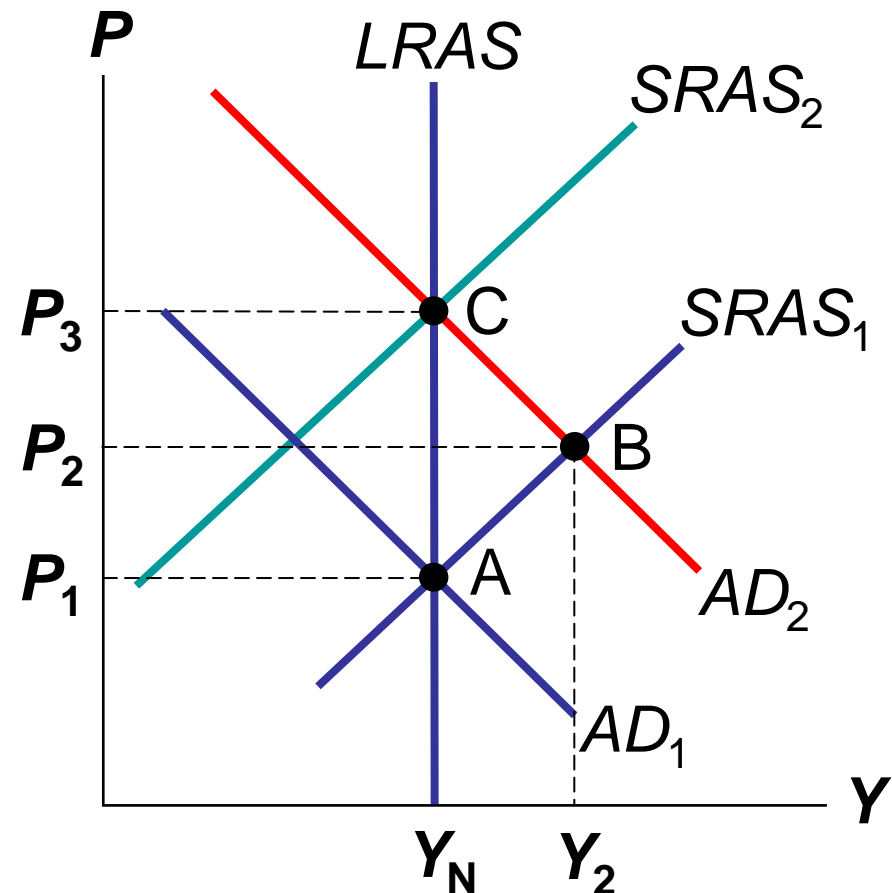


## ACTIVE LEARNING 2: Answers

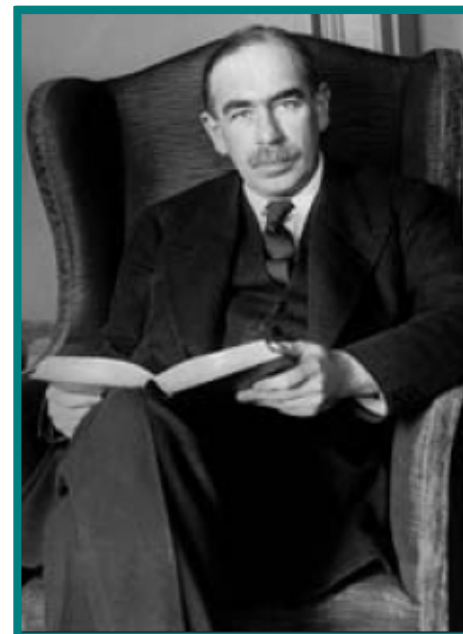
Event: a tax cut

1. affects **C**, *AD* curve
2. shifts *AD* right
3. SR eq'm at point B.  
*P* and *Y* higher,  
unemp lower
4. Over time,  $P_E$  rises,  
*SRAS* shifts left,  
until LR eq'm at C.  
*Y* and unemp back  
at initial levels.



# John Maynard Keynes, 1883-1946

- *The General Theory of Employment, Interest, and Money*, 1936
- Argued recessions and depressions can result from inadequate demand; policymakers should shift *AD*.
- Famous critique of classical theory:  
*The long run is a misleading guide to current affairs. In the long run, we are all dead. Economists set themselves too easy, too useless a task if in tempestuous seasons they can only tell us when the storm is long past, the ocean will be flat.*



# CONCLUSION

- This chapter has introduced the model of aggregate demand and aggregate supply, which helps explain economic fluctuations.
- Keep in mind: these fluctuations are deviations from the long-run trends explained by the models we learned in previous chapters.
- In the next chapter, we will learn how policymakers can affect aggregate demand with fiscal and monetary policy.

# CHAPTER SUMMARY

- Short-run fluctuations in GDP and other macroeconomic quantities are irregular and unpredictable. Recessions are periods of falling real GDP and rising unemployment.
- Economists analyze fluctuations using the model of aggregate demand and aggregate supply.
- The aggregate demand curve slopes downward because a change in the price level has a wealth effect on consumption, an interest-rate effect on investment, and an exchange-rate effect on net exports.

# CHAPTER SUMMARY

- Anything that changes **C**, **I**, **G**, or **NX** – except a change in the price level – will shift the aggregate demand curve.
- The long-run aggregate supply curve is vertical, because changes in the price level do not affect output in the long run.
- In the long run, output is determined by labor, capital, natural resources, and technology; changes in any of these will shift the long-run aggregate supply curve.

# CHAPTER SUMMARY

- In the short run, output deviates from its natural rate when the price level is different than expected, leading to an upward-sloping short-run aggregate supply curve. The three theories proposed to explain this upward slope are the sticky wage theory, the sticky price theory, and the misperceptions theory.
- The short-run aggregate-supply curve shifts in response to changes in the expected price level and to anything that shifts the long-run aggregate supply curve.

# CHAPTER SUMMARY

- Economic fluctuations are caused by shifts in aggregate demand and aggregate supply.
- When aggregate demand falls, output and the price level fall in the short run. Over time, a change in expectations causes wages, prices, and perceptions to adjust, and the short-run aggregate supply curve shifts rightward. In the long run, the economy returns to the natural rates of output and unemployment, but with a lower price level.

# CHAPTER SUMMARY

- A fall in aggregate supply results in stagflation – falling output and rising prices.  
Wages, prices, and perceptions adjust over time, and the economy recovers.



# 34

## **The Influence of Monetary and Fiscal Policy on Aggregate Demand**

**PRINCIPLES OF**  

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**ECONOMICS**  


---

**FOURTH EDITION**

**N. GREGORY MANKIW**

**PowerPoint® Slides  
by Ron Cronovich**

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## In this chapter, look for the answers to these questions:

- How does the interest-rate effect help explain the slope of the aggregate-demand curve?
- How can the central bank use monetary policy to shift the *AD* curve?
- In what two ways does fiscal policy affect aggregate demand?
- What are the arguments for and against using policy to try to stabilize the economy?

# Introduction

- Earlier chapters covered:
  - the long-run effects of fiscal policy on interest rates, investment, economic growth
  - the long-run effects of monetary policy on the price level and inflation rate
- This chapter focuses on the short-run effects of fiscal and monetary policy, which work through aggregate demand.

# Aggregate Demand

- Recall, the *AD* curve slopes downward for three reasons:
  - the wealth effect
  - the interest-rate effect
  - the exchange-rate effect
- Next: a supply-demand model that helps explain the interest-rate effect and how monetary policy affects aggregate demand.

the most important of these effects for the U.S. economy

# The Theory of Liquidity Preference

- A simple theory of the interest rate (denoted  $r$ )
- $r$  adjusts to balance supply and demand for money
- Money supply: assume fixed by central bank, does not depend on interest rate

# The Theory of Liquidity Preference

- Money demand reflects how much wealth people want to hold in liquid form.
- For simplicity, suppose household wealth includes only two assets:
  - Money – liquid but pays no interest
  - Bonds – pay interest but not as liquid
- A household's “money demand” reflects its *preference for liquidity*.
- The variables that influence money demand:  **$Y$** ,  **$r$** , and  **$P$** .

# Money Demand

- Suppose real income ( $Y$ ) rises. Other things equal, what happens to money demand?
- If  $Y$  rises:
  - Households want to buy more g&s, so they need more money.
- *i.e., an increase in  $Y$  causes an increase in money demand, other things equal.*

## ACTIVE LEARNING 1:

### The determinants of money demand

- A. Suppose  $r$  rises, but  $Y$  and  $P$  are unchanged. What happens to money demand?
- B. Suppose  $P$  rises, but  $Y$  and  $r$  are unchanged. What happens to money demand?



## ACTIVE LEARNING 1:

### Answers

- A.** Suppose  $r$  rises, but  $Y$  and  $P$  are unchanged. What happens to money demand?

$r$  is the opportunity cost of holding money.

An increase in  $r$  reduces money demand: Households attempt to buy bonds to take advantage of the higher interest rate.

Hence, **an increase in  $r$  causes a decrease in money demand, other things equal.**

## ACTIVE LEARNING 1:

### Answers

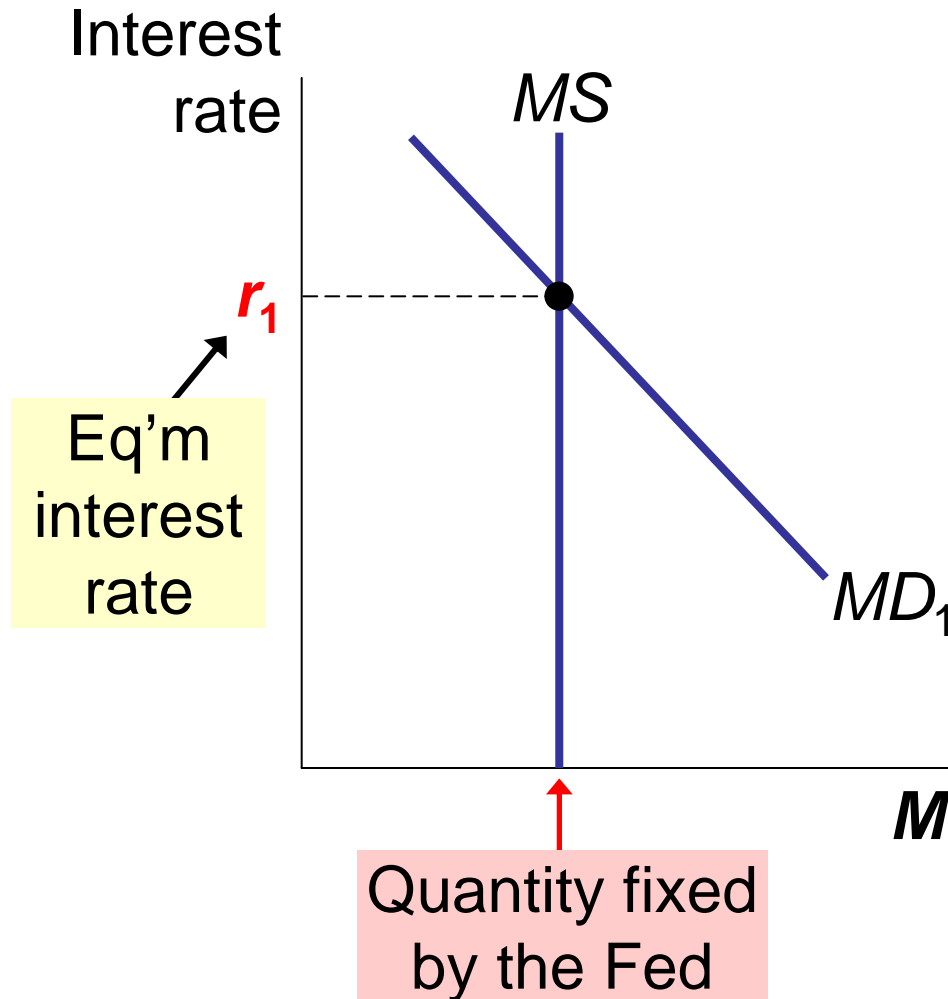
**B.** Suppose  $P$  rises, but  $Y$  and  $r$  are unchanged. What happens to money demand?

If  $Y$  is unchanged, people will want to buy the same amount of g&s.

Since  $P$  is higher, they will need more money to do so.

Hence, **an increase in  $P$  causes an increase in money demand, other things equal.**

# How $r$ Is Determined

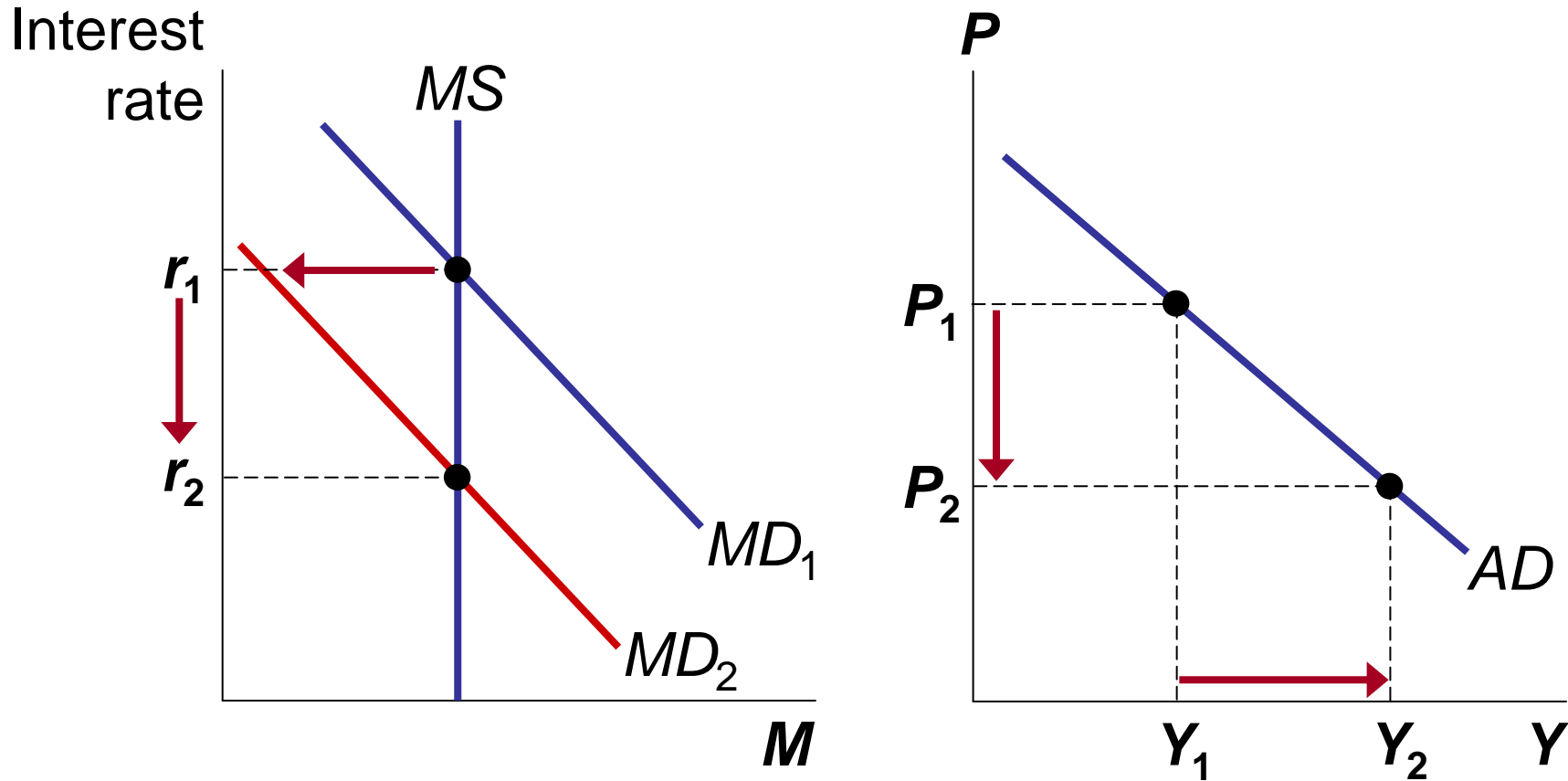


**$MS$  curve is vertical:**  
Changes in  $r$  do not affect  $MS$ , which is fixed by the Fed.

**$MD$  curve is downward sloping:**  
a fall in  $r$  increases money demand.

# How the Interest-Rate Effect Works

A fall in  $P$  reduces money demand, which lowers  $r$ .



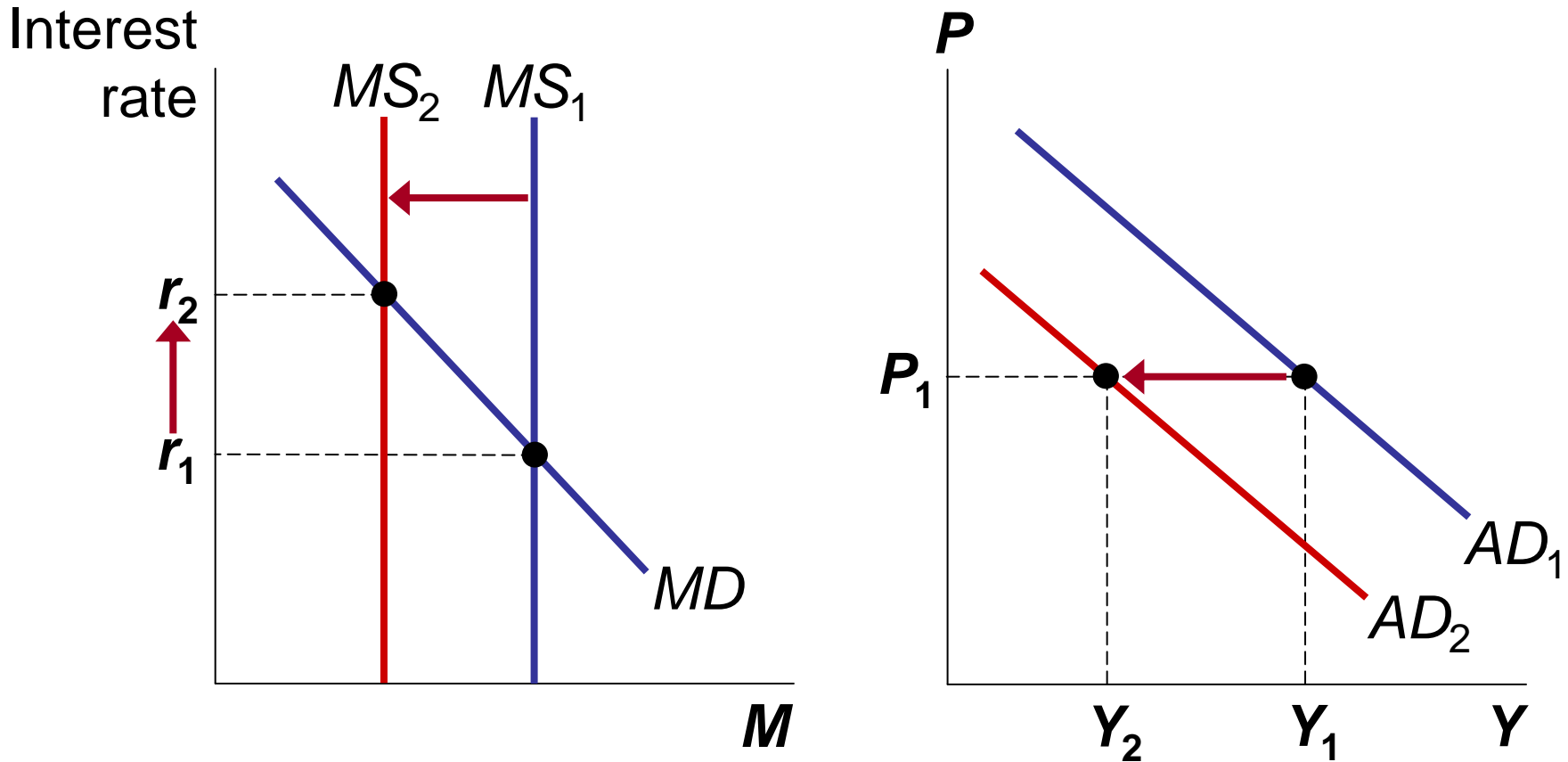
A fall in  $r$  increases  $I$  and the quantity of g&s demanded.

# Monetary Policy and Aggregate Demand

- To achieve macroeconomic goals, the Fed can use monetary policy to shift the *AD* curve.
- The Fed's policy instrument is the money supply.
- The news often reports that the Fed targets the interest rate.
  - more precisely, the **federal funds rate** – which banks charge each other on short-term loans
- To change the interest rate and shift the *AD* curve, the Fed conducts open market operations to change the money supply.

# The Effects of Reducing the Money Supply

The Fed can raise  $r$  by reducing the money supply.



An increase in  $r$  reduces the quantity of g&s demanded.

## ACTIVE LEARNING 2: Exercise

For each of the events below,

- determine the short-run effects on output
  - determine how the Fed should adjust the money supply and interest rates to stabilize output
- A.** Congress tries to balance the budget by cutting govt spending.
- B.** A stock market boom increases household wealth.
- C.** War breaks out in the Middle East, causing oil prices to soar.

## ACTIVE LEARNING 2:

### Answers

- A.** Congress tries to balance the budget by cutting govt spending.

This event would reduce agg demand and output.

To offset this event, the Fed should increase  $MS$  and reduce  $r$  to increase agg demand.



## ACTIVE LEARNING 2:

### Answers

**B.** A stock market boom increases household wealth.

This event would increase agg demand, raising output above its natural rate.

To offset this event, the Fed should reduce  $MS$  and increase  $r$  to reduce agg demand.

## ACTIVE LEARNING 2:

### Answers

- C.** War breaks out in the Middle East, causing oil prices to soar.

This event would reduce agg supply, causing output to fall.

To offset this event, the Fed should increase  $MS$  and reduce  $r$  to increase agg demand.

# Fiscal Policy and Aggregate Demand

- **Fiscal policy**: the setting of the level of govt spending and taxation by govt policymakers
- **Expansionary** fiscal policy
  - an increase in  $G$  and/or decrease in  $T$
  - shifts  $AD$  right
- **Contractionary** fiscal policy
  - a decrease in  $G$  and/or increase in  $T$
  - shifts  $AD$  left
- Fiscal policy has two effects on  $AD$ .

# The Multiplier Effect

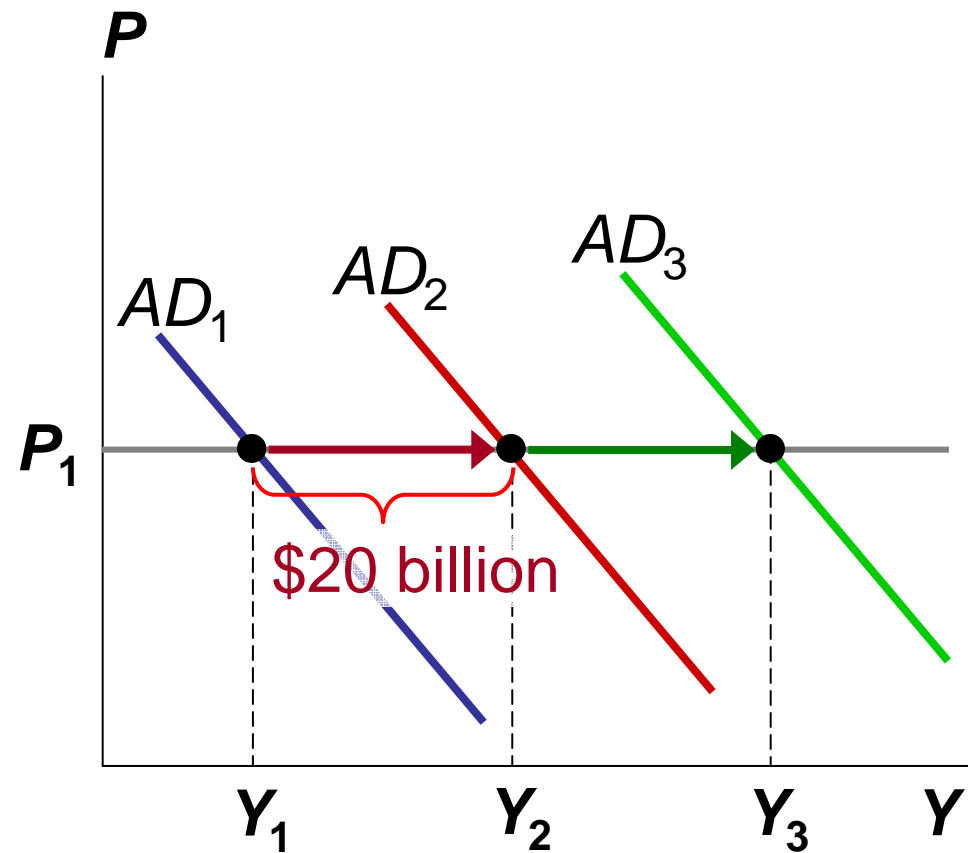
- If the govt buys \$20b of planes from Boeing, Boeing's revenue increases by \$20b.
- This is distributed to Boeing's workers (as wages) and owners (as profits or stock dividends).
- These people are also consumers, and will spend a portion of the extra income.
- This extra consumption causes further increases in aggregate demand.

**Multiplier effect:** the additional shifts in *AD* that result when fiscal policy increases income and thereby increases consumer spending

# The Multiplier Effect

A \$20b increase in **G** initially shifts *AD* to the right by \$20b.

The increase in **Y** causes **C** to rise, which shifts *AD* further to the right.



# Marginal Propensity to Consume

- How big is the multiplier effect?  
It depends on how much consumers respond to increases in income.
- **Marginal propensity to consume (MPC):** the fraction of extra income that households consume rather than save
- *E.g.*, if  $MPC = 0.8$  and income rises \$100, **C** rises \$80.

## A Formula for the Multiplier

Notation:  $\Delta \mathbf{G}$  is the change in  $\mathbf{G}$ ,  
 $\Delta \mathbf{Y}$  and  $\Delta \mathbf{C}$  are the ultimate changes in  $\mathbf{Y}$  and  $\mathbf{C}$

$$\mathbf{Y} = \mathbf{C} + \mathbf{I} + \mathbf{G} + \mathbf{NX} \quad \text{identity}$$

$$\Delta \mathbf{Y} = \Delta \mathbf{C} + \Delta \mathbf{G} \quad \mathbf{I} \text{ and } \mathbf{NX} \text{ do not change}$$

$$\Delta \mathbf{Y} = \text{MPC} \Delta \mathbf{Y} + \Delta \mathbf{G} \quad \text{because } \Delta \mathbf{C} = \text{MPC} \Delta \mathbf{Y}$$

$$\Delta \mathbf{Y} = \frac{1}{1 - \text{MPC}} \Delta \mathbf{G} \quad \text{solved for } \Delta \mathbf{Y}$$

*The multiplier*

## A Formula for the Multiplier

The size of the multiplier depends on  $MPC$ .

e.g., if  $MPC = 0.5$  multiplier = 2

if  $MPC = 0.75$  multiplier = 4

if  $MPC = 0.9$  multiplier = 10

$$\Delta Y = \frac{1}{1 - MPC} \Delta G$$

*The multiplier*

A bigger  $MPC$  means changes in  $Y$  cause bigger changes in  $C$ , which in turn cause more changes in  $Y$ .



## Other Applications of the Multiplier Effect

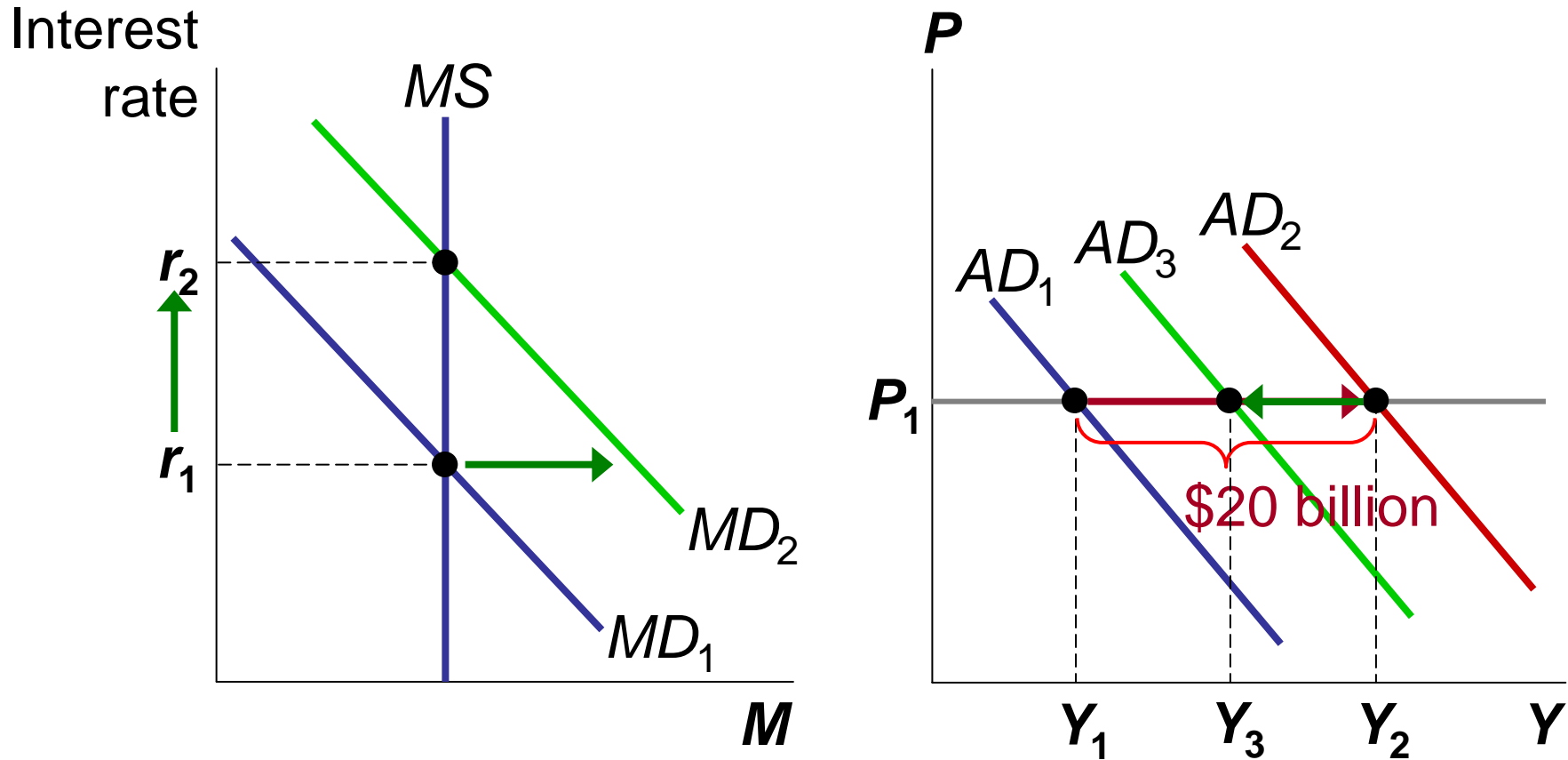
- The multiplier effect:  
each \$1 increase in **G** can generate more than a \$1 increase in agg demand.
- Also true for the other components of GDP.  
Example: Suppose a recession overseas reduces demand for U.S. net exports by \$10b.  
Initially, agg demand falls by \$10b.  
The fall in **Y** causes **C** to fall, which further reduces agg demand and income.

# The Crowding-Out Effect

- Fiscal policy has another effect on  $AD$  that works in the opposite direction.
- A fiscal expansion shifts  $AD$  to the right, but also raises  $r$ , which reduces investment and, thus, reduces the net increase in agg demand.
- So, the size of the  $AD$  shift may be smaller than the initial fiscal expansion.
- This is called the **crowding-out effect**.

# How the Crowding-Out Effect Works

A \$20b increase in  $G$  initially shifts  $AD$  right by \$20b



But higher  $Y$  increases  $MD$  and  $r$ , which reduces  $AD$ .

# Changes in Taxes

- A tax cut increases households' take-home pay.
- Households respond by spending a portion of this extra income, shifting  $AD$  to the right.
- The size of the shift is affected by the multiplier and crowding-out effects.
- Another factor: whether households perceive the tax cut to be temporary or permanent.
  - A permanent tax cut causes a bigger increase in  $C$  – and a bigger shift in the  $AD$  curve – than a temporary tax cut.

## ACTIVE LEARNING 3: Exercise

The economy is in recession.

Shifting the  $AD$  curve rightward by \$200b would end the recession.

- A. If  $MPC = .8$  and there is no crowding out, how much should Congress increase  $G$  to end the recession?
- B. If there is crowding out, will Congress need to increase  $G$  more or less than this amount?

## ACTIVE LEARNING 3: Answers

The economy is in recession.  
Shifting the  $AD$  curve rightward by \$200b  
would end the recession.

- A.** If  $MPC = .8$  and there is no crowding out,  
how much should Congress increase  $G$   
to end the recession?

$$\text{Multiplier} = 1/(1 - .8) = 5$$

**Increase  $G$  by \$40b**

to shift agg demand by  $5 \times \$40b = \$200b$ .

## ACTIVE LEARNING 3:

### Answers

The economy is in recession.

Shifting the  $AD$  curve rightward by \$200b would end the recession.

**B.** If there is crowding out, will Congress need to increase  $G$  more or less than this amount?

Crowding out reduces the impact of  $G$  on  $AD$ .

To offset this, Congress should **increase  $G$  by a larger amount.**

# Fiscal Policy and Aggregate Supply

- Most economists believe the short-run effects of fiscal policy mainly work through agg demand.
- But fiscal policy might also affect agg supply.
- Recall one of the Ten Principles from Chap 1:  
*People respond to incentives.*
- A cut in the tax rate gives workers incentive to work more, so it might increase the quantity of g&s supplied and shift AS to the right.
- People who believe this effect is large are called “Supply-siders.”





# Fiscal Policy and Aggregate Supply

- Govt purchases may also affect agg supply:
- Suppose govt increases spending on roads (or other public capital).
- Better roads may increase business productivity, which increases the quantity of g&s supplied, shifts *AS* to the right.
- This effect is probably more relevant in the long run, as it takes time to build the new roads and put them into use.

# Using Policy to Stabilize the Economy

- Since the Employment Act of 1946, economic stabilization has been a goal of U.S. policy.
- Economists debate how active a role the govt should take to stabilize the economy.

# The Case for Active Stabilization Policy

- Keynes: “animal spirits” cause waves of pessimism and optimism among households and firms, leading to shifts in aggregate demand and fluctuations in output and employment.
- Also, other factors cause fluctuations, *e.g.*,
  - booms and recessions abroad
  - stock market booms and crashes
- If policymakers do nothing, these fluctuations are destabilizing to businesses, workers, consumers.

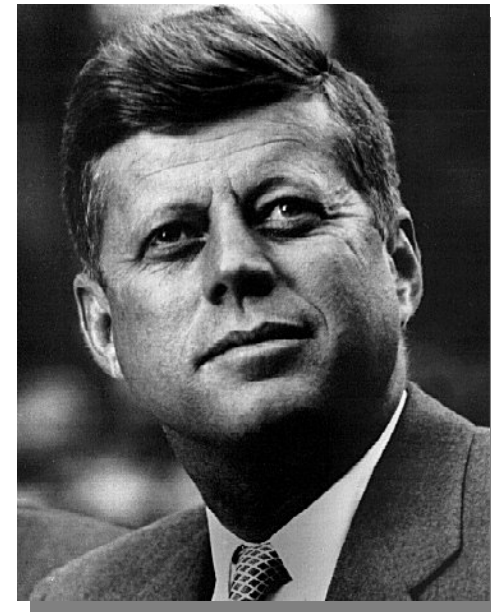
# The Case for Active Stabilization Policy

- Proponents of active stabilization policy believe the govt should use policy to reduce these fluctuations:
  - when GDP falls below its natural rate, should use expansionary monetary or fiscal policy to prevent or reduce a recession
  - when GDP rises above its natural rate, should use contractionary policy to prevent or reduce an inflationary boom

# Keynesians in the White House

1961:

John F Kennedy pushed for a tax cut to stimulate agg demand. Several of his economic advisors were followers of Keynes.



2001:

George W Bush pushed for a tax cut that helped the economy recover from a recession that had just begun.

# The Case Against Active Stabilization Policy

- Monetary policy affects economy with a long lag:
  - firms make investment plans in advance, so  $I$  takes time to respond to changes in  $r$
  - most economists believe it takes at least 6 months for mon policy to affect output and employment
- Fiscal policy also works with a long lag:
  - Changes in  $G$  and  $T$  require Acts of Congress.
  - The legislative process can take months or years.

# The Case Against Active Stabilization Policy

- Due to these long lags, critics of active policy argue that such policies may destabilize the economy rather than help it: By the time the policies affect agg demand, the economy's condition may have changed.
- These critics contend that policymakers should focus on long-run goals, like economic growth and low inflation.

# Automatic Stabilizers

- **Automatic stabilizers:**  
changes in fiscal policy that stimulate agg demand when economy goes into recession, without policymakers having to take any deliberate action



# Automatic Stabilizers: Examples

- The tax system
  - Taxes are tied to economic activity. When economy goes into recession, taxes fall automatically.
  - This stimulates agg demand and reduces the magnitude of fluctuations.

# Automatic Stabilizers: Examples

## ■ Govt spending

- In a recession, incomes fall and unemployment rises.
- More people apply for public assistance (e.g., unemployment insurance, welfare).
- Govt outlays on these programs automatically increase, which stimulates agg demand and reduces the magnitude of fluctuations.

# CONCLUSION

- Policymakers need to consider all the effects of their actions. For example,
  - When Congress cuts taxes, it needs to consider the short-run effects on aggregate demand and employment, and the long-run effects on saving and growth.
  - When the Fed reduces the rate of money growth, it must take into account not only the long-run effects on inflation, but the short-run effects on output and employment.

# CHAPTER SUMMARY

- In the theory of liquidity preference, the interest rate adjusts to balance the demand for money with the supply of money.
- The interest-rate effect helps explain why the aggregate-demand curve slopes downward: An increase in the price level raises money demand, which raises the interest rate, which reduces investment, which reduces the aggregate quantity of goods & services demanded.

# CHAPTER SUMMARY

- An increase in the money supply causes the interest rate to fall, which stimulates investment and shifts the aggregate demand curve rightward.
- Expansionary fiscal policy – a spending increase or tax cut – shifts aggregate demand to the right. Contractionary fiscal policy shifts aggregate demand to the left.

# CHAPTER SUMMARY

- When the government alters spending or taxes, the resulting shift in aggregate demand can be larger or smaller than the fiscal change:

The multiplier effect tends to amplify the effects of fiscal policy on aggregate demand.

The crowding-out effect tends to dampen the effects of fiscal policy on aggregate demand.

# CHAPTER SUMMARY

- Economists disagree about how actively policymakers should try to stabilize the economy. Some argue that the government should use fiscal and monetary policy to combat destabilizing fluctuations in output and employment. Others argue that policy will end up destabilizing the economy, because policies work with long lags.