

# UN1105 Principles of Economics

## Recitation 10: Aggregate Demand and Aggregate Supply

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# Outline

- Review of Concepts
  - AD-AS Model
- Analytical Questions
  - Q1: K&W Problem 27.11
- Short-answer Questions
  - Q2: K&W Problem 27.16

# Review of Concepts: AD-AS Model (i)

## Aggregate Demand

- The AD curve depicts the relationship between the aggregate price level and the quantity of aggregate output demanded, holding other factors constant.
  - Link to I-E model: AD curve summarizes the I-E equilibrium at different prices.
  - A decline in the price level will increase planned aggregate expenditure through the wealth and interest rate effects, thus the AE curve shifts up.
- The AD curve is downward sloping because of (i) the wealth effect, and (ii) the interest rate effect, of a change in the aggregate price level.
  - Wealth effect: higher price level reduces the purchasing power of a given level of wealth.
  - Interest rate effect: higher price level reduces the purchasing power of a given level of monetary holdings, leading to increased demand for money, a rise in interest rates and a fall in investment and consumer spending.
- The AD curve shifts because of changes to
  1. expectations,
  2. wealth (not arising because of changes in aggregate prices),
  3. the size of the existing stock of physical capital,
  4. fiscal policy,
  5. monetary policy,

# Review of Concepts: AD-AS Model (ii)

Figure 1: I-E Model and AD

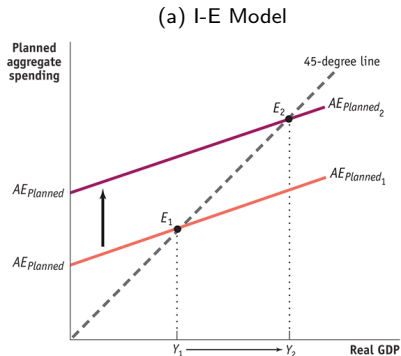


FIGURE 12-2 Krugman/Wells, *Macroeconomics*, 5e, © 2018 Worth Publishers

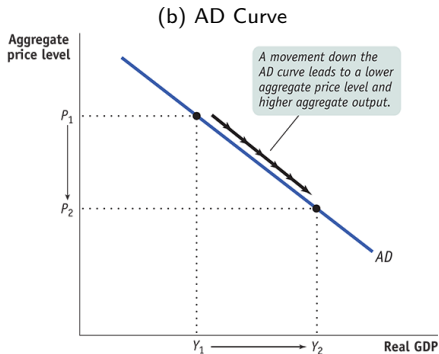












FIGURE 12-3 Krugman/Wells, *Macroeconomics*, 5e, © 2018 Worth Publishers

# Review of Concepts: AD-AS Model (iii)

Figure 2: Factors that Shift Aggregate Demand

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

# Review of Concepts: AD-AS Model (iv)

## Short-run Aggregate Supply (SRAS)

- The SRAS curve depicts the relationship between the aggregate price level and the quantity of aggregate output supplied, holding other factors constant.
- The SRAS curve is upward sloping because nominal wages are *sticky*.
  - A higher aggregate price increases profit per unit if some input prices do not immediately adjust, so the quantity of aggregate output supplied increases.
- The SRAS curve shifts because of changes to
  1. Commodity prices,
  2. Nominal wages,
  3. Productivity,

## Short-run Macroeconomic equilibrium

- Intersection of SRAS and AD
- Determines SR eqm. aggregate price level and SR eqm. aggregate output.
- Economic fluctuations occur because of shifts in SRAS and/or AD.
  - Demand shocks move aggregate prices and output in the same direction,
  - Supply shocks move aggregate prices and output in opposite directions,

# Review of Concepts: AD-AS Model (v)

Figure 3: Short-run Aggregate Supply

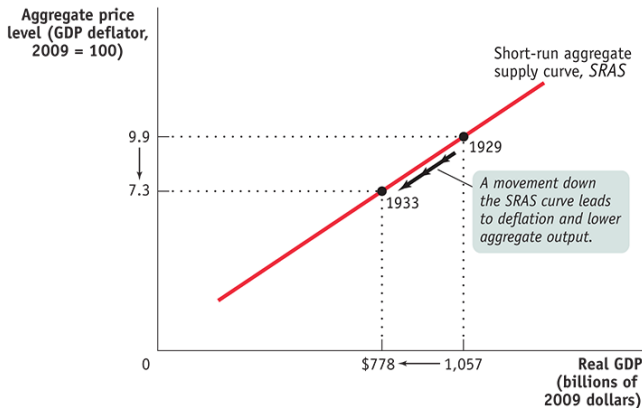
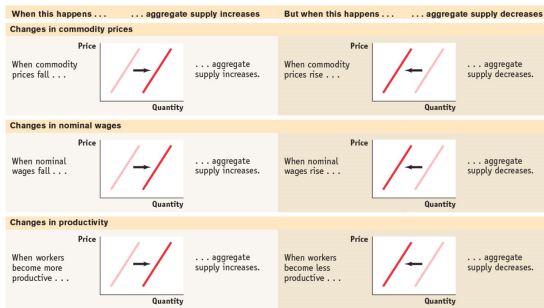


FIGURE 12-5 Krugman/Wells, *Macroeconomics*, 5e, © 2018 Worth Publishers

# Review of Concepts: AD-AS Model (vi)

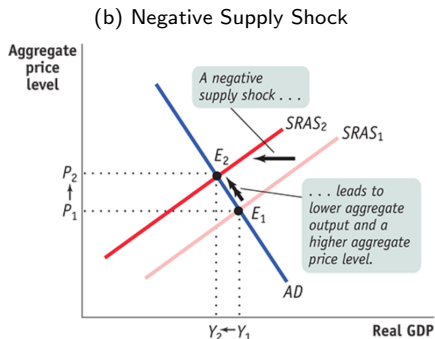
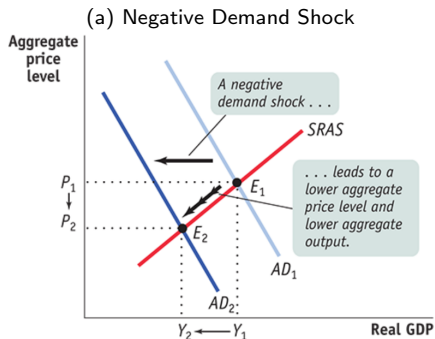
Figure 4: Factors that Shift Aggregate Supply





# Review of Concepts: AD-AS Model (vii)

Figure 5: Effect of Shocks on Short-run Macroeconomic Equilibrium



# Review of Concepts: AD-AS Model (viii)

## Long-run Aggregate Supply

- In the long run, all prices – including wages – are perfectly flexible.
- As such, the economy produces at its potential output.
  - If aggregate output exceeds potential  $\Rightarrow$  unemployment is low  $\Rightarrow$  upward pressure on nominal wages  $\Rightarrow$  AS shifts to the left  $\Rightarrow$  aggregate output falls.
- Therefore, the LRAS curve is vertical at potential output.
  - This is not to say that potential output is fixed, but rather that potential output is independent of the price level as nominal wages will adjust in the LR.
  - Can change with changes in physical/ human capital, technology etc.

## Long-run Macroeconomic Equilibrium

- Because potential output is vertical, AD shocks have only short-run effects on aggregate prices and output. Self-correcting.

# Review of Concepts: AD-AS Model (ix)

- Gaps
  - Recessionary gap is when output is below potential output. An eventual fall in nominal wages moves the economy to LR macroeconomic eqm.
  - Inflation gap is when output is above potential output. The eventual increase in nominal wages moves the economy to LR macroeconomic eqm.
  - We use the output gap – percentage difference of actual output from potential output – to summarize where the economy is. In the LR, output gap is zero.

## Macroeconomic Policy

- The costs of a recessionary gap – high unemployment – or an inflationary gap – future adverse consequences – promotes stabilization policy: using fiscal or monetary policy to offset demand shocks.
- But easier said than done. In reality, fiscal policy has long-term consequences, and there is uncertainty about the output gap and the lag between policy and the effect.
- Using policy to respond to supply shocks is more difficult..

# Review of Concepts: AD-AS Model (x)

Figure 6: Long-run Macroeconomic Equilibrium

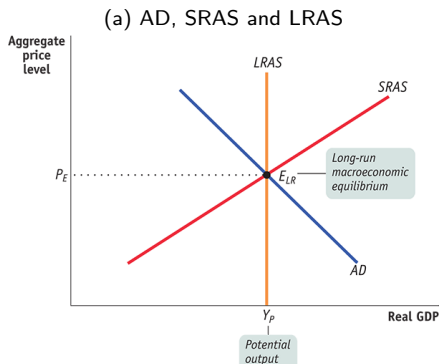


FIGURE 12-14 Krugman/Wells, *Macroeconomics*, 5e, © 2018 Worth Publishers

(b) Dynamics Following Positive Demand Shock

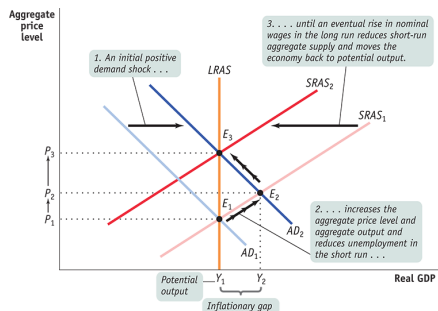


FIGURE 12-16 Krugman/Wells, *Macroeconomics*, 5e, © 2018 Worth Publishers

## Analytical Questions, Q1: K&W Problem 27.11 (i)

Using AD, SRAS, and LRAS supply curves, explain the process by which each of the following events will move the economy from one long-run macroeconomic equilibrium to another. Illustrate with diagrams. In each case, what are the short-run and long-run effects on prices and output?

(a) A decrease in households' wealth due to a decline in the stock market.

A decrease in households' wealth will reduce consumer spending. Beginning at  $E_1$ , the AD curve will shift from  $AD_1$  to  $AD_2$ . In the short run, nominal wages are sticky, and the economy will be in SR eqm. at point  $E_2$ . The aggregate price level will be lower than at  $E_1$ , and aggregate output will be lower than potential output. The economy faces a recessionary gap. As wage contracts are renegotiated, nominal wages will fall and the short-run aggregate supply curve will shift gradually to the right over time until it reaches  $SRAS_2$  and intersects  $AD_2$  at point  $E_3$ . At  $E_3$ , the economy is back at its potential output but at a much lower aggregate price level.

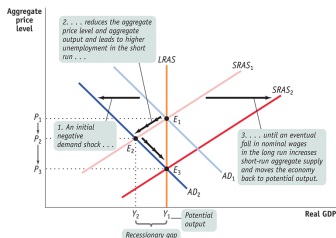


FIGURE 12-15 Krugman/Wells, Macroeconomics, 5e, © 2018 Worth Publishers

## Analytical Questions, Q1: K&W Problem 27.11 (ii)

Using AD, SRAS, and LRAS supply curves, explain the process by which each of the following events will move the economy from one long-run macroeconomic equilibrium to another. Illustrate with diagrams. In each case, what are the short-run and long-run effects on prices and output?

- (b) The government lowers taxes, leaving households with more disposable income, with no corresponding reduction in government purchases.

An increase in disposable income will increase consumer spending and the AD curve will shift to the right. Beginning at  $E_1$ , the AD curve shifts from  $AD_1$  to  $AD_2$ . In the short run, nominal wages are sticky, thus the economy will be in SR eqm. at  $E_2$ . The aggregate price level is higher than at  $E_1$ , and aggregate output exceeds

potential output. The economy faces an inflationary gap. As wage contracts are renegotiated, nominal wages will rise and the SRAS curve will shift gradually to the left over time until it reaches  $SRAS_2$  and intersects  $AD_2$  at point  $E_3$ . At  $E_3$ , the economy is back at its potential output but at a much higher aggregate price level.

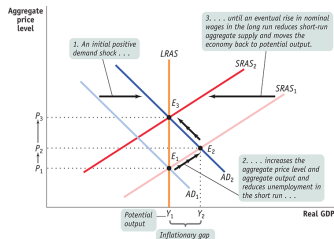


FIGURE 12-16 Krugman/Wells, Macroeconomics, 5e, © 2018 Worth Publishers

## Short-answer Questions, Q2: K&W Problem 27.16

In each of the following cases, in the short run, determine whether the events cause a shift of a curve or a movement along a curve. Determine which curve is involved and the direction of the change.

- (a) As a result of an increase in the value of the dollar in relation to other currencies, American producers now pay less in dollar terms for foreign steel, a major commodity used in production.

As the value of the dollar in terms of other currencies increases and American producers pay less in dollar terms for foreign steel, producers' profit per unit increases and they are willing to supply a greater quantity of aggregate output at any given aggregate price level. The short-run aggregate supply curve will shift to the right.

- (b) An increase in the quantity of money by the Federal Reserve increases the quantity of money that people wish to lend, lowering interest rates.

As the Federal Reserve increases the quantity of money, households and firms have more money, which they are willing to lend out, and interest rates fall. The lower interest rates will increase investment spending and consumer spending, leading to a greater quantity of aggregate output demanded at any given aggregate price level. The aggregate demand curve will shift to the right.

## Short-answer Questions, Q2: K&W Problem 27.16

In each of the following cases, in the short run, determine whether the events cause a shift of a curve or a movement along a curve. Determine which curve is involved and the direction of the change.

- (c) Greater union activity leads to higher nominal wages.

If unions are able to negotiate higher nominal wages for a large portion of the workforce, this will increase production costs and reduce profit per unit at any given aggregate price level. The short-run aggregate supply curve will shift to the left.

- (d) A fall in the aggregate price level increases the purchasing power of households' and firms' money holdings. As a result, they borrow less and lend more.

As the aggregate price level falls and the purchasing power of households' and firms' money holdings increases, the public tries to reduce its money holdings by borrowing less and lending more. So interest rates fall, leading to a rise in both investment spending and consumer spending. This is the interest rate effect of a change in the aggregate price level, represented as a movement down along the aggregate demand curve.