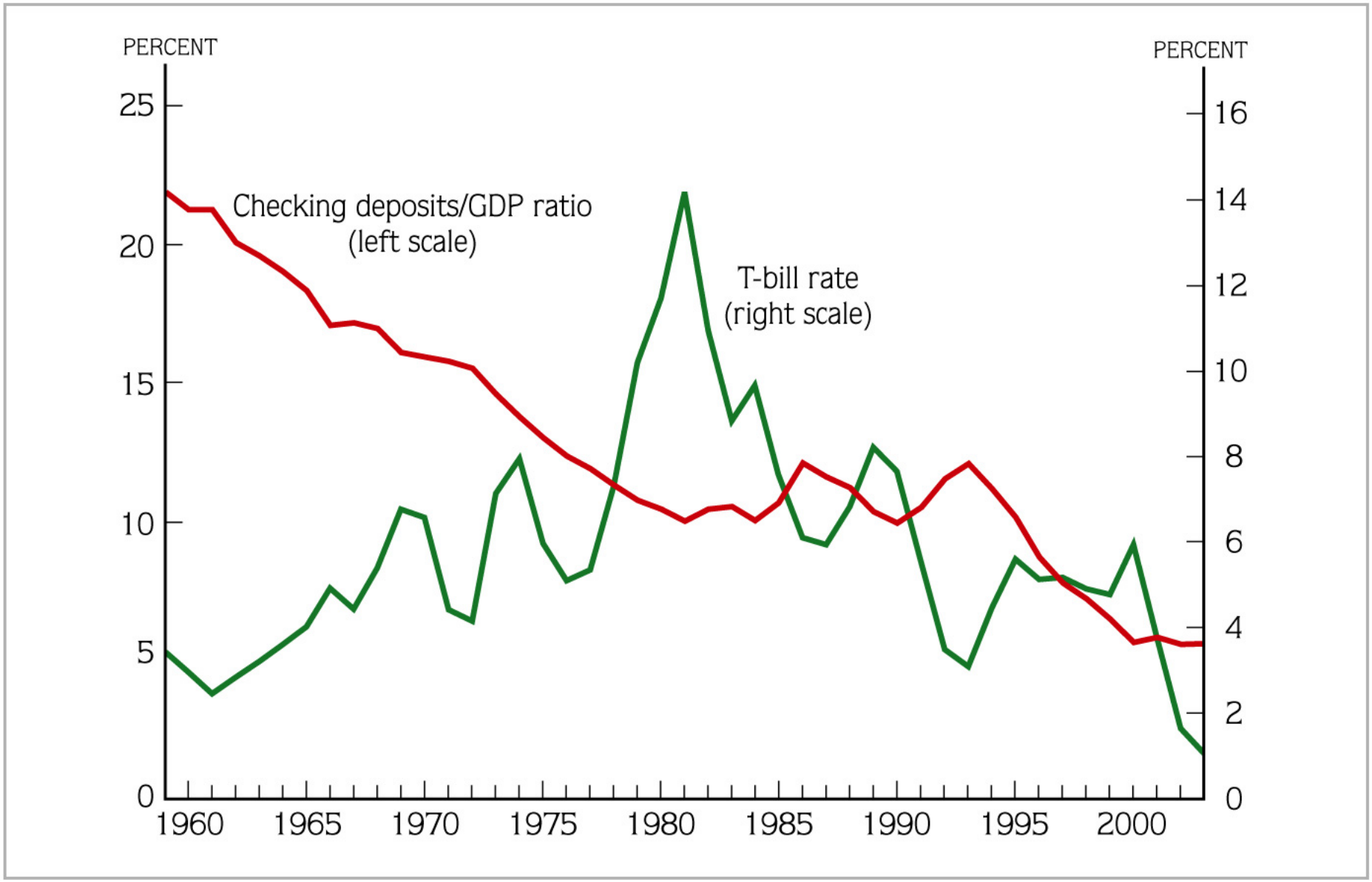

FIGURE 14.3 Checking Deposits Divided by GDP

The Demand Function for Money

- We can summarize the demand for currency and checking deposits in two demand functions:

  $CU = CU(R, PY)$

  $D = D(R, PY)$

  – The equations show that the demand for currency and the demand for checking deposits are functions of the market interest rate R and nominal income PY (the price level P times real income Y).

14.4 HOW THE FED CONDUCTS MONETARY POLICY

- How should the Fed use its power to achieve its objectives of keeping inflation low and economic fluctuations small?
- Decisions about monetary policy in the United States are made by the *Federal Open Market Committee* (FOMC).

Setting Interest Rates or Money Growth

- FOMC alternatives for monetary policy:
  - **Set the growth rate of the money supply.**
  - **Set the short-term interest rate.**
  - **Money supply setting is preferable if shifts in the IS curve dominate.**
  - **Interest rate setting preferable if shifts in the LM curve dominate.**

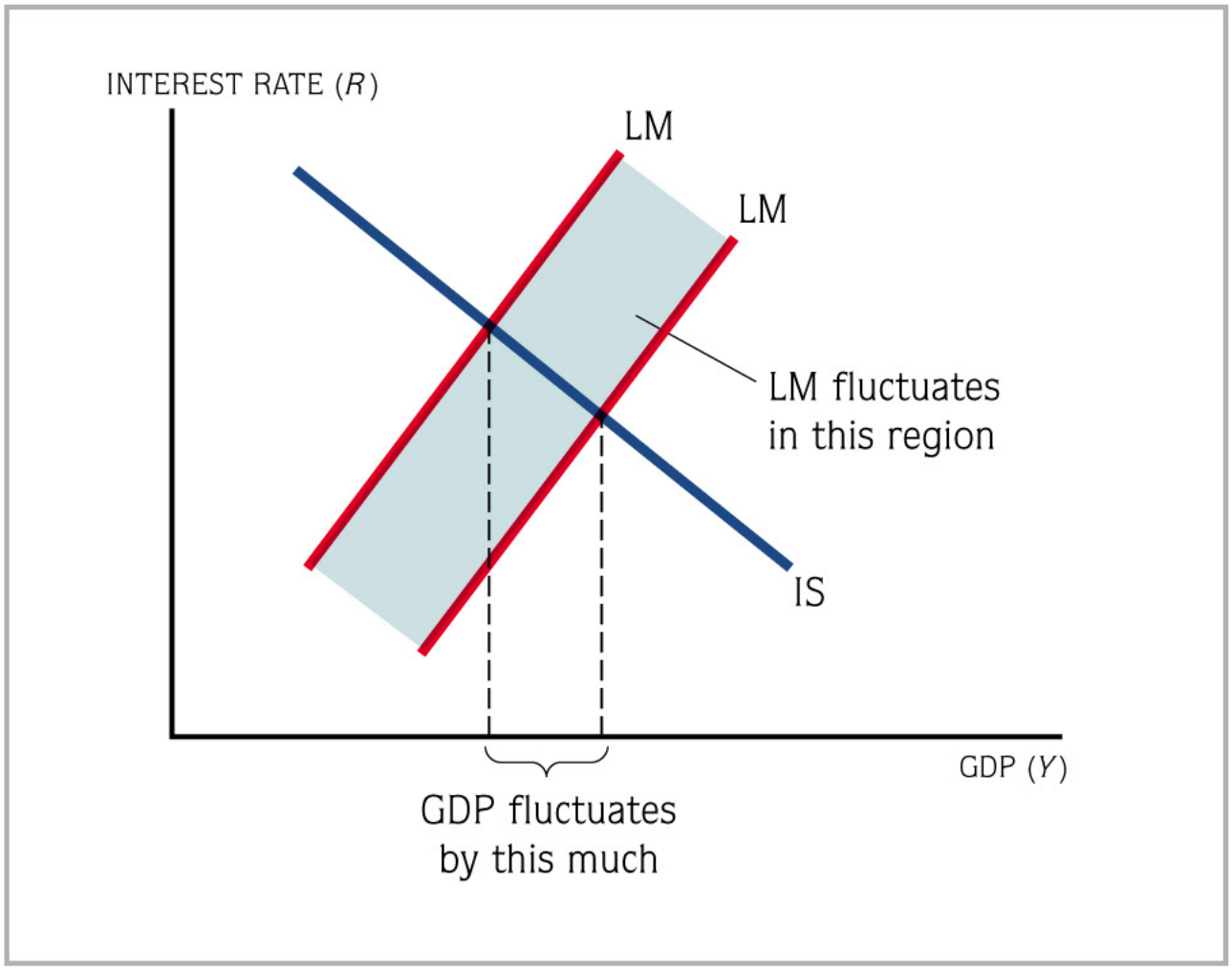

FIGURE 14.4 Shifts in the LM Curve

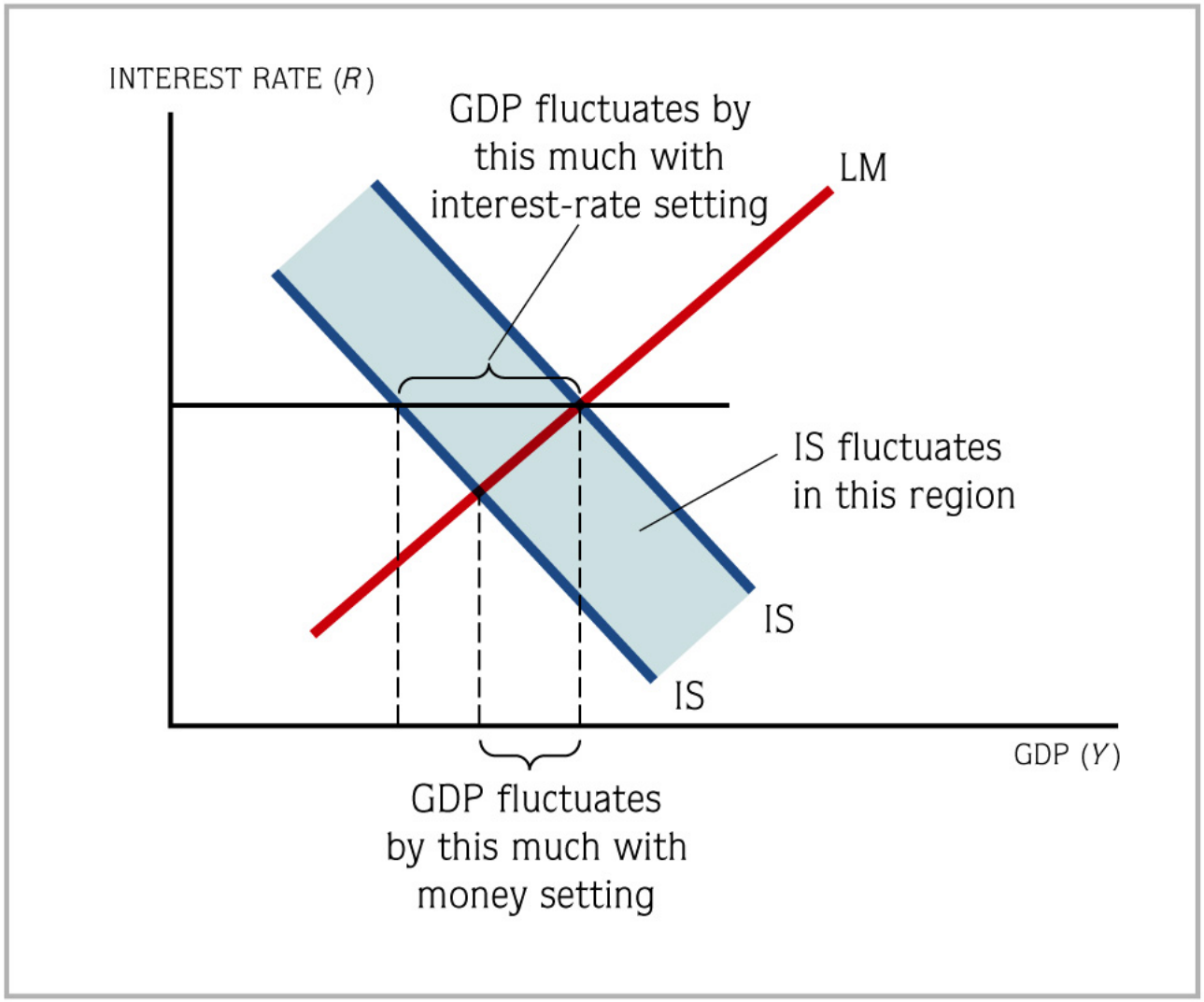

FIGURE 14.5 Shifts in the IS Curve

The Zero Bound on Nominal Interest Rates

- What are the implications for the conduct of monetary policy when nominal interest rates approach or equal zero?
- The constraint of a *zero bound* on the nominal interest rate limits the scope of monetary policy.
- If the nominal interest rate is zero, it cannot be lowered any further to stimulate the economy.

The Zero Bound on Nominal Interest Rates

- Deflation is negative inflation (falling prices).
- With deflation, a zero nominal interest rate produces a positive real interest rate.
- This may be too high to stimulate the economy, and cannot be lowered any further.

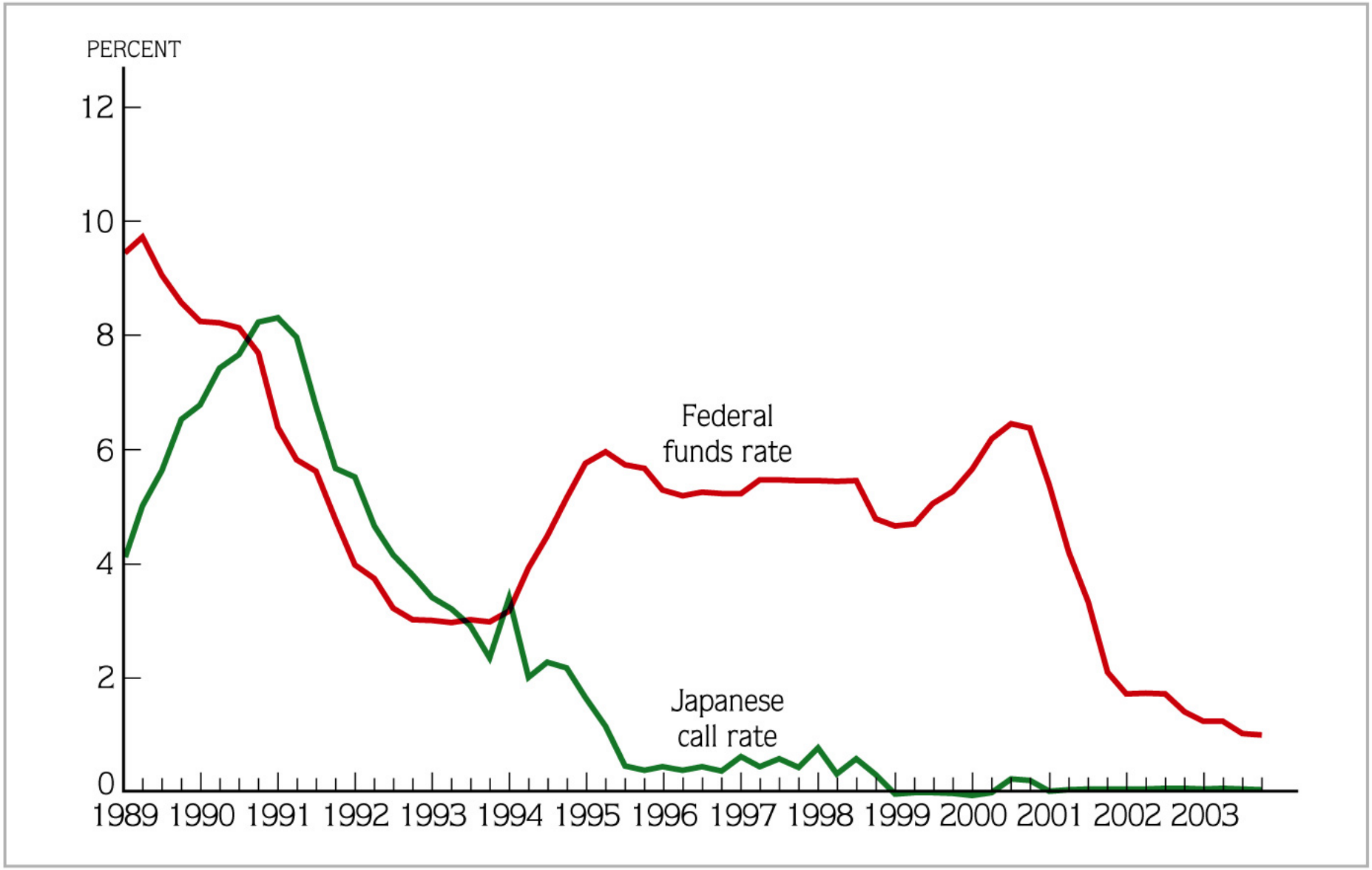

FIGURE 14.6 Short-Term Interest Rates in Japan and the United States

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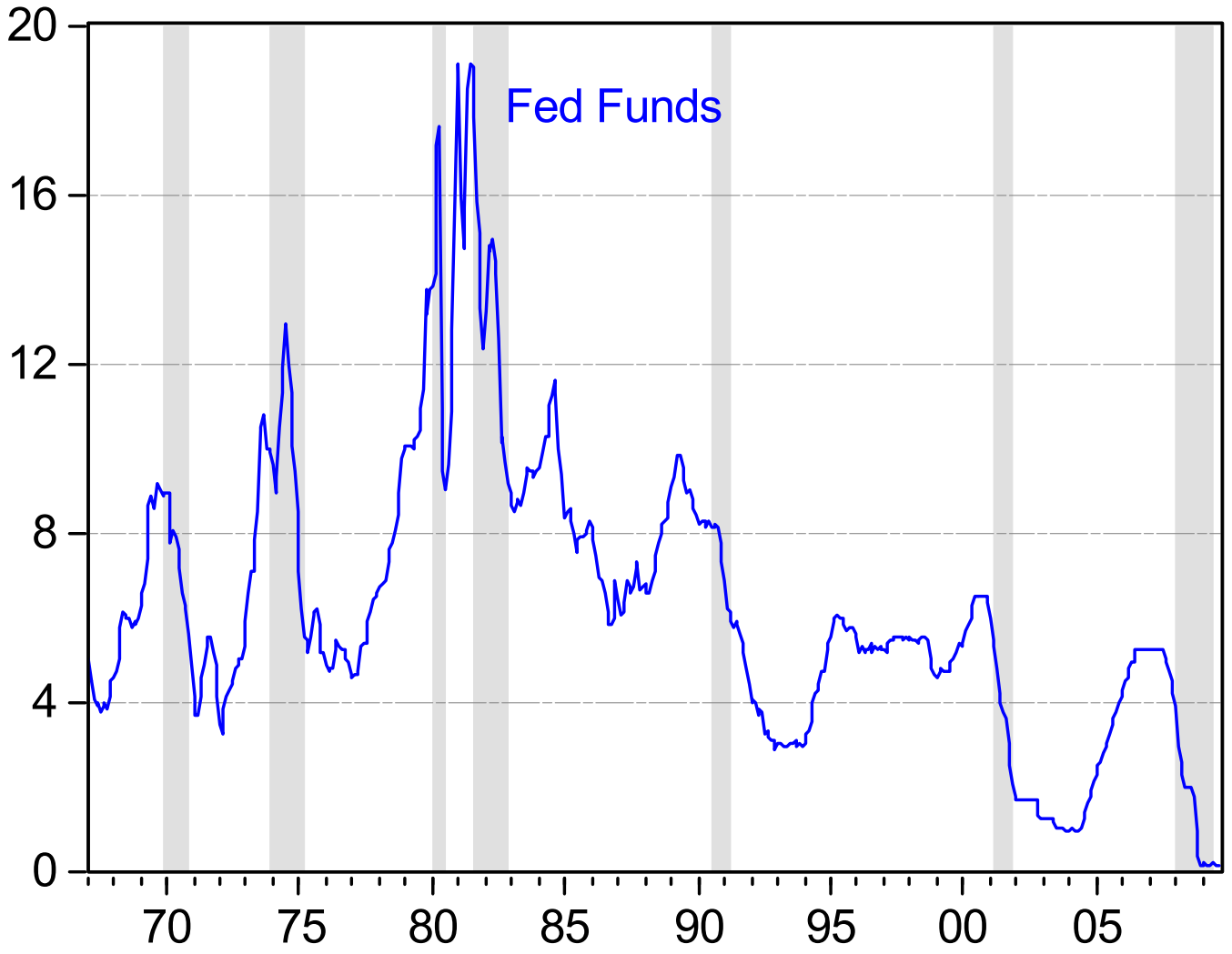
Zero Bound in America



Lags in Monetary Policy

- Monetary policy affects real GDP and prices with a lag.
- The evidence suggests that the peak effect of monetary policy on GDP occurs after a lag of between one and two years.
- Uncertainty about the future state of the economy adds to the caution of monetary policy makers.