AGGREGATE EXPENDITURE AND OUTPUT IN THE SHORT RUN

Chapter 12

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Chapter Outline

- **12.1** The Aggregate Expenditure Model
- **12.2** Determining the Level of Aggregate Expenditure in the Economy
- **12.3** Graphing Macroeconomic Equilibrium
- **12.4** The Multiplier Effect
- **12.5** The Aggregate Demand Curve
- **Appendix** The Algebra of Macroeconomic Equilibrium

12.1 The Aggregate Expenditure Model

- In this chapter, we will build up a simple mathematical model of the economy known as the *aggregate expenditure model* and understand how macroeconomic equilibrium is determined in the aggregate expenditure model.
- **Aggregate expenditure model**: A macroeconomic model that focuses on the short-run relationship between total spending and real GDP, assuming that the price level is constant.
- This model will focus on short-run determination of total output in an economy.

Four Components of Aggregate Expenditure

The four components in our model will be the same four that we introduced in a previous chapter as the components of GDP:

- *Consumption (C)*: Spending by households on goods and services
- *Planned investment (I)*: Planned spending by firms on capital goods and by households on new homes
- *Government purchases (G)*: Spending on all levels of government on goods and services
- *Net exports (NX)*: The value of exports minus the value of imports

Aggregate expenditure is total spending in the economy: the sum of consumption, planned investment, government purchases, and net exports.

Planned Investment vs. Actual Investment

- Our aggregate expenditure model uses *planned investment*, rather than *actual investment*; in this way, the definition of aggregate expenditures is slightly different from GDP.
- The difference is that planned investment spending does not include the build-up of **inventories**: goods that have been produced but not yet sold:
- *Planned investment =*
  Actual investment – unplanned change in inventories
- Although the Bureau of Economic Analysis measures *actual investment*, we will assume that their measurement is close enough to *planned investment* to use in our estimates of aggregate expenditures.

Macroeconomic Equilibrium

- Equilibrium in the economy occurs when spending on output is equal to the value of output produced; that is:

  Aggregate Expenditure (AE) = GDP

- This should look "obvious":

  $AE = C + I + G + NX$

  $GDP = C + I + G + NX$

- The difference is that in the first equation, *I* is planned investment, whereas in the second, *I* is actual investment.
- *So macroeconomic equilibrium occurs when planned investment equals actual investment, i.e. no unplanned change in inventories.*

Table 12.1 The Relationship between Aggregate Expenditure and GDP

- If AE = GDP, the economy is in macroeconomic equilibrium because planned investment = actual investment.
- If AE < GDP, the economy is not in macroeconomic equilibrium since, planned investment < actual investment

  or, actual investment – unplanned inventories < actual investment

  or, unplanned inventories > 0 (positive and rising)

Therefore, inventories must rise to restore the macroeconomic equilibrium!

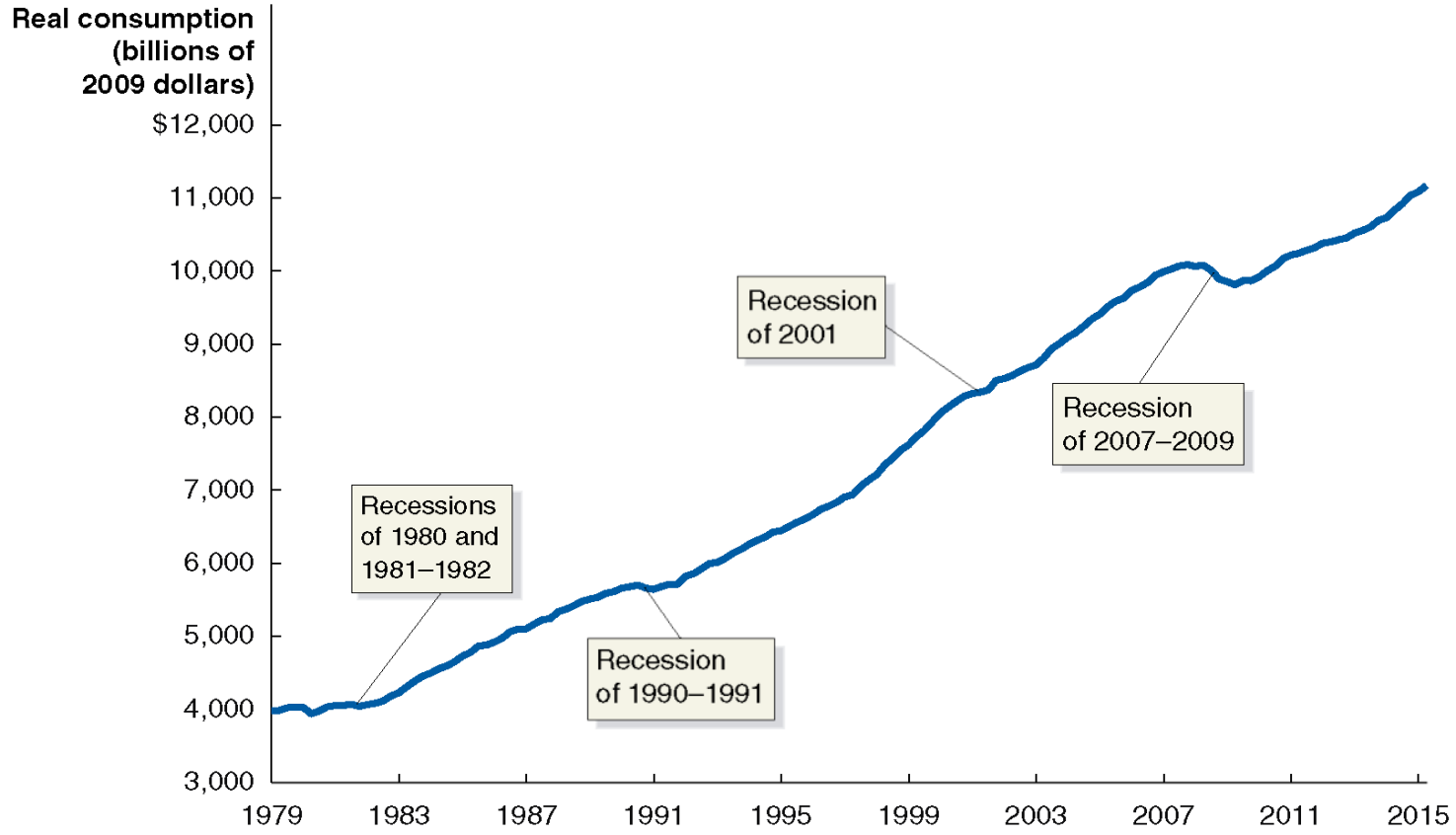
Just like markets for a particular product may not be in equilibrium (quantity supplied may not equal quantity demanded at the current price), the economy may not be in equilibrium.

- This is just a way of showing how we get to the macroeconomic equilibrium in Table 12.1. Review the table and do AE > GDP on your own!

12.2 Determining the Level of Aggregate Expenditure in the Economy

- Each of the components of aggregate expenditure plays a different role in the determination of equilibrium aggregate expenditure.
- We will explore them in this section.
- **Throughout this chapter, all values are in *real* terms rather than *nominal*.**
- Values are in billions of 2009 dollars.

Figure 12.1 Real Consumption



US consumption tends to follow a relatively smooth, upward trend; its growth declines during periods of recession.

Determinants of Consumption (1 of 2)

Current disposable income

- Consumer expenditure is largely determined by how much money consumers receive in a given year:
- Current disposable income = (Personal income − Personal income taxes + transfer payments)
- Income expands most years; hence so does consumption.

Household wealth

- A household's *wealth* can be thought of as its *assets* (like homes, stocks and bonds, and bank accounts) minus its *liabilities* (mortgages, student loans, etc.).
- Households with greater wealth spend more on consumption, an extra $1,000 in wealth will result in $40-$50 in extra annual consumption spending, holding constant the effect of income.

Determinants of Consumption (2 of 2)

Expected future income

- Most people prefer to keep their consumption fairly stable from year to year, a process known as *consumption-smoothing*.
- So consumption relates both to current and future income.

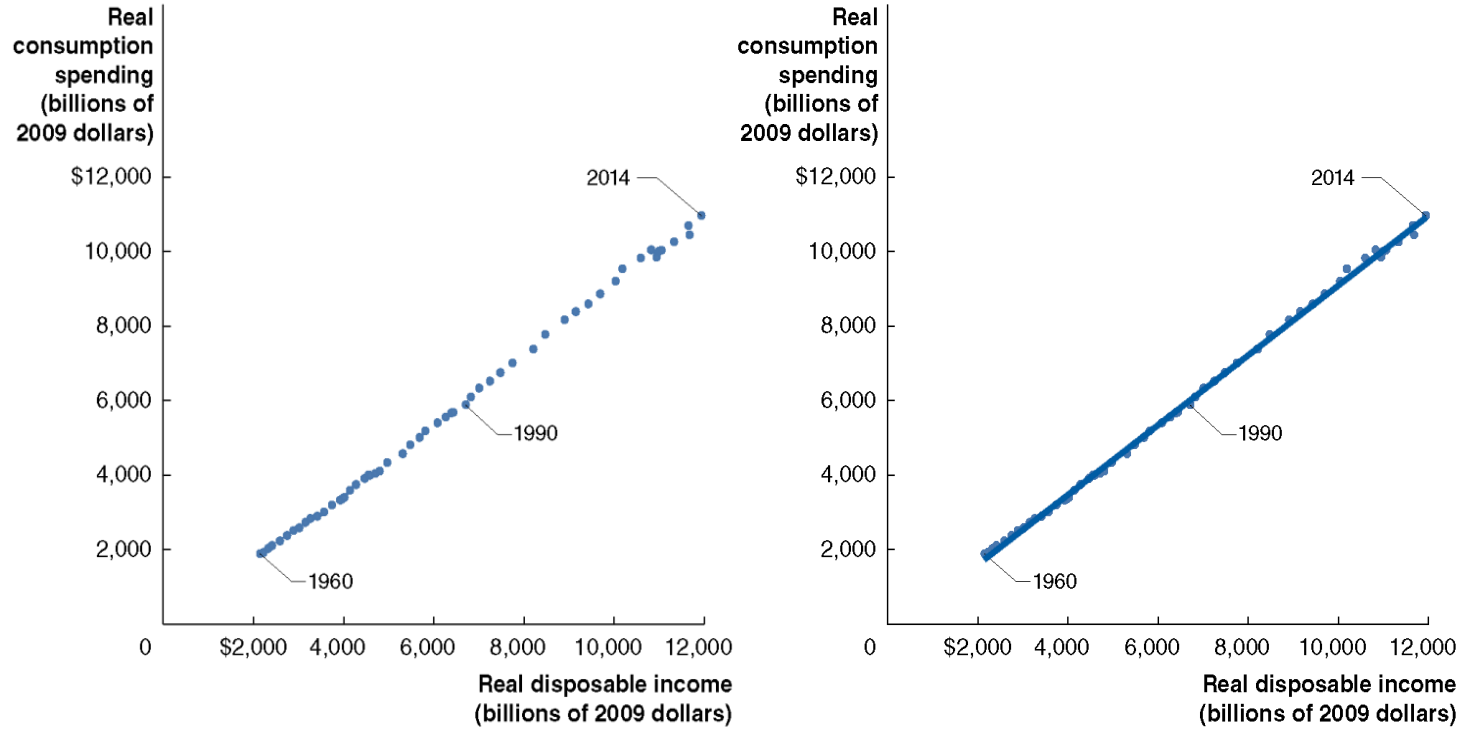
The price level

- As prices rise, a household's real wealth falls (because they are able to buy fewer goods with the same wealth). Consequently, higher prices result in lower consumption spending.

The interest rate

- Higher real interest rates encourage saving rather than spending, so they result in lower spending, especially on *durable goods*.

Figure 12.2 The Relationship between Consumption and Income: 1960-2014



- As the graphs demonstrate, the relationship between consumption and income is "very strong."
- **Consumption function**: the relationship between consumption spending and disposable income. A straight line describes this *consumption function* very well: households spend a consistent fraction of each extra dollar on consumption.

Estimating the MPC

- **Marginal Propensity to Consume (MPC)**: the amount by which consumption spending changes when disposable income changes.
- The marginal propensity to consume is the slope of the consumption function. Thus, we can estimate the MPC by estimating the slope of the consumption function:

$$MPC = \frac{\text{Change in consumption}}{\text{Change in disposable income}} = \frac{\Delta C}{\Delta YD}$$

- Similarly, we can also estimate for the change in consumption if we are given the MPC and change in disposable income. Go through the example in the textbook for practice.

Figure 12.3 The Relationship between Consumption and National Income

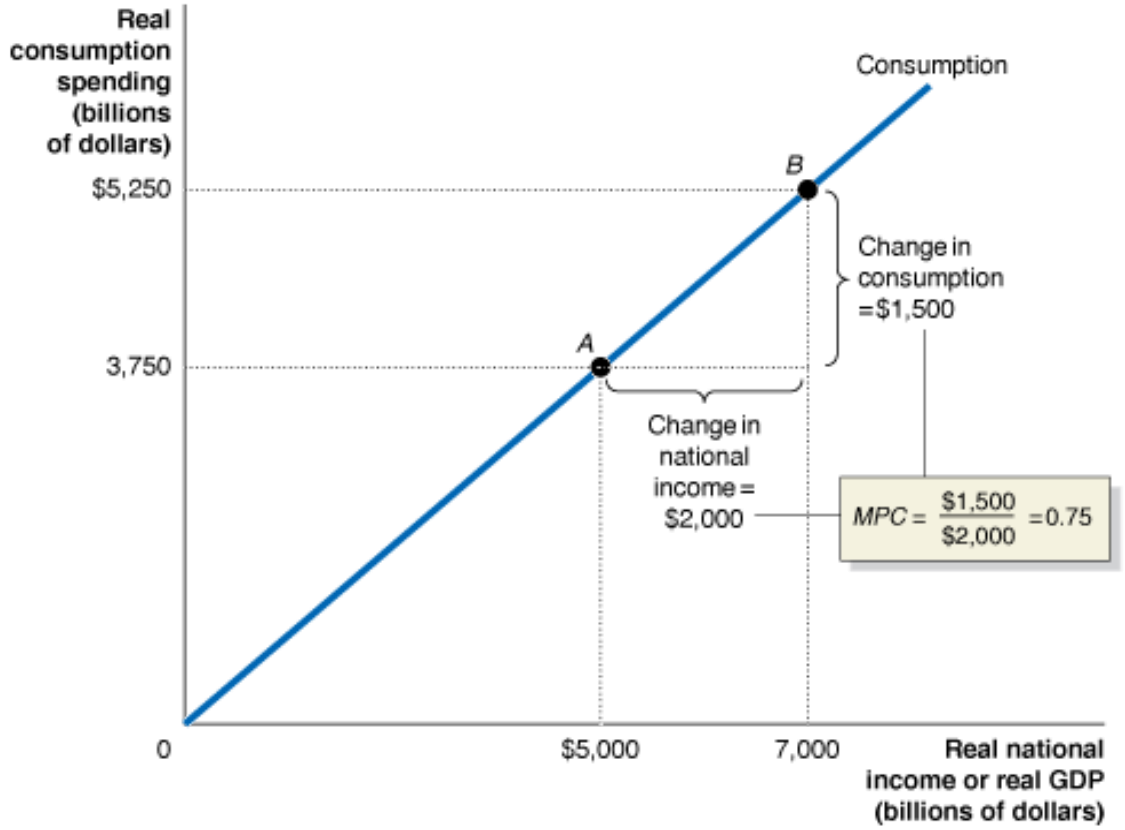
- The figure shows the relationship between consumption and national income for an imaginary economy, keeping net taxes constant. For data, check the textbook.

Moving from Point A to B,

As national income rises by $2,000 billion, consumption rises by $1,500 billion.

- So the marginal propensity to consume for this economy is:

$$MPC = \frac{\Delta C}{\Delta Y} = \frac{\$1{,}500 \text{ billion}}{\$2{,}000 \text{ billion}} = 0.75$$



Income, Consumption, and Saving

- By definition, disposable income not spent (consumed) is saved. Therefore
- $\text{National income} = \text{Consumption} + \text{Saving} + \text{Taxes}$

$$Y = C + S + T$$

- Any change in national income can be decomposed into changes in the items on the right hand side:

$$\Delta Y = \Delta C + \Delta S + \Delta T$$

- We assume net taxes do not change, so $\Delta T = 0$, then

$$\Delta Y = \Delta C + \Delta S$$

- Dividing through by ΔY gives:

$$\frac{\Delta Y}{\Delta Y} = \frac{\Delta C}{\Delta Y} + \frac{\Delta S}{\Delta Y}$$

Marginal Propensity to Save (MPS)

$$\frac{\Delta Y}{\Delta Y} = \frac{\Delta C}{\Delta Y} + \frac{\Delta S}{\Delta Y}$$

- $\frac{\Delta S}{\Delta Y}$ is the amount by which savings changes, when (disposable) income changes. This is known as the **marginal propensity to save**. We can rewrite the equation above as

$$1 = MPC + MPS$$

- That is, the marginal propensity to consume plus the marginal propensity to save must equal 1.
- Part of any increase in income is consumed, and the rest is saved.

Determinants of Planned Investment (1 of 2)

Expectations of future profitability

- Investment goods, such as factories, office buildings, machinery, and equipment, are long-lived. Firms build more of them when they are optimistic about future profitability.
- Purchases of new housing are included in planned investment. In recessions, households have reduced wealth and hence less incentive to invest in new housing.

Interest rate

- Since business investment is sometimes financed by borrowing, the real interest rate is an important consideration for investing.
- *Higher real interest rates result in less investment spending, and lower real interest rates result in more investment spending.*

Determinants of Planned Investment (2 of 2)

Taxes

- Higher *corporate income taxes* on profits decrease the money available for reinvestment and decrease incentives to invest by diminishing the expected profitability of investment.
- Similarly, *investment tax incentives* tend to increase investment.

Cash flow

- Firms often pay for investments out of their own **cash flow**, the difference between the cash revenues received by a firm and the cash spending by the firm.
- The largest contributor to cash flow is profit. During recessions, profits fall for most firms, decreasing their ability to finance investment.

US Real Net Exports

Net exports equals exports minus imports; it is affected by:

- *Price level in U.S. vs. the price level in other countries*
- *U.S. growth rate vs. growth rate in other countries*
- *U.S. dollar exchange rate*

U.S. net exports have been negative for the last few decades. The value typically becomes higher (less negative) during a recession, as spending on imports falls.

- Check out Figures 12.5-12.7.

Determinants of Net Exports

If…	U.S. Net Exports will…	…because…
…U.S. price level rises faster than foreign price levels…	decrease	U.S. goods become more expensive relative to foreign goods, so imports rise and exports fall.
…***slower***…	increase	The opposite is true.
…U.S. GDP grows ***faster*** than foreign GDP…	decrease	U.S. demand for imports rises faster than foreign demand for our exports.
…***slower***…	increase	The opposite is true.
…$US ***rises*** in value relative to other currencies…	decrease	Imports are cheaper, and our exports are more expensive. So imports rise and exports fall.
…***falls***…	increase	The opposite is true.

12.3 Graphing Macroeconomic Equilibrium

Suppose there is a single product in the whole economy: Pepsi.

- For the Pepsi economy to be in equilibrium, the amount of Pepsi produced must equal the amount of Pepsi sold.
- Otherwise, inventories of Pepsi have to rise or fall to restore macroeconomic equilibrium.

- We use a 45°-line diagram to illustrate macroeconomic equilibrium.

Figure 12.8 An Example of a 45°-Line Diagram

- Any point on the 45° line could be an equilibrium—like points A or B.
- At point C, the economy's inventories of Pepsi are being depleted, and production must rise to restore equilibrium.
- At point D, inventories of Pepsi are growing, so production must fall.

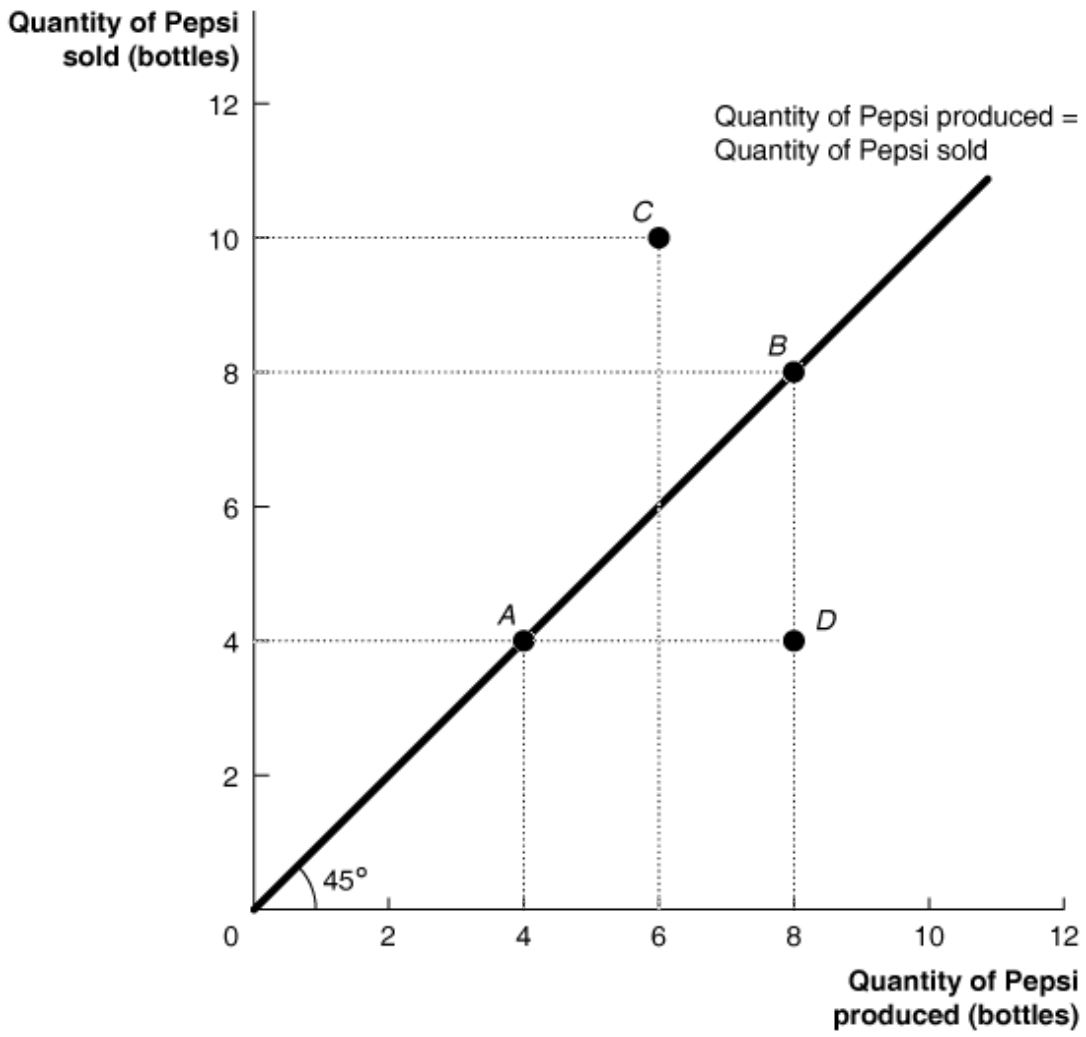
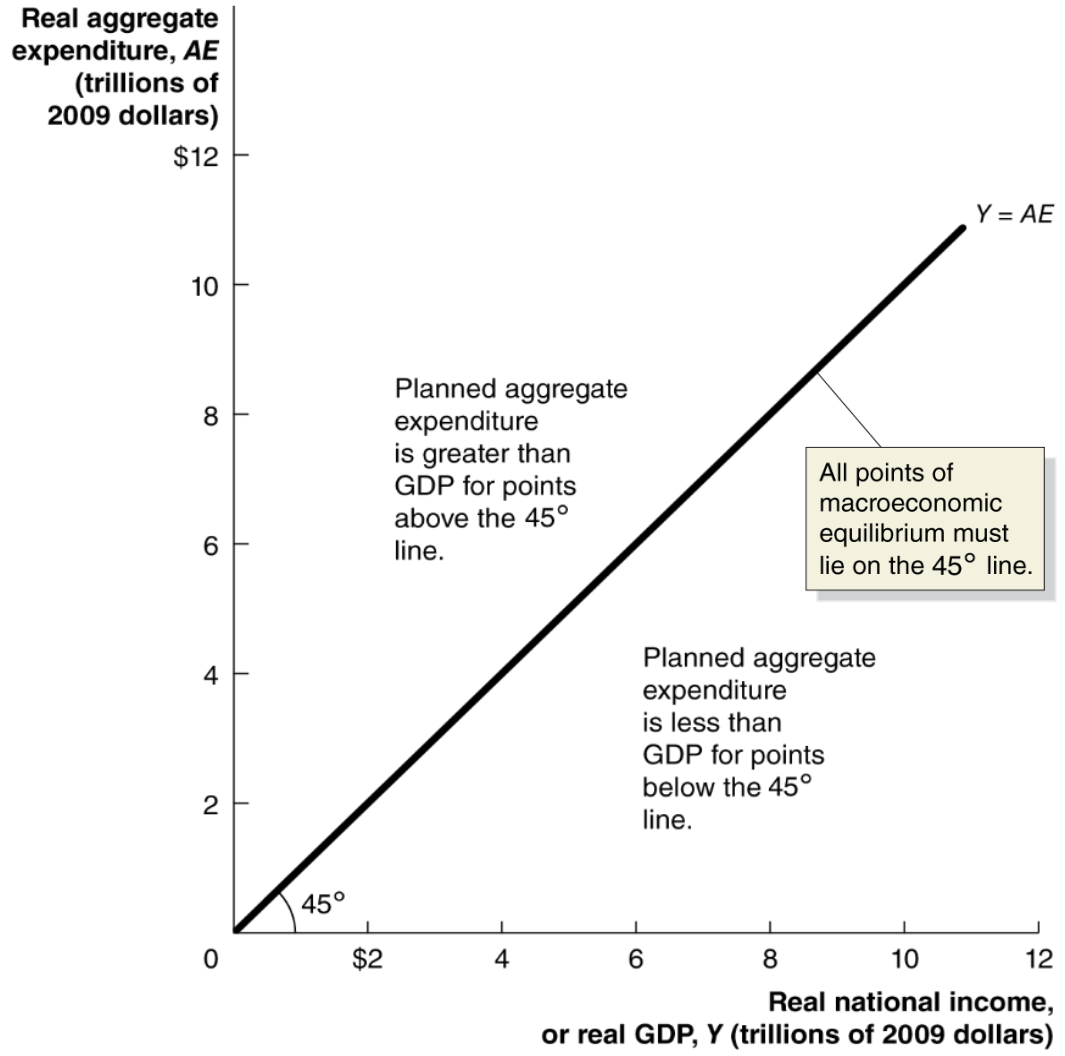


Figure 12.9 The Relationship between Planned Aggregate Expenditures and GDP on a 45°-Line Diagram

- We can apply this model to a real economy, with real national income (GDP) on the x-axis and real aggregate expenditure on the y-axis.
- This model is also known as the *Keynesian cross.*
- Only points on the 45°-line can be a macroeconomic equilibrium, with planned aggregate expenditure equal to GDP.



Determining the Macroeconomic Equilibrium

Any point on the 45°-line *could* be an equilibrium, but how do we know which one *will* be the equilibrium in a given year?

- To determine this, recall that when they receive additional income, households consume some of it and save some of it.
- The resulting *consumption function* tells us how much consumers will spend (real expenditure) when they have a particular income (real GDP).

This will determine Consumption (*C*) in the equation

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

Macroeconomic equilibrium simply means the left side (real GDP) must equal the right side (planned aggregate expenditure).

The trick is to find the "right" level of *C*. For that, we use the 45° line diagram.

Figure 12.10 Macroeconomic Equilibrium on the 45°-Line Diagram (1 of 3)

- We start by placing the consumption function on the diagram.
- If there was no other expenditure in the economy, then the macroeconomic equilibrium would be where the consumption function crossed the 45° line; there, income (GDP) equals expenditure.

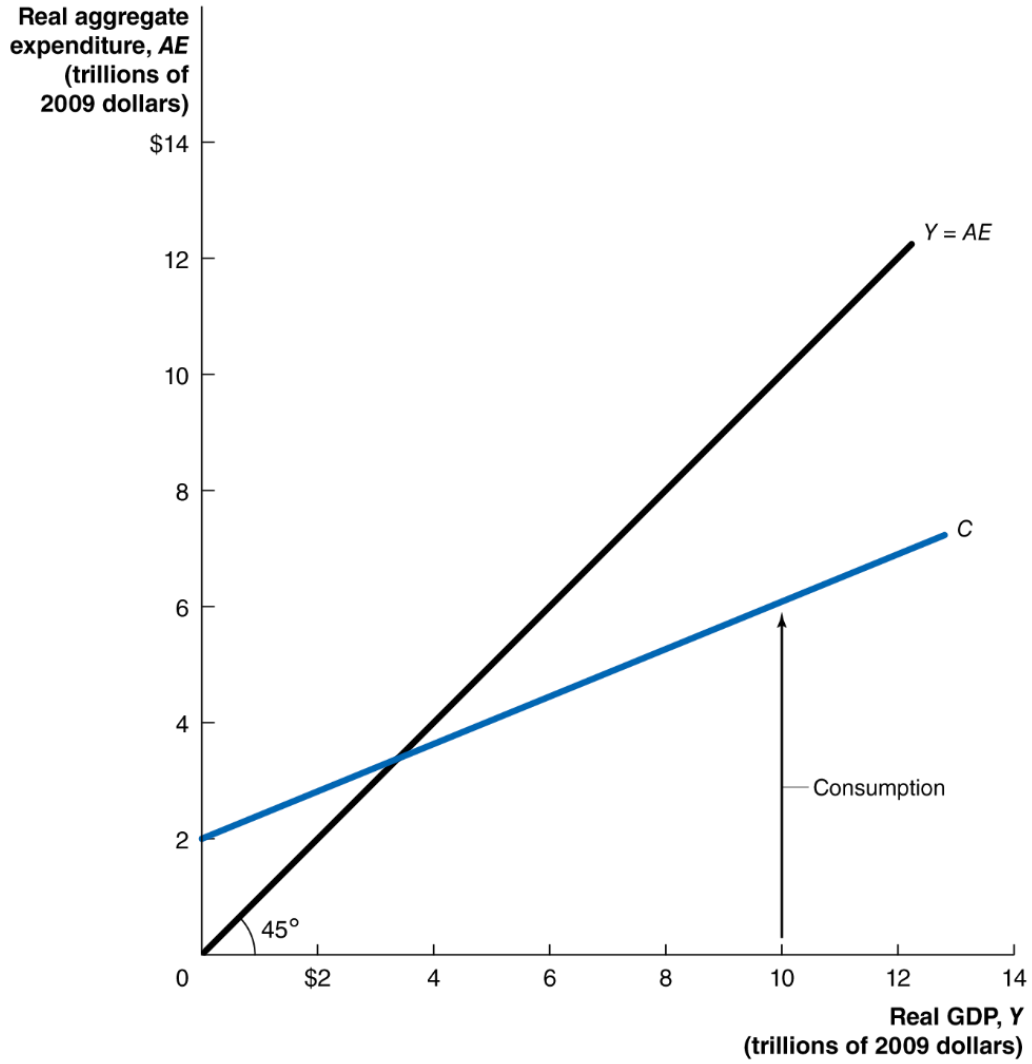


Figure 12.10 Macroeconomic Equilibrium on the 45°-Line Diagram (2 of 3)

- But there are other expenditures. We will assume they are *not* affected by income, that they are predetermined.
- Then we add the other expenditures: planned investment…

… government purchases…

… and net exports.

- These are vertical shifts in real expenditure, because their values do not depend on real GDP.

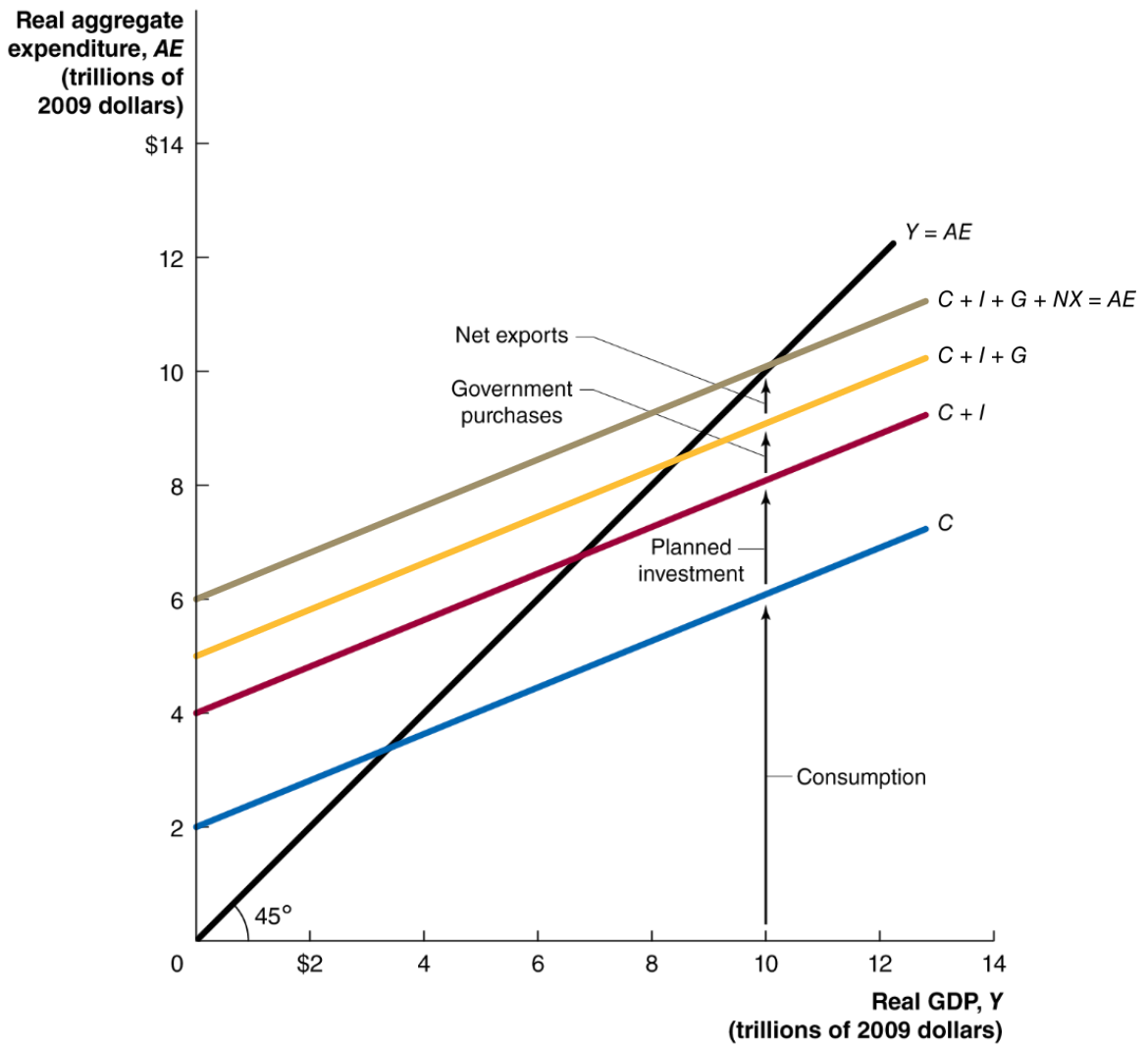


Figure 12.10 Macroeconomic Equilibrium on the 45°-Line Diagram (3 of 3)

- At last, we have macroeconomic equilibrium: the point at which

1. Income equals expenditure, i.e. $Y = C + I + G + NX$.
2. The level of consumption is consistent with the level of income, according to the consumption function.

- We call this top most line the *aggregate expenditure function.*

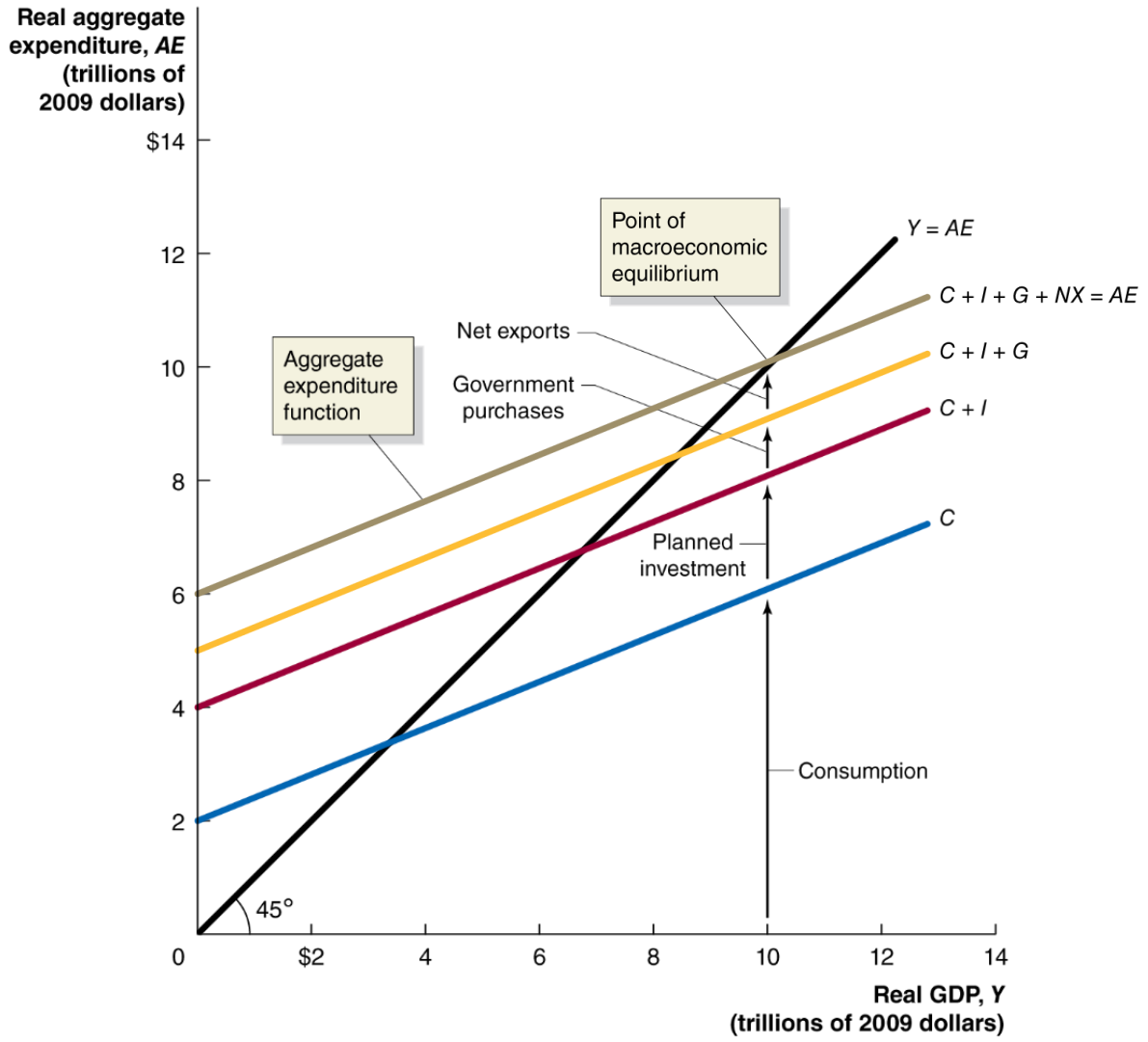


Figure 12.11 Macroeconomic Equilibrium

- In this economy, macroeconomic equilibrium occurs at $10 trillion.
- What if real GDP were lower, say $8 trillion?
- Aggregate expenditure would be higher than GDP, so inventories would fall.
- This would signal firms to increase production, increasing GDP.
- The reverse would occur if real GDP were *above* $10 trillion.

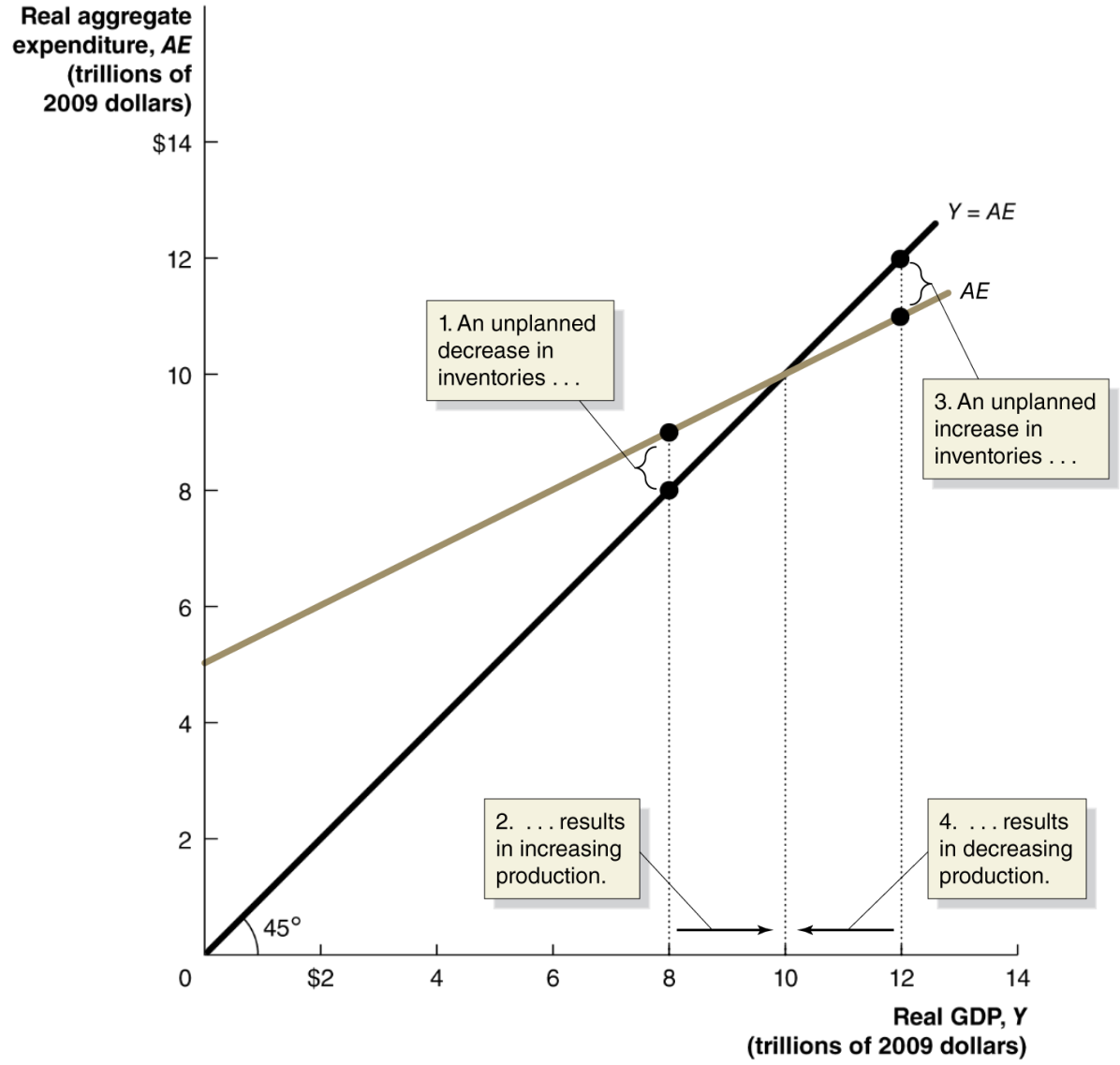
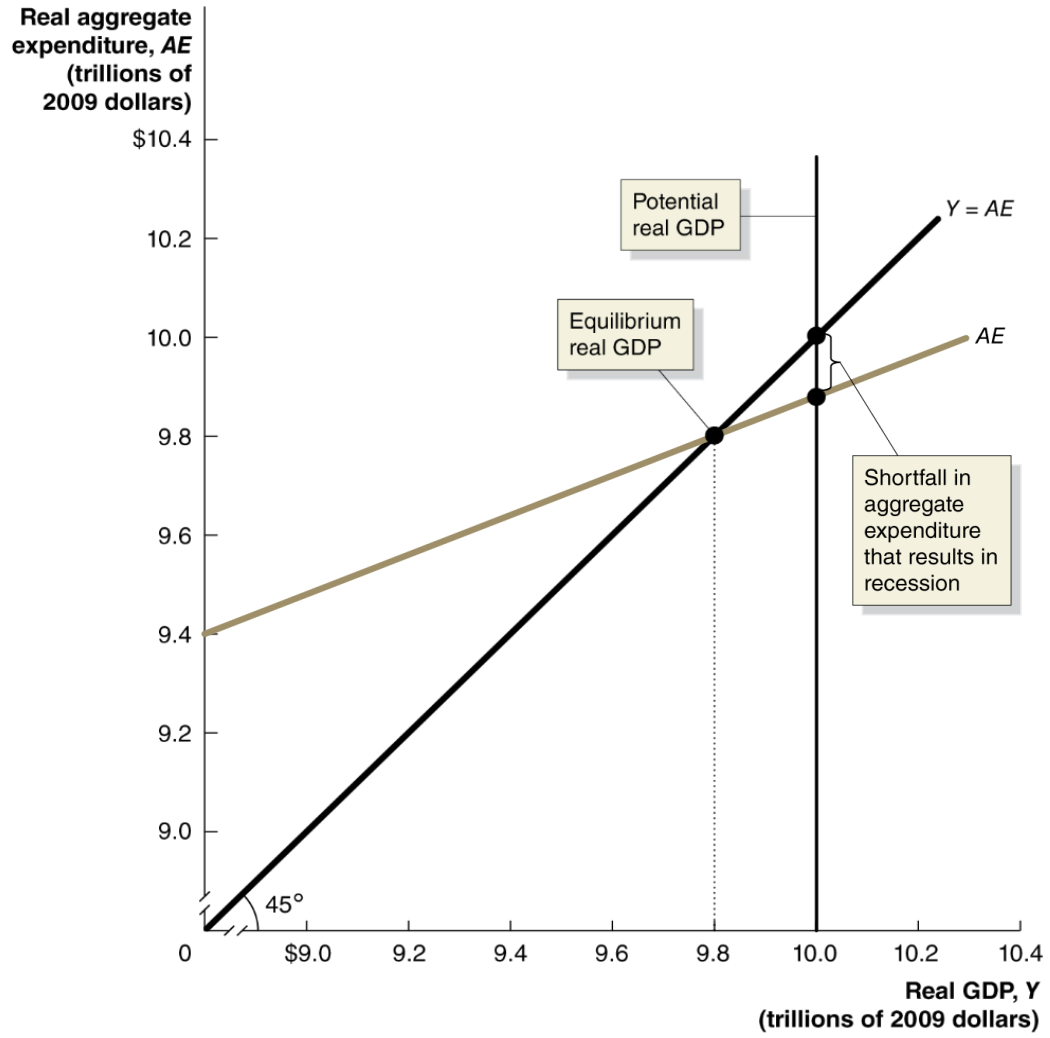


Figure 12.12 Showing a Recession on the 45°-Line Diagram

- Macroeconomic equilibrium can occur anywhere on the 45°-line. Ideally, we would like it to occur at the level of *potential GDP*.
- If equilibrium occurs at this level, unemployment will be low—at the *natural rate of unemployment* or the *full employment* level.
- But this might not occur; maybe firms are pessimistic and reduce investment spending.
- Then the equilibrium will occur *below* potential GDP—a recession.



The Important Role of Inventories

- Inventories play a critical role in this model of the economy.
- When planned aggregate expenditure is less than real GDP, firms will experience unplanned increases in inventories.
- Then even if spending returns to normal levels, firms have excess inventories to sell, and they will do this instead of increasing production to normal levels.

Example: In 2009, the "Great Recession" was about to end. But real GDP fell sharply in the first quarter of 2009—at a 6.7 percent *annualized rate.*

- *Economists estimate that almost half of this decline was due to firms cutting production as they sold off their unintended accumulation of inventories.*

Table 12.3 Macroeconomic Equilibrium

Real GDP (*Y*)	Consumption (*C*)	Planned Investment (*I*)	Government Purchases (*G*)	Net Exports (*NX*)	Planned Aggregate Expenditure (*AE*)	Unplanned Change in Inventories	Real GDP Will…
$8,000	$6,200	$1,500	$1,500	−$500	$8,700	−$700	increase
9,000	6,850	1,500	1,500	−500	9,350	−350	increase
10,000	7,500	1,500	1,500	−500	10,000	0	be in equilibrium
11,000	8,150	1,500	1,500	−500	10,650	+350	decrease
12,000	8,800	1,500	1,500	−500	11,300	+700	decrease

- The table shows several hypothetical combinations of real GDP and planned aggregate expenditure.
- As real GDP changes, consumption changes but planned investment, government purchases, and net exports stay constant.
- Macroeconomic equilibrium can occur only at $10,000 billion; otherwise, the unplanned change in inventories will cause firms to change production and hence real GDP will change.

12.4 The Multiplier Effect

Describe the multiplier effect and use the multiplier formula to calculate changes in equilibrium GDP.

You may have noticed that a small change in planned aggregate expenditure causes a larger change in equilibrium real GDP.

In our model, planned investment, government purchases, and net exports are **autonomous expenditures**: their level does not depend on the level of GDP.

- But consumption has both an autonomous and *induced* effect.
- So its level *does* depend on the level of GDP, and this produces the upward-sloping AE line.

Figure 12.13 The Multiplier Effect

- An increase in an autonomous expenditure shifts the aggregate expenditure line upward.
- When this happens, real GDP increases by *more* than the change in autonomous expenditures; this is the **multiplier effect**.
- The value of the increase in equilibrium real GDP divided by the increase in autonomous expenditures is the **multiplier**.

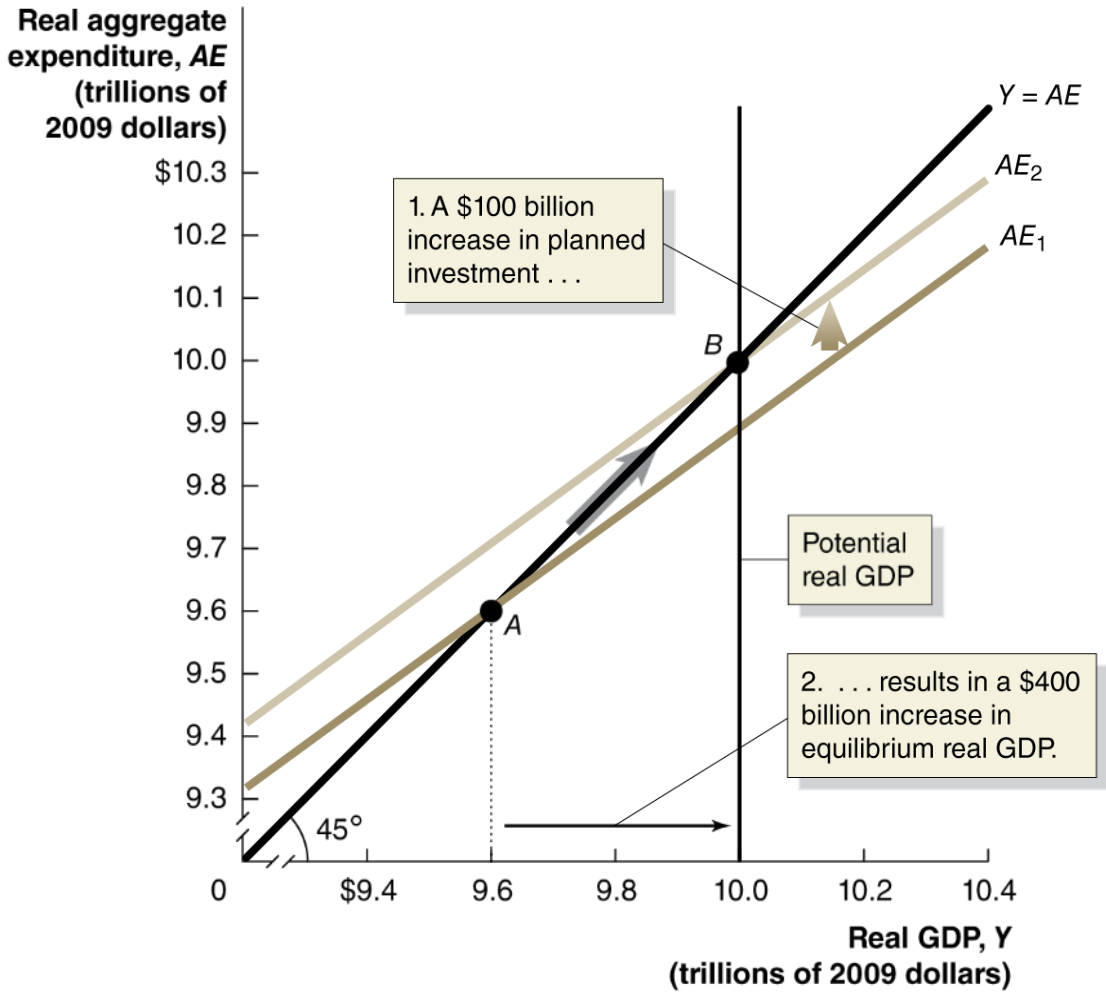


Table 12.4 The Multiplier Effect in Action

- Initially, real GDP rises by the amount of the increase in autonomous expenditure.
- This causes an increase in real GDP, which causes an increase in production, which causes an increase in real GDP.

	Additional Autonomous Expenditure (investment)	Additional Induced Expenditure (consumption)	Total Additional Expenditure = Total Additional GDP
Round 1	$100 billion	$0	$100 billion
Round 2	0	75 billion	175 billion
Round 3	0	56 billion	231 billion
Round 4	0	42 billion	273 billion
Round 5	0	32 billion	305 billion
.	.	.	.
.	.	.	.
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Round 10	0	8 billion	377 billion
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.	.	.	.
Round 15	0	2 billion	395 billion
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Round 19	0	1 billion	398 billion
.	.	.	.
.	.	.	.
.	.	.	.
Round n	0	0	400 billion

Eventual Effect of the Multiplier

- We cannot say how long this adjustment to macroeconomic equilibrium will take—how many "rounds," back and forth.
- But we can calculate the value of the multiplier, as the eventual change in real GDP divided by the change in autonomous expenditures (planned investment, in this case):
- $\frac{\Delta Y}{\Delta I} = \frac{\text{Change in real GDP}}{\text{Change in investment spending}} = \frac{\$400 \text{ billion}}{\$100 \text{ billion}} = 4$
- With a multiplier of 4, each $1 increase in planned investment (or any other autonomous expenditure) eventually increases equilibrium real GDP by $4.

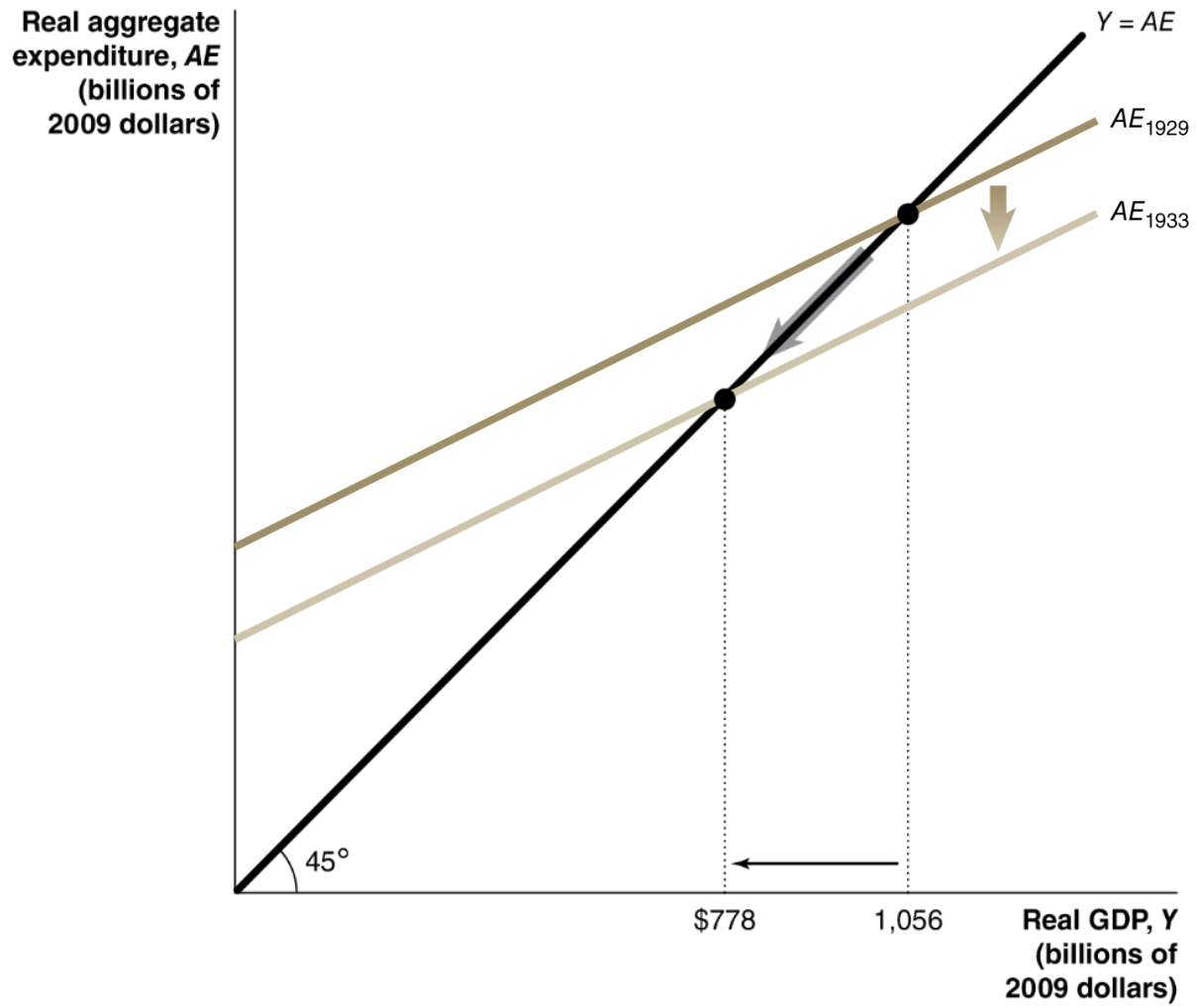
Making the Connection: The Multiplier in Reverse: the Great Depression (1 of 2)

- The multiplier can work in reverse too, like it did during the Great Depression of the 1930s.
- Several events, including the stock market crash of October 1929, led to reductions in investments by firms.
- Real GDP fell, so consumers cut back on spending, prompting firms to reduce production more, so consumers spent even less…

Year	Consumption	Investment	Exports	Real GDP	Unemployment Rate
1929	$781 billion	$124 billion	$41 billion	$1,057 billion	2.9%
1933	$638 billion	$27 billion	$22 billion	$778 billion	20.9%

Making the Connection: The Multiplier in Reverse: the Great Depression (2 of 2)

- The 45°-line diagram can help to illustrate this process.
- Aggregate expenditures fell initially, due to the decrease in investment.
- This prompted a multiplied effect on equilibrium real GDP.
- Recovery from the Great Depression took many years; unemployment remained above 10 percent until WWII.



The Multiplier and the Marginal Propensity to Consume

- How can we know the eventual value of the multiplier?

In each "round," the additional income prompts households to consume some fraction (the *marginal propensity to consume*).

The total change in equilibrium real GDP equals:

- The initial increase in planned investment spending = *$100* billion
- *Plus* the first induced increase in consumption = *MPC* × *$100* billion
- *Plus* the second induced increase in consumption = *MPC* × *(MPC* × *$100* billion*)*
  = MPC^2 × *$100* billion
- *Plus* the third induced increase in consumption = *MPC* × *(MPC^2* × *$100* billion*)*
  = MPC^3 × *$100* billion

And so on…

A Formula for the Multiplier

- This becomes the infinite sum:
- $\text{Total change in GDP} = \$100 \text{ billion} + MPC \times \$100 \text{ billion} + MPC^2 \times \$100 \text{ billion} + MPC^3 \times \$100 \text{ billion} + \ldots)$

$$= \$100 \text{ billion} \times (1 + MPC + MPC^2 + MPC^3 + \cdots)$$

$$= \$100 \text{ billion} \times \frac{1}{1 - MPC}$$

- In our case, $MPC = 0.75$, so the multiplier is 1/(1-0.75) = 4
- A $100 billion increase in investment eventually results in a $400 billion increase in equilibrium real GDP.
- The general formula for the multiplier is

$$\text{Multiplier} = \frac{\text{Change in equilibrium real GDP}}{\text{Change in autonomous expenditure}} = \frac{1}{1 - MPC}$$

Summarizing the Multiplier Effect

1. The multiplier effect occurs both for an increase and a decrease in planned aggregate expenditure.
2. Because the multiplier is greater than 1, the economy is sensitive to changes in autonomous expenditure.
3. The larger the MPC, the larger the value of the multiplier.
4. Our model is somewhat simplified, omitting some real-world complications. For example, as real GDP changes, imports, inflation, interest rates, and income taxes will change.

The last point generally means that the value we estimate for the multiplier, from the MPC, is too high. In the next chapter, we will address some of these shortcomings.

The Paradox of Thrift

- Recall the savings identity: *savings equals investment*.
- This implied that savings were the key to long-term growth.
- What happens in the short-term if people save more: consumption decreases, and hence incomes decrease, so consumption decreases… potentially pushing the economy into recession.
- John Maynard Keynes referred to this as the *paradox of thrift*: what appears to be favorable in the long-run may be counterproductive in the short-run.
- Economists debate whether this paradox of thrift really exists; increasing savings decreases the real interest rate; the consequent increase in investment spending may offset the decrease in consumption spending.
- We cannot settle this with our simple model.

12.5 The Aggregate Demand Curve

As demand for a product rises, we expect that two things will occur: production will increase and so will the product's price.

- Our model has concentrated on the first of these, but what about price changes?

In the larger economy, we also expect that an increase in aggregate expenditure would increase the *price level*.

Will this price level change have a feedback effect on aggregate expenditures?

- We generally expect that it will: increases in the price level will cause aggregate expenditure to fall, and decreases in the price level will cause aggregate expenditures to rise.

In this section, we will try to understand the relationship between the aggregate demand curve and aggregate expenditure.

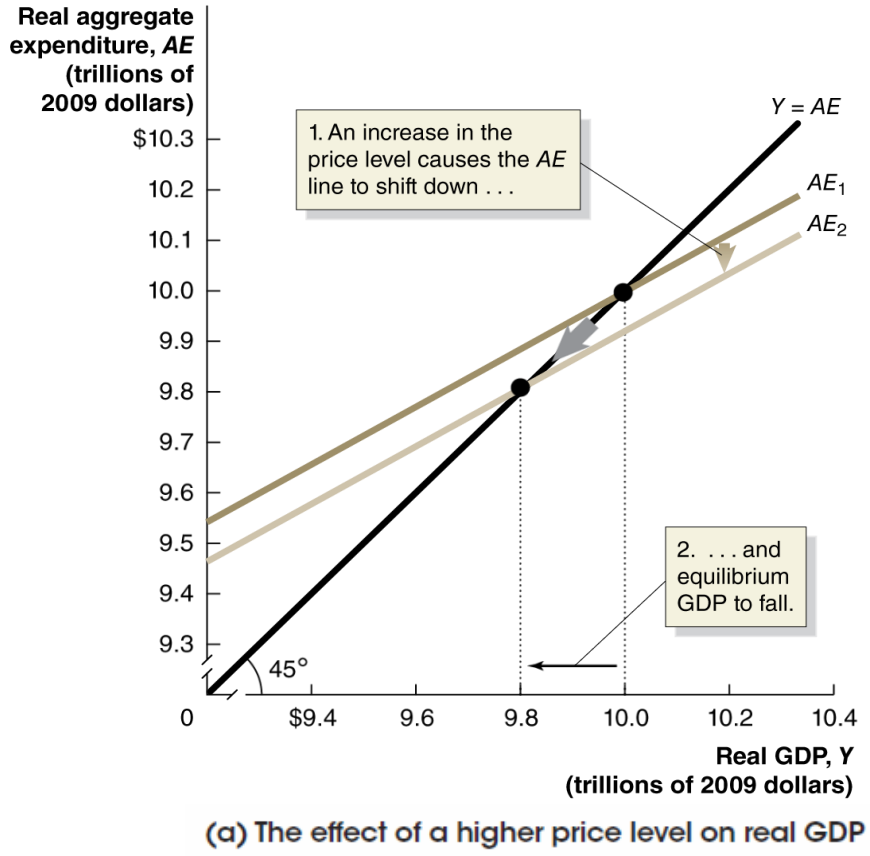
How Does the Price Level Affect Aggregate Expenditures?

The price level affects aggregate expenditures in three ways:

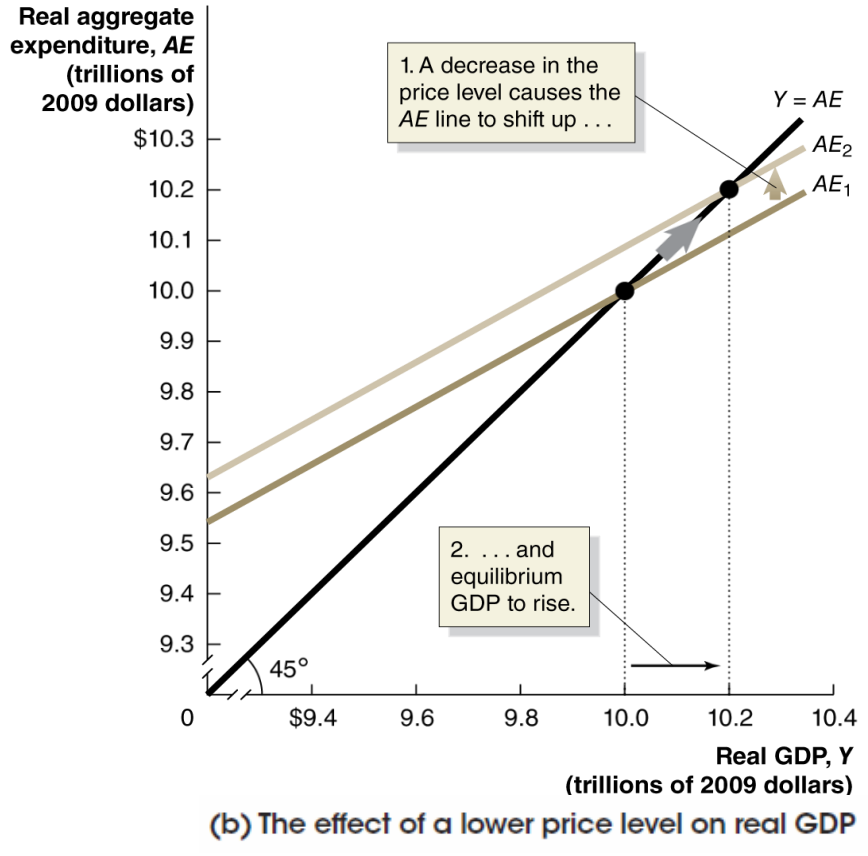
1. Rising price levels decrease the real value of household wealth, causing consumption to fall.
2. If price levels rise in the U.S. faster than in other countries, U.S. exports fall and imports rise, causing net exports to fall.
3. When prices rise, firms and households *need more money* to finance buying and selling. If the supply of money doesn't change, the interest rate must rise; this will cause investment spending to fall.

- Of course, these effects work in reverse if the price level falls.
- Each effect works in the same direction, so rising price levels decrease aggregate expenditures, while falling price levels increase aggregate expenditures.

Figure 12.14 The Effect of a Change in the Price Level on Real GDP



(a) The effect of a higher price level on real GDP



(b) The effect of a lower price level on real GDP

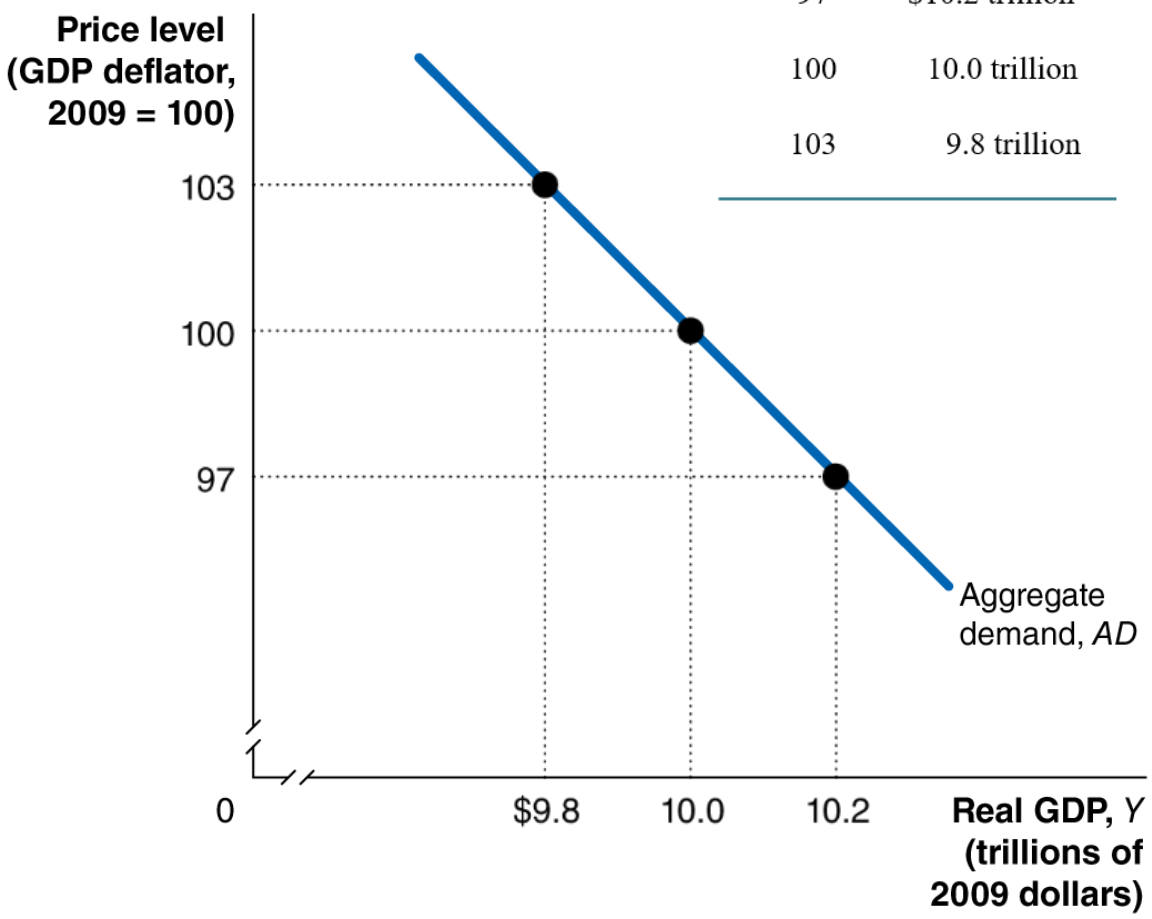
The diagrams show the effects described on the previous slide:

a. Increases in the price level cause AE and real GDP to fall.
b. Decreases in the price level cause AE and real GDP to rise.

Figure 12.15 The Aggregate Demand Curve

- Consequently, there is an inverse relationship between the price level and real GDP.
- This relationship is known as the *aggregate demand curve*.
- **Aggregate demand (AD) curve**: A curve that shows the relationship between the price level and the level of planned aggregate expenditure in the economy, holding constant all other factors that affect aggregate expenditure.

Price level	Equilibrium real GDP
97	$10.2 trillion
100	10.0 trillion
103	9.8 trillion



Appendix: The Algebra of Macroeconomic Equilibrium

Applying the algebra of macroeconomic equilibrium:

- Graphical analysis of macroeconomic equilibrium can tell us the *qualitative changes* that take place.
- But an equation based model can allow us to make *quantitative* or *numerical estimates* of what will occur.
- Economists in universities, firms, and the government rely on *econometric models* in which they statistically estimate the relationships between economic variables.

Aggregate Expenditure Equations

- Based on the example in the text, we can generate the following equations (changing the MPC so as to generate different results):

1. Consumption function: $C = 1{,}000 + 0.65Y$
2. Planned Investment function $I = 1{,}500$
3. Government purchases function $G = 1{,}500$
4. Net export function $NX = -500$
5. Equilibrium condition $Y = C + I + G + NX$

- In using the model, researchers would estimate the *parameters* of the model—such as the MPC or the values of the autonomous expenditure components like planned investment—using statistical methods and years of observations of data.

Solving the Model

The first four equations can be used to form the aggregate expenditure function—the right hand side of the fifth equation.

The fifth equation is the essential "equilibrium condition," representing the effect of the 45°-line.

Substituting the first four equations into the fifth gives:

$$Y = 1{,}000 + 0.65Y + 1{,}500 + 1{,}500 - 500$$

Subtracting $0.65Y$ from both sides gives:

$$Y - 0.65Y = 1{,}000 + 1{,}500 + 1{,}500 - 500$$

Which simplifies to:

$$0.35Y = 3{,}500$$

$$Y = \frac{3{,}500}{0.35} = 10{,}000$$

General Aggregate Expenditure Equations

More generally, we could allow the parameters of the model to be represented by letters:

1. Consumption function: $C = \bar{C} + MPC(Y)$
2. Planned Investment function $I = \bar{I}$
3. Government purchases function $G = \bar{G}$
4. Net export function $NX = \overline{NX}$
5. Equilibrium condition $Y = C + I + G + NX$

The letters with bars over them are parameters—fixed (autonomous) values.

For example, $\bar{I} = 1{,}500$ in our example.

Solving the General Aggregate Expenditure Equations

Solving now for equilibrium, we get:

$$Y = \bar{C} + MPC(Y) + \bar{I} + \bar{G} + \overline{NX}$$
$$Y - MPC(Y) = \bar{C} + \bar{I} + \bar{G} + \overline{NX}$$
$$Y(1 - MPC) = \bar{C} + \bar{I} + \bar{G} + \overline{NX}$$
$$Y = \frac{\bar{C} + \bar{I} + \bar{G} + \overline{NX}}{1 - MPC}$$
$$Y = (\bar{C} + \bar{I} + \bar{G} + \overline{NX}) \times \frac{1}{1 - MPC}$$

The last equation makes clear that:

$$\text{Equilibrium GDP} = \text{Autonomous expenditure} \times \text{Multiplier}$$

THE END

“The welfare of a nation can scarcely be inferred from a measurement of national income as defined by the GDP.” – Simon Kuznets

“What I'm not saying is that all government spending is bad. It's not - far, far from it, but there is no free lunch, as a former colleague of mine used to say. There is no public tooth fairy. Father Christmas does not work on the Treasury staff this year. You can never bail someone out of trouble without putting someone else into trouble.” – Arthur Laffer