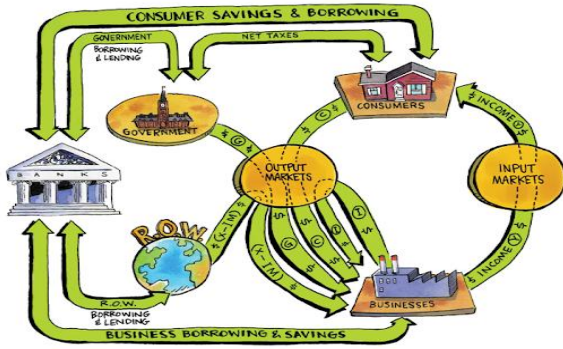


CHAPTER 12 LECTURE - AGGREGATE DEMAND AND AGGREGATE SUPPLY

CHAPTER 12 LECTURE - AGGREGATE DEMAND AND AGGREGATE SUPPLY



1

WHAT YOU WILL LEARN IN THIS CHAPTER

- How does the aggregate demand curve illustrate the relationship between the aggregate price level and the quantity of aggregate output demanded?
- How does the aggregate supply curve illustrate the relationship between the aggregate price level and the quantity of aggregate output supplied?
- Why is the aggregate supply curve different in the short run than in the long run?
- How is the AD-AS model used to analyze economic fluctuations?
- How can monetary policy and fiscal policy stabilize the economy?

2

SHOCKS TO THE SYSTEM

- What causes recessions?
- Why is inflation high in some recessions and not others?
- The economy's behavior can be explained, predicted, and potentially manipulated by looking at
- *total (aggregate) demand*
- *total (aggregate) supply*



3

3

THE AGGREGATE DEMAND CURVE

- **Aggregate demand curve:** the relationship between the **aggregate price level** and the **quantity of aggregate output demanded** by households, businesses, the government, and the rest of the world

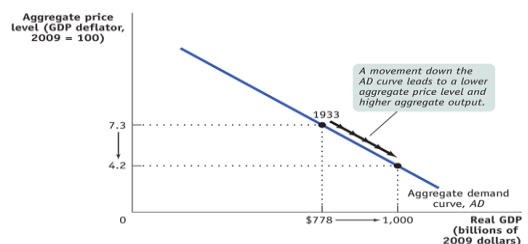


FIGURE 12-1 Krugman/Wells, Macroeconomics, 5e, © 2018 Worth Publishers

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CHAPTER 12 LECTURE - AGGREGATE DEMAND AND AGGREGATE SUPPLY

THE SHAPE OF THE AGGREGATE DEMAND CURVE

- Recall: $GDP = C + I + G + X - IM$
- Why does a rise in the aggregate price level reduce C , I , and $X - IM$?
- (Why does the AD curve slope downward?)
 1. The wealth effect: A higher aggregate price level reduces the purchasing power of households' wealth and reduces consumer spending.
 2. The interest rate effect: A higher aggregate price level makes households hold more money and leads to a rise in interest rates (and a fall in investment spending and consumer spending).

5

5

THE AGGREGATE DEMAND CURVE AND THE INCOME-EXPENDITURE MODEL

- We now drop the assumption that the overall price level is fixed. When the aggregate price level changes, the $AE_{Planned}$ curve shifts.
- (The AD curve is the application of the income expenditure model at different prices.)

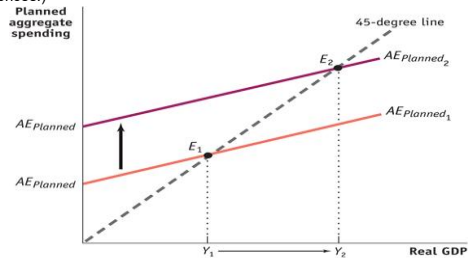


FIGURE 12-2 Krugman/Wells, Macroeconomics, 5e, © 2018 Worth Publishers

6

6

FROM THE THE INCOME-EXPENDITURE MODEL TO THE THE AGGREGATE DEMAND CURVE

- If the price level drops, planned spending rises at all output levels (from the wealth and interest-rate effects).
- This leads to a multiplier process that moves the income-expenditure equilibrium from E_1 to E_2 and raises real GDP from Y_1 to Y_2 .

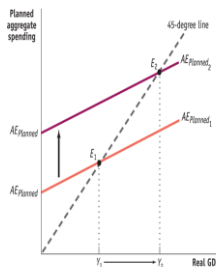


FIGURE 12-2 Krugman/Wells, Macroeconomics, 5e, © 2018 Worth Publishers

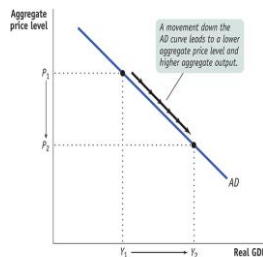


FIGURE 12-3 Krugman/Wells, Macroeconomics, 5e, © 2018 Worth Publishers

7

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Factors that Affect AD

$$AD = C + I + G + NX$$

- **Consumption**
 - Income
 - Wealth
 - Expectations
 - Demographics
 - Taxes
- **Investment**
 - Interest Rates
 - Technology
 - Cost of Capital Goods
 - Capacity Utilization
- **Government Spending**
- **Net Exports**
 - Domestic & Foreign Income
 - Domestic & Foreign Prices
 - Exchange Rates
 - Government Policy

8

8

CHAPTER 12 LECTURE - AGGREGATE DEMAND AND AGGREGATE SUPPLY

SHIFTS OF THE AGGREGATE DEMAND CURVE (1/2)

- What happens when some factor changes spending patterns at every price level?
- The aggregate demand curve *shifts* because of changes in:
 - Expectations: If consumers and firms become more optimistic, aggregate spending rises; if they become more pessimistic, aggregate spending falls.
 - Wealth: When the real value of household assets rises, their purchasing power also rises, leading to an increase in aggregate spending.
 - Size of the existing stock of physical capital: Firms plan investment spending depending on how much physical capital they already have: the more they have, the less they will feel a need to add more.

9

SHIFTS OF THE AGGREGATE DEMAND CURVE (2/2)

- What happens when some factor changes spending patterns at every price level?
 - Fiscal policy:
 - Government purchases of final goods and services, G , directly affect the aggregate demand curve because government purchases are a component of aggregate demand.
 - Taxes and government transfers influence the aggregate demand curve indirectly through their effect on disposable income.
 - Monetary policy:
 - When the central bank increases the quantity of money in circulation, households and firms have more money to lend out which drives the interest rate down, leading to higher investment spending and higher consumer spending.

10

GRAPHING THE SHIFTS OF THE AGGREGATE DEMAND CURVE

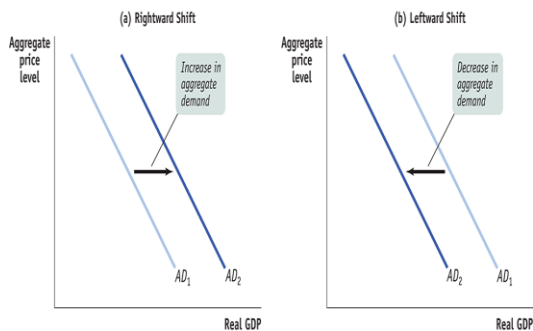


FIGURE 12-4 Krugman/Wells, Macroeconomics, 5e, © 2018 Worth Publishers

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FACTORS THAT SHIFT AGGREGATE DEMAND

Table 12-1 Factors That Shift Aggregate Demand

When this happens . . .	... aggregate demand increases	But when this happens . . .	... aggregate demand decreases
Changes in expectations			
When consumers and firms become more optimistic . . .		When consumers and firms become more pessimistic . . .	
Changes in wealth			
When the real value of household assets rises . . .		When the real value of household assets falls . . .	
Size of the existing stock of physical capital			
When the existing stock of physical capital is relatively small . . .		When the existing stock of physical capital is relatively large . . .	
Fiscal policy			
When the government increases spending or cuts taxes . . .		When the government reduces spending or raises taxes . . .	
Monetary policy			
When the central bank increases the quantity of money . . .		When the central bank reduces the quantity of money . . .	

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CHAPTER 12 LECTURE - AGGREGATE DEMAND AND AGGREGATE SUPPLY

PITFALLS: MOVING ALONG VS. SHIFTING THE AGGREGATE DEMAND CURVE

- **Q:** Does a change in wealth move us along the *AD* curve (wealth effect) or shift it?
- **A:** It depends on the source of the change in wealth.
 - If it's a change in price level that affects our wealth, it's a movement along the *AD*.
 - *Example: Rapid inflation shrinks our wealth.*
 - If it's a change in something else that affects our wealth, it's a shift in the *AD*.
 - *Example: The housing market crashes.*

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DEFINING THE SHORT-RUN AGGREGATE SUPPLY CURVE

- The *aggregate supply curve* shows the relationship between the aggregate price level and the quantity of aggregate output in the economy.

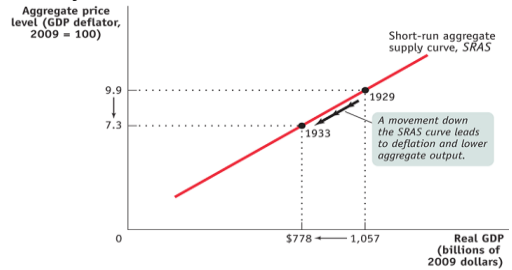
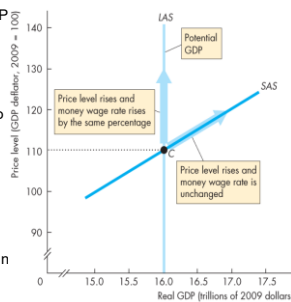


FIGURE 12-5 Krugman/Wells, *Macroeconomics*, 5e, © 2018 Worth Publishers

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SHORT RUN AGGREGATE SUPPLY

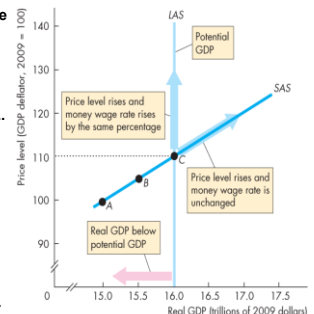
- In the short run, the quantity of real GDP supplied increases if the price level rises.
- The *SAS* curve slopes upward.
- A rise in the price level with no change in the money wage rate induces firms to increase production.
- In the short run, the quantity of real GDP supplied decreases if the price level falls.
- The *SAS* curve slopes upward.
- A fall in the price level with no change in the money wage rate induces firms to decrease production.



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SHORT RUN AGGREGATE SUPPLY

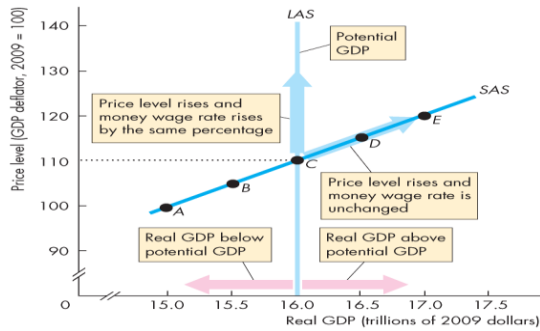
- With a given money wage rate, the *SAS* curve cuts the *LAS* curve at potential GDP.
- The price level is 110.
- With the given money wage rate, as the price level falls below 110 ...
- the quantity of real GDP supplied decreases along the *SAS* curve.
- With the given money wage rate, as the price level rises above 110 ...
- the quantity of real GDP supplied increases along the *SAS* curve.
- Real GDP exceeds potential GDP.



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CHAPTER 12 LECTURE - AGGREGATE DEMAND AND AGGREGATE SUPPLY

SHORT AND LONG RUN AGGREGATE SUPPLY



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THE SHAPE OF THE SHORT-RUN AGGREGATE SUPPLY CURVE

- Why does the SRAS curve slope upward?
- ...because nominal wages are sticky in the short run.
 - Nominal wage: the dollar amount of the wage paid
 - Sticky wages: nominal wages that are slow to fall even in the face of high unemployment and slow to rise even in the face of labor shortages



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18

STICKY WAGES

- How do sticky wages affect SRAS?
- Profit per unit = price per unit – production cost per unit
- Nominal wages are often determined by contracts that were signed some time ago.
 - Even when there are no formal contracts, there are often informal contracts between management and workers.
- A higher aggregate price level leads to higher profits and increased aggregate output in the short run.

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SHIFTS OF THE SHORT-RUN AGGREGATE SUPPLY CURVE (1 of 2)

- What happens when something changes production levels at every price level?
- The SRAS curve shifts because of changes in:
 - commodity prices
 - nominal wages
 - productivity
- Each of these factors changes producers' profits and therefore shifts the SRAS.

20

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CHAPTER 12 LECTURE - AGGREGATE DEMAND AND AGGREGATE SUPPLY

SHIFTS OF THE SHORT-RUN AGGREGATE SUPPLY CURVE (2 of 2)

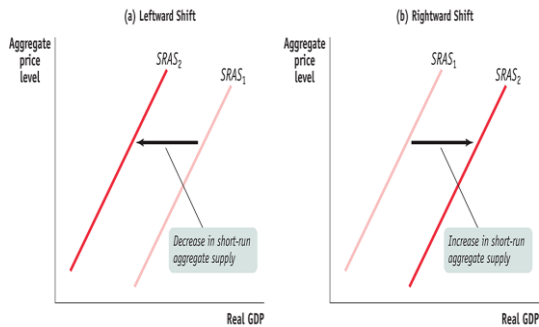


FIGURE 12-6 Krugman/Wells, Macroeconomics, 5e, © 2018 Worth Publishers

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FACTORS THAT SHIFT AGGREGATE SUPPLY

Table 12-2 Factors That Shift Aggregate Supply

When this happens . . .	. . . aggregate supply increases	But when this happens . . .	. . . aggregate supply decreases
Changes in commodity prices			
When commodity prices fall . . .		When commodity prices rise . . .	
Changes in nominal wages			
When nominal wages fall . . .		When nominal wages rise . . .	
Changes in productivity			
When workers become more productive . . .		When workers become less productive . . .	

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LEARN BY DOING PRACTICE QUESTION 1

- If the economy is in equilibrium and the real estate market collapses, what will likely happen?
 - The *AD* curve will shift rightward.
 - The *AD* curve will shift leftward.
 - The *SRAS* curve will shift rightward.
 - The *SRAS* curve will shift leftward.

23

LEARN BY DOING PRACTICE QUESTION 1 (Answer)

- If the economy is in equilibrium and the real estate market collapses, what will likely happen?
 - The *AD* curve will shift rightward.
 - The *AD* curve will shift leftward. (correct answer)
 - The *SRAS* curve will shift rightward.
 - The *SRAS* curve will shift leftward.

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CHAPTER 12 LECTURE - AGGREGATE DEMAND AND AGGREGATE SUPPLY

LEARN BY DOING PRACTICE QUESTION 2

- The short-run aggregate supply curve will shift to the right when:
 - a) when input costs rise.
 - b) when taxes rise.
 - c) when interest rates rise.
 - d) when productivity rises.

25

25

LEARN BY DOING PRACTICE QUESTION 2 (Answer)

- The short-run aggregate supply curve will shift to the right when:
 - a) when input costs rise.
 - b) when taxes rise.
 - c) when interest rates rise.
 - d) when productivity rises. (correct answer)

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LONG-RUN AGGREGATE SUPPLY CURVE

- The long-run aggregate supply curve shows the relationship between the aggregate price level and the quantity of aggregate output supplied that would exist if all prices, including nominal wages, were fully flexible.
- The long run is the time it takes for all prices (including nominal wages) to adjust.
- Now there is no change to profits **SIMPLY BECAUSE PRICES HAVE CHANGED.**

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27

GRAPHING THE LONG-RUN AGGREGATE SUPPLY CURVE

- **Potential output** is the level of real GDP the economy would produce if all prices, including nominal wages, were fully flexible.

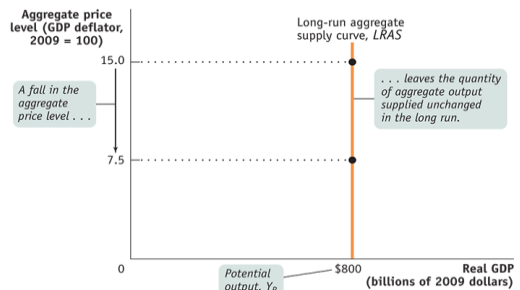


FIGURE 12-7 Krugman/Wells, *Macroeconomics*, 5e, © 2018 Worth Publishers

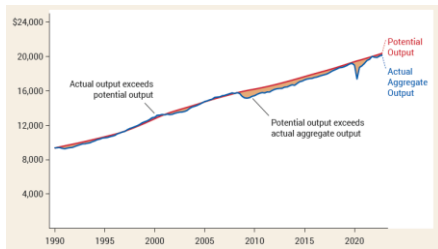
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CHAPTER 12 LECTURE - AGGREGATE DEMAND AND AGGREGATE SUPPLY

ACTUAL AND POTENTIAL OUTPUT, 1990 to 2022

- The level of real GDP is almost always either above or below potential output because of short-run fluctuations.



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FROM THE SHORT RUN TO THE LONG RUN

- If the economy finds itself at a price and output level away from the $LRAS$, wages will adjust and the $SRAS$ curve will shift toward equilibrium.

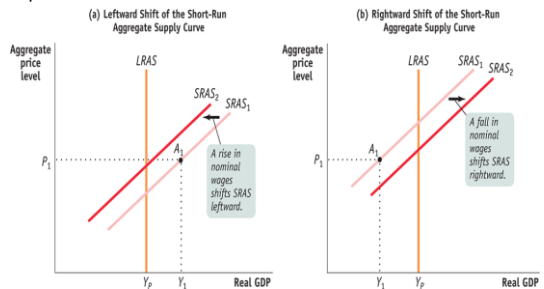


FIGURE 12-9 Krugman/Wells, Macroeconomics, 5e, © 2018 Worth Publishers

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STICKY WAGES IN THE GREAT RECESSION

- If the theory of sticky wages were true, we'd find evidence that wages fail to fall even during periods of high unemployment. We do.

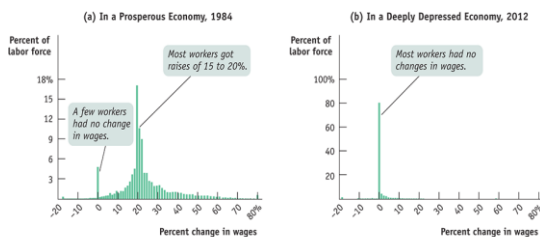


FIGURE 12-10 Krugman/Wells, Macroeconomics, 5e, © 2018 Worth Publishers
Data from: Olivier Blanchard, Portugal, P. (2015). The Portuguese Economic Crisis: Policies and Outcomes. Bertelsmann Policy Brief, 19.02. 2015.

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THE AD-AS MODEL

- The **AD-AS model** uses the aggregate supply curve and the aggregate demand curve together to analyze economic fluctuations.

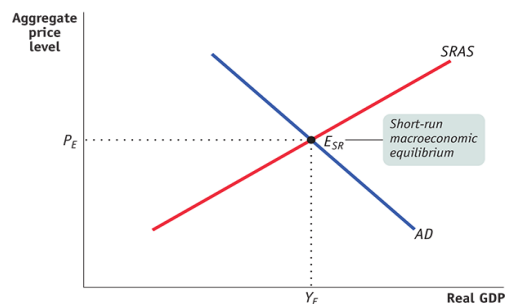


FIGURE 12-11 Krugman/Wells, Macroeconomics, 5e, © 2018 Worth Publishers

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CHAPTER 12 LECTURE - AGGREGATE DEMAND AND AGGREGATE SUPPLY

SHIFTS OF AGGREGATE DEMAND: SHORT-RUN

- The economy is in short-run macroeconomic equilibrium when the quantity of aggregate output supplied is equal to the quantity demanded.
- The short-run equilibrium aggregate price level is the aggregate price level in the short-run macroeconomic equilibrium.
- Short-run equilibrium aggregate output is the quantity of aggregate output produced in the short-run macroeconomic equilibrium.
- An event that shifts the aggregate demand curve is a demand shock.
- An event that shifts the aggregate supply curve is a supply shock.

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DEMAND SHOCKS

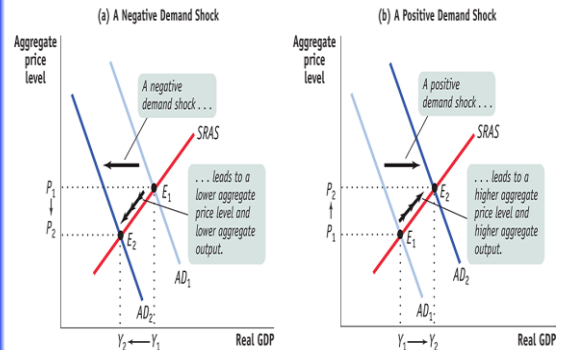


FIGURE 12-12 Krugman/Wells, Macroeconomics, 5e, © 2018 Worth Publishers

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SUPPLY SHOCKS

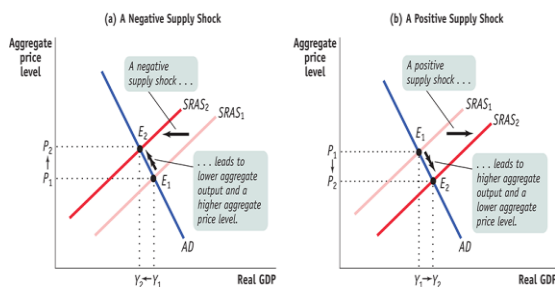


FIGURE 12-13 Krugman/Wells, Macroeconomics, 5e, © 2018 Worth Publishers

- **Stagflation** is the combination of inflation and falling aggregate output.

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SUPPLY SHOCKS VS. DEMAND SHOCKS IN ACTION

- Which type of recession is more common? Demand shocks are the usual culprit. Negative supply shocks are rare but nasty.

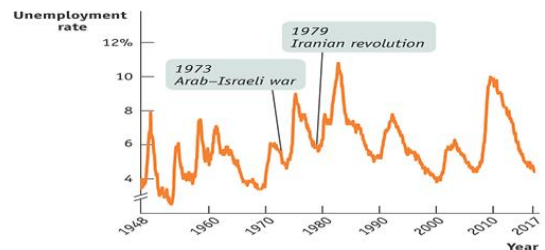


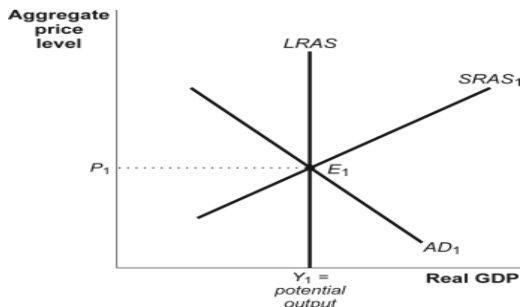
FIGURE 12-17 Krugman/Wells, Macroeconomics, 5e, © 2018 Worth Publishers
Data from: Bureau of Labor Statistics; Federal Reserve Bank of St. Louis.

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CHAPTER 12 LECTURE - AGGREGATE DEMAND AND AGGREGATE SUPPLY

LONG-RUN MACROECONOMIC EQUILIBRIUM

- The economy is in long-run macroeconomic equilibrium when the point of short-run macroeconomic equilibrium is on the long-run aggregate supply curve.



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SHORT-RUN VS. LONG-RUN EFFECTS OF A NEGATIVE DEMAND SHOCK

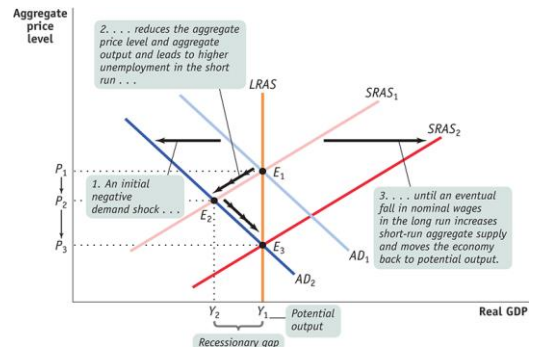


FIGURE 12-15 Krugman/Wells, Macroeconomics, 5e, © 2018 Worth Publishers

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SHORT-RUN VS. LONG-RUN EFFECTS OF A POSITIVE DEMAND SHOCK

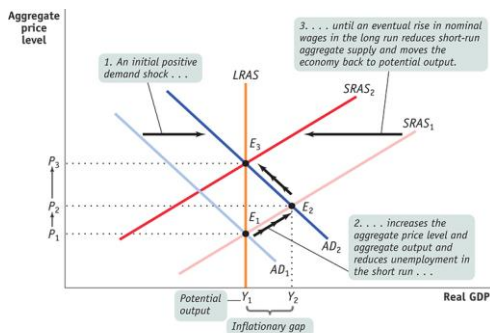


FIGURE 12-16 Krugman/Wells, Macroeconomics, 5e, © 2018 Worth Publishers

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SHIFTS IN AGGREGATE DEMAND

- In the short run, shifts in aggregate demand cause fluctuations in the economy's output of goods and services.
- In the long run, shifts in aggregate demand affect the overall price level but do not affect output.

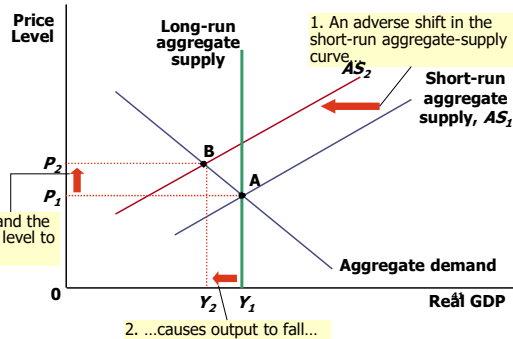


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CHAPTER 12 LECTURE - AGGREGATE DEMAND AND AGGREGATE SUPPLY

AN ADVERSE SHIFT IN AGGREGATE SUPPLY

A decrease in one of the determinants of aggregate supply shifts the curve to the left: Output falls below the natural rate of employment.



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POLICY RESPONSES TO A RECESSION

- Adverse shifts in aggregate supply cause stagflation—a combination of recession and inflation.
 - Output falls and prices rise.
 - Policymakers who can influence aggregate demand cannot offset both of these adverse effects simultaneously.

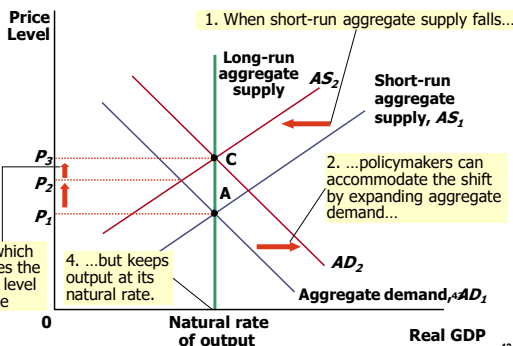
Stagflation

- Policymakers may respond to a recession in one of the following ways:
 - wait for prices and wages to adjust
 - take action to increase aggregate demand by using monetary and fiscal policy.

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Accommodating an Adverse Shift in Aggregate Supply



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GAP RECAP

- Recessionary gap:** when aggregate output is below potential output
- Inflationary gap:** when aggregate output is above potential output
- Output gap:** the percent difference between actual aggregate output and potential output

$$\text{Output gap} = \frac{\text{Actual aggregate output} - \text{Potential output}}{\text{Potential output}} \times 100$$

What happens next? Are we stuck in a gap forever?

We'll discuss how policy makers can attempt to move us back to potential output next...

But the economy may correct itself in the long run if wages and prices fully adjust.

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CHAPTER 12 LECTURE - AGGREGATE DEMAND AND AGGREGATE SUPPLY

LEARN BY DOING DISCUSSION QUESTION 1

- Suppose an economy is in short-run equilibrium but the level of real GDP is less than potential output. Which of these following statements is true?
 - a) In the long run, nominal wages will fall and the *SRAS* curve will shift left, restoring the economy to potential output.
 - b) In the long run, nominal wages will fall and the *SRAS* curve will shift right, restoring the economy to potential output.
 - c) In the long run, nominal wages will fall and the *AD* curve will shift left, restoring the economy to potential output.
 - d) In the long run, nominal wages will fall and the *AD* curve will shift right, restoring the economy to potential output.

45

45

LEARN BY DOING DISCUSSION QUESTION 1 (Answer)

- Suppose an economy is in short-run equilibrium but the level of real GDP is less than potential output. Which of these following statements is true?
 - a) In the long run, nominal wages will fall and the *SRAS* curve will shift left, restoring the economy to potential output.
 - b) In the long run, nominal wages will fall and the *SRAS* curve will shift right, restoring the economy to potential output. (correct answer)
 - c) In the long run, nominal wages will fall and the *AD* curve will shift left, restoring the economy to potential output.
 - d) In the long run, nominal wages will fall and the *AD* curve will shift right, restoring the economy to potential output.

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LEARN BY DOING DISCUSSION QUESTION 2

- Suppose short-run equilibrium real GDP for an economy is greater than potential output. This implies that:
 - a) nominal wages will have to adjust upward as the economy moves from the short run to the long run.
 - b) the level of unemployment is very low.
 - c) jobs are plentiful.
 - d) to reach long-run equilibrium, the *SRAS* curve will shift to the left, resulting in a higher aggregate price level.
 - e) Answers (a), (b), (c), and (d) are all correct.

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LEARN BY DOING DISCUSSION QUESTION 2 (Answer)

- Suppose short-run equilibrium real GDP for an economy is greater than potential output. This implies that:
 - a) nominal wages will have to adjust upward as the economy moves from the short run to the long run.
 - b) the level of unemployment is very low.
 - c) jobs are plentiful.
 - d) to reach long-run equilibrium, the *SRAS* curve will shift to the left, resulting in a higher aggregate price level.
 - e) Answers (a), (b), (c), and (d) are all correct. (correct answer)

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CHAPTER 12 LECTURE - AGGREGATE DEMAND AND AGGREGATE SUPPLY

MACROECONOMIC POLICY

- It's true that the economy is self-correcting in the long run.
- Most economists think it takes a decade or longer.
- Stabilization policy: the use of government policy to reduce the severity of recessions and rein in excessively strong expansions
 - John Maynard Keynes (1883–1946) created the modern field of macroeconomics.

"But this 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 that when the storm is long past the ocean is flat again."

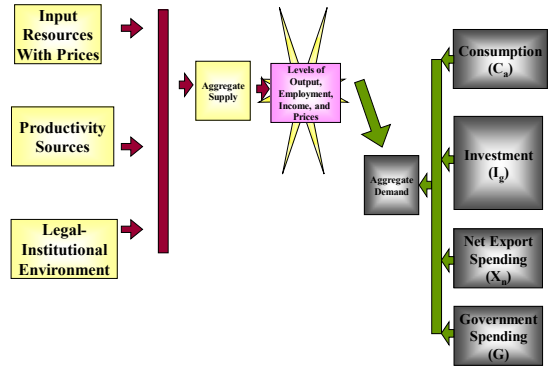
—J. M. Keynes



Bettmann/Getty Images

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The Big Picture Review



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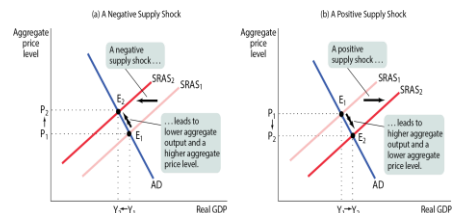
POLICY IN RESPONSE TO DEMAND SHOCKS

- If policy makers react quickly to the fall in aggregate demand, they can use monetary or fiscal policy to shift the aggregate demand curve back to the right.
- Instead of going through a recession, the government could make the economy stay at the original equilibrium.
- Macroeconomic policy would be desirable because:
 - The temporary fall in aggregate output is associated with high unemployment.
 - Preventing deflation is a good thing.
- Does this mean that policy makers should always act to offset declines in aggregate demand? Not necessarily. Some policy measures may have long-term costs in terms of lower long-run growth (budget deficits, for example). Also, policy makers aren't perfectly informed, and the effects of their policies aren't perfectly predictable. This creates the danger that stabilization policy will do more harm than good.

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RESPONDING TO SUPPLY SHOCKS

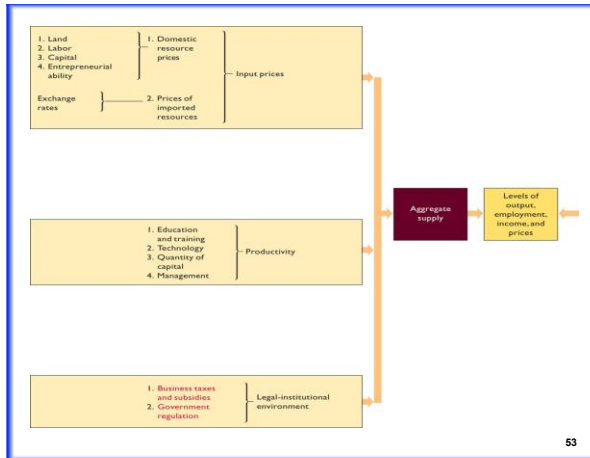


- A negative supply shock leads to a rise in prices *and* a rise in unemployment, which poses a policy dilemma:
 - Stabilization of unemployment requires an increase in aggregate demand. This leads to inflation.
 - Stabilization of prices requires a decrease in aggregate demand. This leads to higher unemployment.
- In the 1970s, the United States chose to stabilize prices at the cost of higher unemployment.

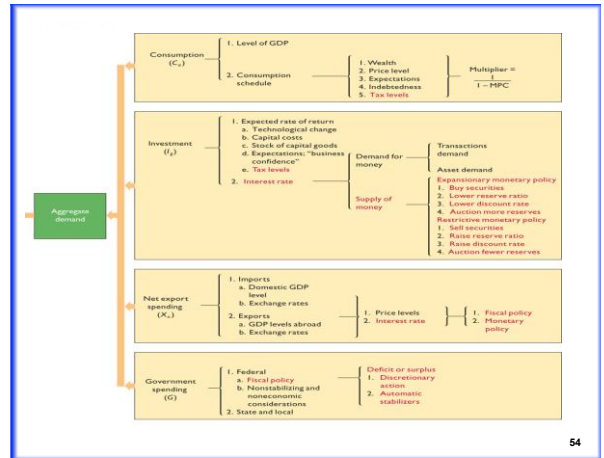
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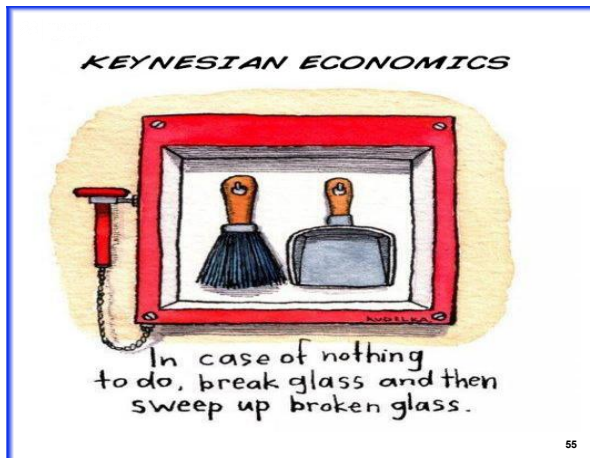
CHAPTER 12 LECTURE - AGGREGATE DEMAND AND AGGREGATE SUPPLY



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