Chapter 9 Introduction to Economic Fluctuations

- facts about the business cycle
- how the short run differs from the long run
- an introduction to aggregate demand
- an introduction to aggregate supply in the short run and long run
- how the model of aggregate demand and aggregate supply can be used to analyze the short-run and long-run effects of “shocks.”
Facts about the business cycle

- GDP growth averages 3–3.5 percent per year over the long run with large fluctuations in the short run.

- Consumption and investment fluctuate with GDP, but consumption tends to be less volatile and investment more volatile than GDP.

- Unemployment rises during recessions and falls during expansions.

- **Okun’s Law**: the negative relationship between GDP and unemployment.
Growth rates of real GDP, consump., investment

Percent change from 4 quarters earlier

Investment growth rate

Real GDP growth rate

Consumption growth rate
Okun’s Law

\[ \frac{\Delta Y}{\gamma} = 3 - 2\Delta u \]

Percentage change in real GDP

Change in unemployment rate


1971

-3 -2 -1 0 1 2 3 4
Okun’s Confounding Law
Time horizons in macroeconomics

- **Long run**
  Prices are flexible, respond to changes in supply or demand.

- **Short run**
  Many prices are “sticky” at a predetermined level.

In reality, quantities are adjusted faster than prices.
### Table 9.1

The Frequency of Price Adjustment

This table is based on answers to the question: How often do the prices of your most important products change in a typical year?

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percentage of Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than once</td>
<td>10.2</td>
</tr>
<tr>
<td>Once</td>
<td>39.3</td>
</tr>
<tr>
<td>1.01 to 2</td>
<td>15.6</td>
</tr>
<tr>
<td>2.01 to 4</td>
<td>12.9</td>
</tr>
<tr>
<td>4.01 to 12</td>
<td>7.5</td>
</tr>
<tr>
<td>12.01 to 52</td>
<td>4.3</td>
</tr>
<tr>
<td>52.01 to 365</td>
<td>8.6</td>
</tr>
<tr>
<td>More than 365</td>
<td>1.6</td>
</tr>
</tbody>
</table>

The Quantity Equation as Aggregate Demand

- From Chapter 4, recall the quantity equation

\[ MV = PY \]

- For given values of \( M \) and \( V \), this equation implies an inverse relationship between \( P \) and \( Y \)…
Aggregate supply in the long run

- Recall from Chapter 3:
  In the long run, output is determined by factor supplies and technology

\[ \bar{Y} = F(\bar{K}, \bar{L}) \]

\( \bar{Y} \) is the full-employment or natural level of output, at which the economy’s resources are fully employed.

“Full employment” means that unemployment equals its natural rate (not zero).
Long-run effects of an increase in $M$

In the long run, this raises the price level…

…but leaves output the same.

An increase in $M$ shifts $AD$ to the right.
Aggregate supply in the short run

- Many prices are sticky in the short run.
- For now (and through Chap. 12), we assume
  - all prices are stuck at a predetermined level in the short run.
  - firms are willing to sell as much at that price level as their customers are willing to buy.
- Therefore, the short-run aggregate supply (SRAS) curve is horizontal:
The short-run aggregate supply curve

The $SRAS$ curve is horizontal:
The price level is fixed at a predetermined level, and firms sell as much as buyers demand.
Short-run effects of an increase in $M$

In the short run when prices are sticky,…

…causes output to rise.

…an increase in aggregate demand…
The SR & LR effects of $\Delta M > 0$

A = initial equilibrium

B = new short-run eq’m after Fed increases M

C = long-run equilibrium

Diagram:
- LRAS
- SRAS
- AD1
- AD2
- $P_2$
- $Y_2$
- A
- B
- C

CHAPTER 9 Introduction to Economic Fluctuations
Shocks

- **shocks**: exogenous changes in agg. supply or demand

- Shocks temporarily push the economy away from full employment.

- **Example**: exogenous decrease in velocity

  If the money supply is held constant, a decrease in $V$ means people will be using their money in fewer transactions, causing a decrease in demand for goods and services.
The effects of a negative demand shock

*AD* shifts left, depressing output and employment in the short run.

Over time, prices fall and the economy moves down its demand curve toward full-employment.
Supply shocks

- A supply shock alters production costs, affects the prices that firms charge. (also called price shocks)

- Examples of adverse supply shocks:
  - Bad weather reduces crop yields, pushing up food prices.
  - Workers unionize, negotiate wage increases.
  - New environmental regulations require firms to reduce emissions. Firms charge higher prices to help cover the costs of compliance.

- Favorable supply shocks lower costs and prices.
CASE STUDY:  
The 1970s oil shocks

- Early 1970s: OPEC coordinates a reduction in the supply of oil.

- Oil prices rose
  - 11% in 1973
  - 68% in 1974
  - 16% in 1975

- Such sharp oil price increases are supply shocks because they significantly impact production costs and prices.
CASE STUDY:
The 1970s oil shocks

The oil price shock shifts SRAS up, causing output and employment to fall.

In absence of further price shocks, prices will fall over time and economy moves back toward full employment.
Stabilizing output with monetary policy

But the Fed accommodates the shock by raising agg. demand.

results:
$P$ is permanently higher, but $Y$ remains at its full-employment level.
1. Long run: prices are flexible, output and employment are always at their natural rates, and the classical theory applies.

   Short run: prices are sticky, shocks can push output and employment away from their natural rates.

2. Aggregate demand and supply: a framework to analyze economic fluctuations
3. The aggregate demand curve slopes downward.

4. The long-run aggregate supply curve is vertical, because output depends on technology and factor supplies, but not prices.

5. The short-run aggregate supply curve is horizontal, because prices are sticky at predetermined levels.