Introduction to Economics

Business Cycles and Aggregate Demand & the Multiplier Model

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- Short-term fluctuations in economic activity - ***business cycles.***

- What causes business fluctuations?
- How can government policies reduce their virulence?

- Keynesian economics emphasizes that *changes in aggregate demand can have powerful impacts on the overall levels of output, employment, and prices in the short run* .

What exactly do we mean by “business cycles”?

- **Business cycles** are economy wide fluctuations in total national output, income, and employment, usually lasting for a period of 2 to 10 years, marked by widespread expansion or contraction in most sectors of the economy.

- Main phases:

- Recession

- Expansion

The turning points of the cycle

- Peaks

- Troughs

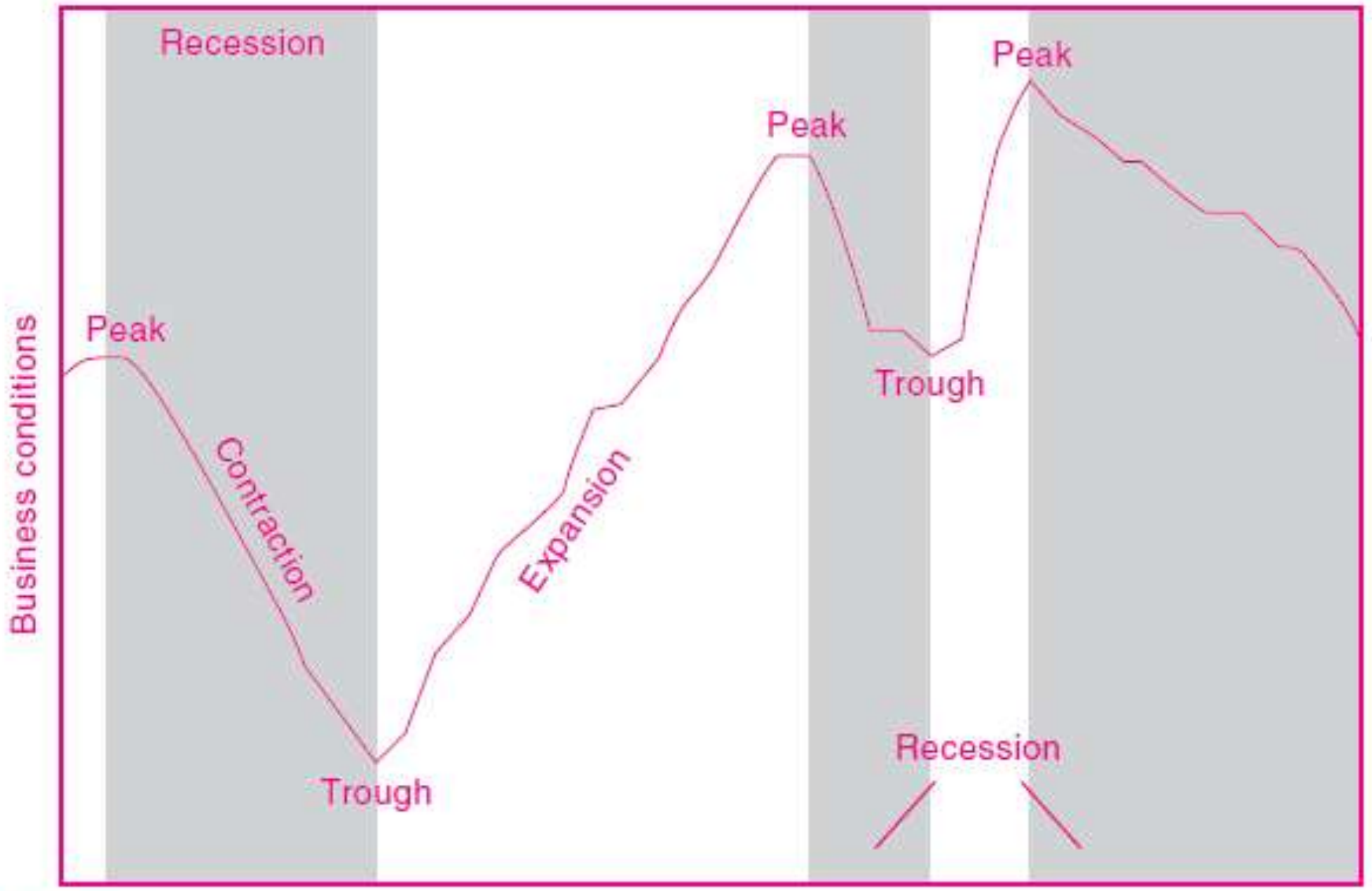

FIGURE 22-1. A Business Cycle, like the Year, Has Its Seasons

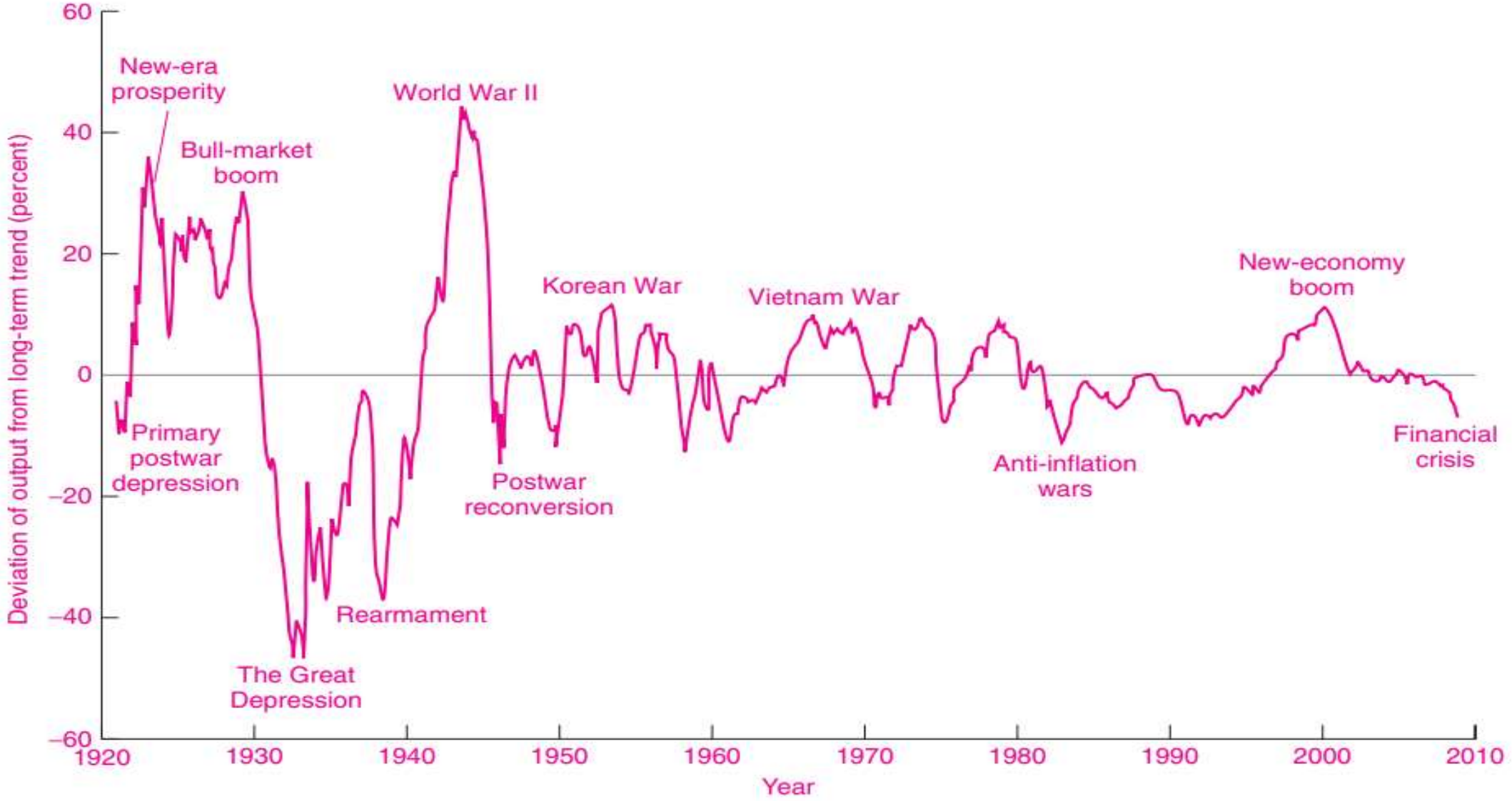

FIGURE 22-2. Business Activity since 1919

Industrial production has fluctuated irregularly around its long-run trend. Can you detect a more stable economy in recent years?

- A **recession** is a recurring period of decline in total output, income, and employment, usually lasting from 6 to 12 months and marked by contractions in many sectors of the economy. A recession that is large in both scale and duration is called a **depression.**

- *Customary characteristics* of a recession:

  - Investment usually falls sharply in recessions. Consumer purchases often decline sharply as well. As businesses slow production lines, real GDP falls.

  - Employment usually falls sharply in the early stages of a recession.

  - As output falls, inflation slows and the demand for crude materials declines, and materials' prices tumble.

  - Business profits fall sharply in recessions

  - Generally, as business conditions deteriorate and employment falls, the Central Banks begin to lower short-term interest rates to stimulate investment, and other interest rates decline as well.

Business-cycle Theories

Two categories: exogenous and internal.

- The *exogenous* theories find the sources of the business cycle in the fluctuations of factors outside the economic system—in wars, revolutions, and elections; in oil prices, gold discoveries, and population migrations; in discoveries of new lands and resources; in scientific breakthroughs and technological innovations; even in sunspots, climate change, and the weather.
- The *internal* theories look for mechanisms within the economic system itself. In this approach, every expansion breeds recession and contraction, and every contraction breeds revival and expansion. Many business cycles in economic history were internal cycles that originated in the financial sector.

✓ One common feature of capitalism around the world is the speculative booms and busts that occurred frequently in the nineteenth century

Aggregate Demand and Business Cycles

- **Aggregate demand** (or *AD*) is the total or aggregate quantity of output that is willingly bought at a given level of prices, other things held constant.
- *AD* is the desired spending in all product sectors: consumption, private domestic investment, government purchases of goods and services, and net exports.

$$Y = C + I + G + NX$$

The AD curve slopes downward. This downward slope implies that real spending declines as the price level rises, other things held constant. Real spending declines with a higher price level primarily because of the effect of higher prices on real incomes and real wealth.

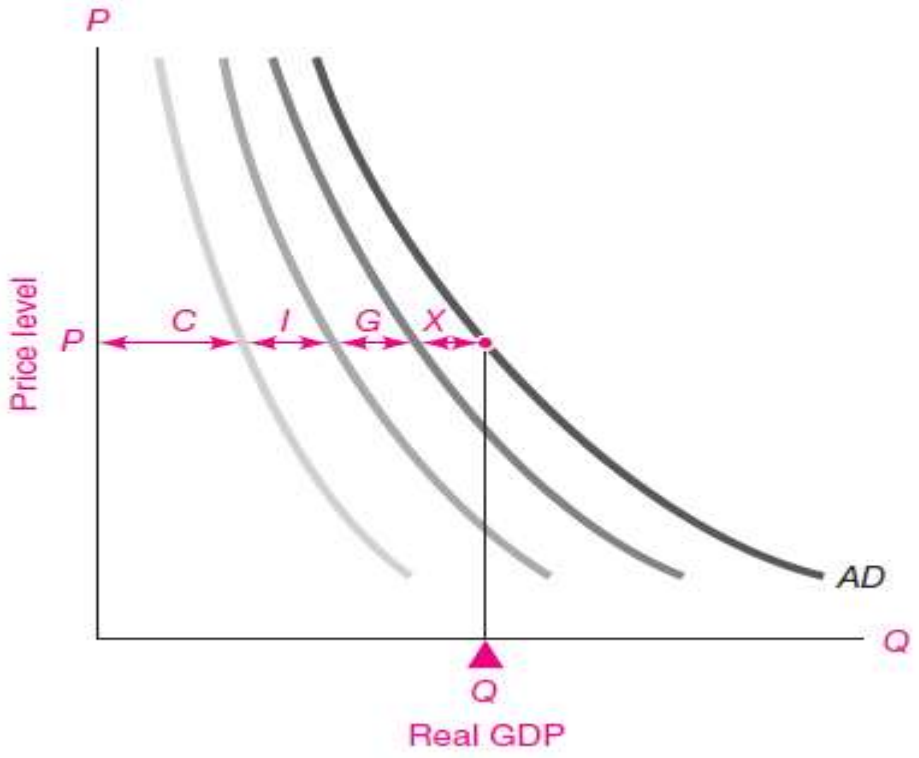

FIGURE 22-3. Components of Aggregate Demand

Variable	Impact on aggregate demand
	Policy Variables
Monetary policy	Monetary expansion may lower interest rates and loosen credit conditions, inducing higher levels of investment and consumption of durable goods. In an open economy, monetary policy also affects the exchange rate and net exports.
Fiscal policy	Increases in government purchases of goods and services directly increase spending; tax reductions or increases in transfers raise disposable income and induce higher consumption. Tax incentives like an investment tax credit can induce higher spending in a particular sector.
	Exogenous Variables
Foreign output	Output growth abroad leads to an increase in net exports.
Asset values	Rise in stock market increases household wealth and thereby increases consumption; also, higher stock prices lower the cost of capital and thereby increase business investment.
Advances in technology	Technological advances can open up new opportunities for business investment. Important examples have been the railroad, the automobile, and computers.
Other	Defeat of a socialist government stimulates foreign investment; peace breaks out, with an increase in world oil production, and lowers oil prices; good weather leads to lower food prices.

TABLE 22-1. Many Factors Can Increase Aggregate Demand and Shift out the *AD* Curve

- Business-cycle fluctuations in output, employment, and prices are often caused by shifts in aggregate demand. These occur as consumers, businesses or governments change total spending relative to the economy's productive capacity.
- When these shifts in aggregate demand lead to sharp business downturns, the economy suffers recessions or even depressions.
- A sharp upturn in economic activity can lead to inflation.

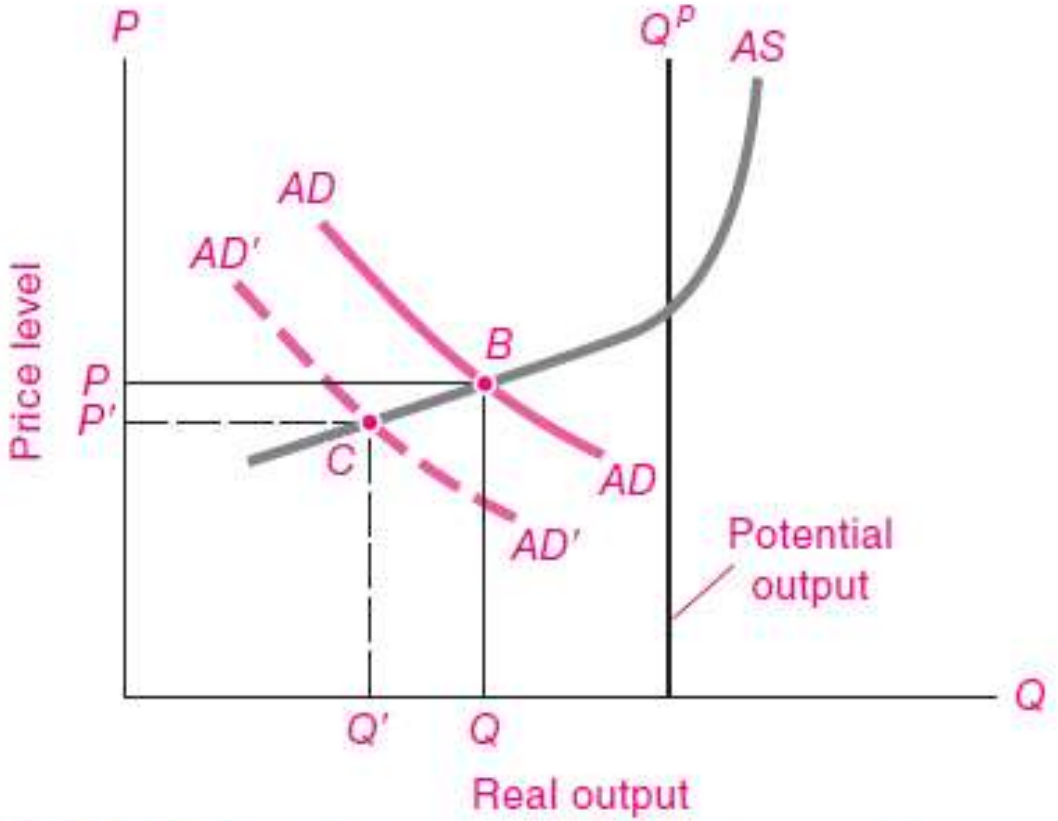

FIGURE 22-5. A Decline in Aggregate Demand Leads to an Economic Downturn

THE MULTIPLIER MODEL

- The simplest approach to understanding business cycles is known as the *Keynesian multiplier model*.
- It is a macroeconomic theory used to explain how output is determined in the short run. The name “multiplier” comes from the finding that each dollar change in exogenous expenditures (such as investment) leads to more than a dollar change (or a multiplied change) in GDP.

Output Determined By Total Expenditures

- *Total expenditure approach* to determining national output.
- Planned expenditure = equals total output – the economy is in equilibrium
- The total expenditure curve (*TE*) shows the level of expenditure desired or planned by consumers and businesses corresponding to each level of output.
- Point *E* is the macroeconomic equilibrium.

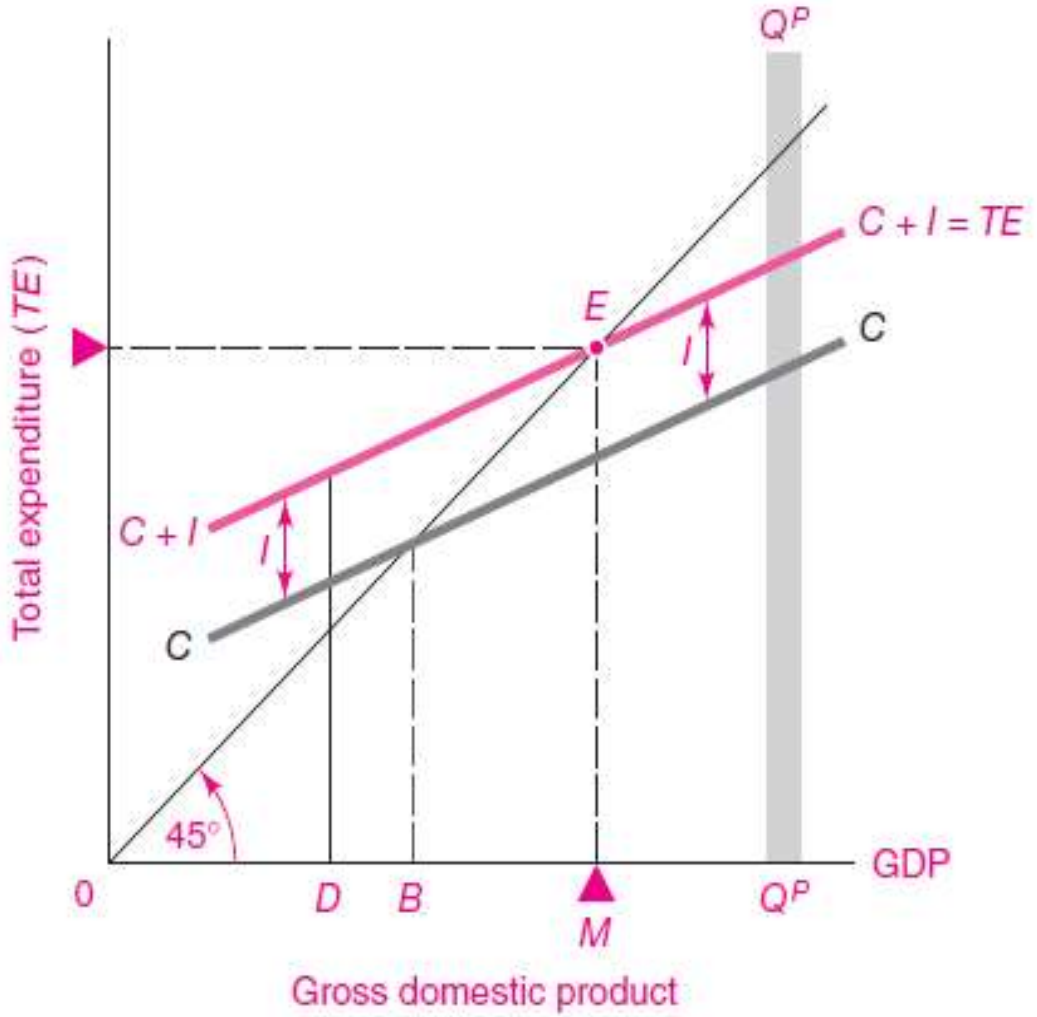

FIGURE 22-7. The Equilibrium Level of National Output Is Determined When Total Expenditure (*TE*) Equals Output

GDP Determination Where Output Equals Planned Spending (billions of dollars)

(1) Levels of GDP and *DI*	(2) Planned consumption	(3) Planned saving (3) = (1) − (2)	(4) Planned investment	(5) Level of GDP (5) = (1)		(6) Total planned consumption and investment, *TE* (6) = (2) + (4)	(7) Resulting tendency of output
4,200	3,800	400	200	4,200	>	4,000 ↓	Contraction
3,900	3,600	300	200	3,900	>	3,800 ↓	Contraction
3,600	**3,400**	**200**	**200**	**3,600**	**=**	**3,600**	**Equilibrium**
3,300	3,200	100	200	3,300	<	3,400 ↑	Expansion
3,000	3,000	0	200	3,000	<	3,200 ↑	Expansion
2,700	2,800	−100	200	2,700	<	3,000 ↑	Expansion

TABLE 22-2. Equilibrium Output Can Be Found Arithmetically at the Level Where Planned Spending Equals GDP

The Multiplier

- The **multiplier** is the impact of a 1-dollar change in exogenous expenditures on total output. In the simple $C + I$ model, the multiplier is the ratio of the change in total output to the change in investment.

$$\text{Change in output} = \frac{1}{MPS} \times \text{change in investment}$$

$$= \frac{1}{1 - MPC} \times \text{change in investment}$$

- If I rise from 10 mil to 11 mil, and MPC is 4/5. How much will the real GDP increase?

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- Change in I = 1 mil
- MPC= 4/5= 0.8
- Change in GDP?

- **Change in GDP = 1/ 1-MPC x change in I**
- = 1/1-0.8 x 1mil = 1/0.2 x 1 mil = 5 x 1 mil = 5 mil
- Change in GDP = + 5 mil

Fiscal-policy Multipliers

- Government purchases of goods and services (G) are an important force in determining output and employment. In the multiplier model, if G increases, output will rise by the increase in G times the expenditure multiplier. Government purchases therefore have the potential to increase or decrease output over the business cycle.

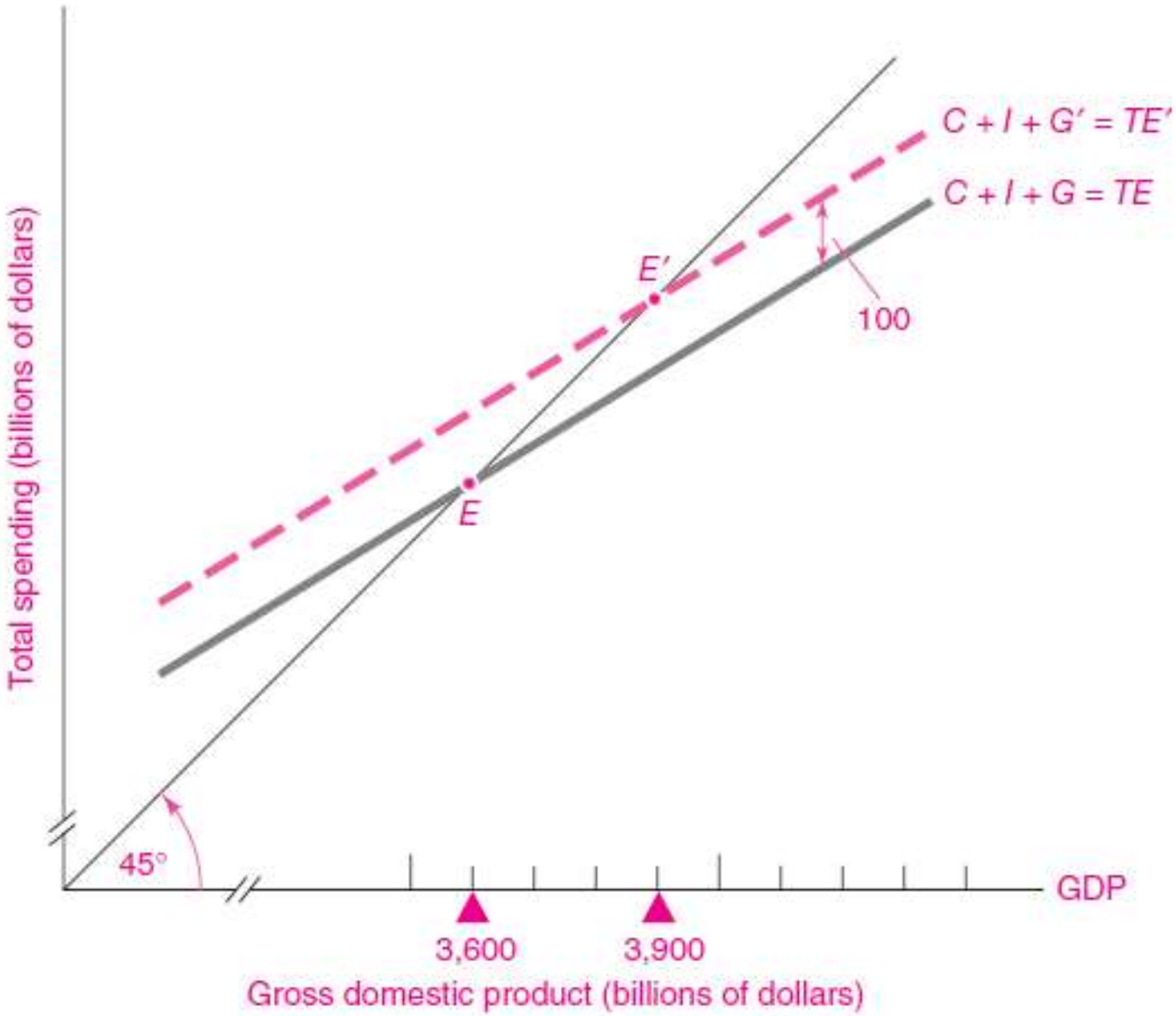

FIGURE 22-11. The Effect of Higher *G* on Output

Suppose that the government raises defense purchases by $100 billion in response to a threat to Mideast oil fields. This shifts upward the $C + I + G$ line by $100 billion to $C + I + G'$.

The new equilibrium level of GDP is thus read off the 45° line at E' rather than at E. Because the *MPC* is ⅔, the new level of output is $300 billion higher. That is, the government expenditure multiplier is

$$3 = \frac{1}{1 - \frac{2}{3}}$$

(What would the government expenditure multiplier be if the *MPC* were ¾? ⁹⁄₁₀?)

Impact of Taxes

- Tax changes are a powerful weapon in affecting output. But the tax multiplier is smaller than the expenditure multiplier by a factor equal to the *MPC:*
- Tax multiplier = *MPC x* expéditeur multiplier (1/MPC)
- Tax multiplier = MPC/1-MPC

- The multiplier model, working together with the dynamics of investment, shows how alternating bouts of investment optimism and pessimism, along with changes in other exogenous expenditures, can lead to the fluctuations that we call business cycles.

- Tax multiplier = MPC/1-MPC
- Tax change = -30 mil
- MPC = 4/5
- Change in GDP?
- Change in GDP = 0.8/1-0.8 x (30)
- Change in GDP = 120 mil $