

An Introduction to Macroeconomics

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Learning Objectives:

LO26.1 Performance and Policy: Key Economic Indicators

LO26.2 The Miracle of Modern Economic Growth

**LO26.3 Saving, Investment, and Choosing Between Present and Future
Consumption**

LO26.4 Uncertainty, Expectations, and Shocks

(Why shocks and sticky prices cause short-run fluctuations in output and employment)

LO26.5 How Sticky Are Prices?

(The degree to which prices in the economy are sticky)

LO26.6 Categorizing Macroeconomic Models Using Price Stickiness

(Why economists use different models for different time horizons)

Assessing the Economy's Performance

1. What Is Macroeconomics?

Macroeconomics studies the economy as a whole.

It focuses on:

- **Long-run economic growth**
- **Short-run economic fluctuations**, also called the **business cycle**

Economies usually grow over time, but in the short run they may experience **recessions**, where output and living standards fall.

2. Why Do Economists Use Key Indicators?

Economists study many types of data, but they mainly focus on **three key indicators** to measure the health of an economy:

- **Real GDP**
- **Unemployment**
- **Inflation**

These indicators help economists understand how well an economy is performing and guide government policy.

3. Real GDP (Gross Domestic Product)

Real GDP measures the value of all **final goods and services** produced within a country during a specific period, adjusted for price changes.

Why Real GDP is important:

- Shows whether the economy is **growing or shrinking**
- Measures changes in **actual output**, not just prices
- Higher real GDP means a **higher standard of living**

Nominal vs. Real GDP:

- **Nominal GDP** uses current prices and can increase due to inflation
- **Real GDP** removes the effect of price changes and shows true growth

4. Unemployment

Unemployment occurs when people are willing and able to work but cannot find a job.

Why unemployment matters:

- Wastes valuable human resources
- Reduces total production in the economy
- Is linked to social problems such as poverty, crime, and poor health

A low unemployment rate usually means the economy is performing well.

Assessing the Economy's Performance

5. Inflation

Inflation is an increase in the overall level of prices in the economy.

Why inflation is important:

- Reduces purchasing power
- Lowers real income if wages do not rise as fast as prices
- Decreases the value of savings
- Creates uncertainty for households and businesses

6. The Goals of Economic Policy

Governments use economic policy to:

- Promote **economic growth**
- Reduce **unemployment**
- Control **inflation**

Economists use macroeconomic models to study:

- Monetary policy (interest rates)
- Fiscal policy (taxes and government spending)
- Trade-offs between inflation and unemployment

The Miracle of Modern Economic Growth

<p>1. What Is Modern Economic Growth?</p>	<p>Modern economic growth refers to a situation where output per person (living standards) increases over time.</p> <p>This type of growth is a recent historical phenomenon.</p>
<p>2. Living Standards Before the Industrial Revolution</p>	<p>Before the Industrial Revolution (late 1700s):</p> <ul style="list-style-type: none"> • Living standards showed almost no growth for hundreds or even thousands of years. • The average Roman or Chinese peasant lived at nearly the same standard of living across centuries. • Total output increased, but population grew at the same rate, so output per person stayed constant. <p>→ Result: No sustained improvement in living standards.</p>
<p>3. The Industrial Revolution and Its Impact</p>	<p>The Industrial Revolution introduced:</p> <ul style="list-style-type: none"> • Factory production • Automation • Major advances in technology and research • Continuous invention and innovation <p>These changes caused:</p> <ul style="list-style-type: none"> • Output to grow faster than population • Output per person to increase • Living standards to rise for the first time in history <p>Countries that experienced this were said to have modern economic growth.</p>
<p>4. The Power of Compounding Growth</p>	<p>Even small annual growth rates have large effects over time.</p> <p>Example:</p> <ul style="list-style-type: none"> • An annual growth rate of 2%: <ul style="list-style-type: none"> ○ Doubles living standards every 35 years ○ \$10,000 → \$20,000 → \$40,000 → \$80,000 <p>This was unimaginable before modern economic growth, when living standards were unchanged for centuries.</p>

<p>5. Differences Between Rich and Poor Countries</p>	<ul style="list-style-type: none"> • Before 1800, living standards across countries were very similar • Today, rich countries have living standards over 50 times higher than poor countries • These differences exist mainly because: <ul style="list-style-type: none"> ○ Some countries experienced modern economic growth ○ Others did not
<p>6. Measuring Living Standards: GDP per Person</p>	<p>Economists compare living standards using GDP per person, adjusted in three ways:</p> <ol style="list-style-type: none"> 1. Currency conversion GDP is converted into U.S. dollars for easy comparison. 2. Per capita adjustment GDP is divided by population to measure average output per person. 3. Purchasing Power Parity (PPP) Adjusts for price differences across countries so that: <ul style="list-style-type: none"> ○ \$1 buys a similar amount of goods and services in all countries <p>→ GDP per person (PPP) is a reliable measure of average living standards.</p>

Saving, Investment, and Choosing Between Present and Future Consumption

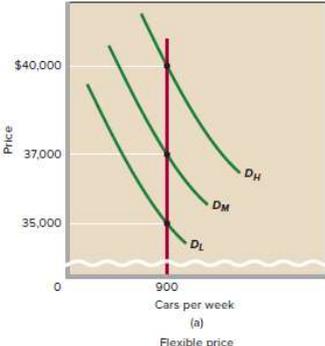
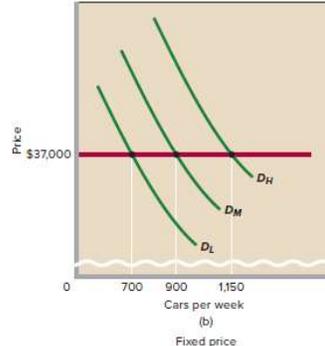
<p>1. What Is Modern Economic Growth?</p>	<p>Rising living standards require an economy to sacrifice some current consumption in order to increase future output.</p> <p>Economic growth depends on two key flows:</p> <ul style="list-style-type: none"> • Saving • Investment <p>Without saving and investment, sustained growth in living standards is impossible.</p>
<p>2. Saving</p>	<p>Saving occurs when:</p> <ul style="list-style-type: none"> • Current consumption is less than current output, or • Current spending is less than current income <p>In simple terms, saving means not consuming all income today so that resources are available for future use.</p>
<p>3. Investment (Economic Definition)</p>	<p>In economics, investment means:</p> <ul style="list-style-type: none"> • Using resources to increase future productive capacity <p>Examples:</p> <ul style="list-style-type: none"> • Building factories • Purchasing machinery and equipment • Investing in research and development (R&D) • Improving technology <p>⚠ Important note:</p> <p>In economics, investment does not mean buying stocks or bonds. Those are financial investments, not real investment.</p>
<p>4. Why Saving and Investment Matter</p>	<p>The key relationship is:</p> <ul style="list-style-type: none"> • Investment is limited by saving <p>To increase investment:</p> <ul style="list-style-type: none"> • Society must increase saving • Increased saving requires reduced current consumption <p>→ This creates a trade-off between present and future consumption.</p>

<p>5. The Trade-Off: Present vs. Future Consumption</p>	<ul style="list-style-type: none"> • More saving today → less consumption today • Less consumption today → more investment • More investment → higher future output • Higher future output → higher future living standards <p>Societies must decide:</p> <ul style="list-style-type: none"> • How much current consumption to give up • How much future consumption they want to gain
<p>6. Role of Banks and Financial Institutions</p>	<p>Households are the main savers, while businesses are the main investors.</p> <p>Financial institutions connect savers and investors by:</p> <ul style="list-style-type: none"> • Collecting household savings • Paying savers interest, dividends, or capital gains • Lending funds to businesses for investment in capital goods <p>Examples of financial institutions:</p> <ul style="list-style-type: none"> • Banks • Mutual funds • Pension funds • Insurance companies
<p>7. Importance of a Well-Functioning Financial System</p>	<p>A strong financial system:</p> <ul style="list-style-type: none"> • Encourages saving • Directs savings to productive investments • Promotes economic growth and stability <p>A weak financial system:</p> <ul style="list-style-type: none"> • Misallocates resources • Reduces investment efficiency • Slows economic growth

Uncertainty, Expectations, and Shocks

(Why shocks and sticky prices cause short-run fluctuations in output and employment)

<p>1. Uncertainty and Expectations</p>	<p>The future is uncertain, especially for saving and investment decisions.</p> <ul style="list-style-type: none"> • Investment projects may succeed or fail. • Firms try to predict future demand and profits before investing. • These predictions are called expectations. <p>Macroeconomics must study expectations because they strongly affect current economic behavior.</p>
<p>2. Why Expectations Matter</p>	<p>Expectations are important for two main reasons:</p> <p>1. Effect on Current Decisions</p> <ul style="list-style-type: none"> • If firms are optimistic, they invest more today. • If firms become pessimistic, they invest less. • Lower investment today leads to lower future output and consumption. <p>2. Expectations Can Be Wrong (Shocks)</p> <p>When expectations are not fulfilled, firms face shocks.</p> <ul style="list-style-type: none"> • A shock is an unexpected event. • Shocks force firms to change their plans.
<p>3. Types of Shocks</p>	<p>There are two main types of shocks:</p> <p>1. Demand Shocks</p> <p>Unexpected changes in demand for goods and services.</p> <ul style="list-style-type: none"> • Positive demand shock: demand is higher than expected • Negative demand shock: demand is lower than expected <p>2. Supply Shocks</p> <p>Unexpected changes in the supply of goods and services (e.g., oil price shocks, natural disasters).</p> <p>→ Economists believe that most short-run fluctuations are caused by demand shocks, not supply shocks.</p>
<p>4. Sticky (Inflexible) Prices</p>	<p>Many prices in the economy are sticky, meaning:</p> <ul style="list-style-type: none"> • They are slow to change in the short run • They do not adjust immediately to changes in demand <p>Because prices are sticky:</p> <ul style="list-style-type: none"> • Markets do not clear quickly • Quantity adjusts instead of price

<p>5. Demand Shocks with Flexible Prices</p>	<p>If prices were fully flexible:</p> <ul style="list-style-type: none"> • Prices would rise or fall when demand changes • Quantity produced would stay at its optimal level • Output and employment would remain stable <p>→ With flexible prices, there would be no short-run fluctuations in GDP or unemployment.</p>
<p>6. Demand Shocks with Sticky Prices</p>	<p>In reality, prices are sticky.</p> <p>When demand changes unexpectedly and prices do not adjust:</p> <ul style="list-style-type: none"> • Firms cannot sell all their output (low demand), or • Firms cannot meet all demand (high demand) <p>As a result:</p> <ul style="list-style-type: none"> • Firms adjust output and employment, not prices <div style="display: flex; justify-content: space-around; align-items: flex-end;">   </div>
<p>7. Role of Inventories</p>	<p>Firms often use inventories to deal with short-run demand changes.</p> <ul style="list-style-type: none"> • Low demand → inventories increase • High demand → inventories decrease <p>Inventories help smooth production in the short run, but:</p> <ul style="list-style-type: none"> • Persistent low demand → inventories become too large • Firms are forced to cut production • Workers are laid off

8. From One Firm to the Whole Economy

When many firms experience:

- Unexpected declines in demand
- Sticky prices
- Rising inventories

The result is:

- Lower production
- Falling GDP
- Rising unemployment

→ This is a **recession**.

When demand is unexpectedly high:

- Production increases
- GDP rises
- Unemployment falls

→ This is an **economic boom**.

How Sticky Are Prices?

(The degree to which prices in the economy are sticky)

1. What Are Sticky Prices?

Sticky prices are prices that are **slow to change** in response to changes in supply and demand.

Price stickiness helps explain why:

- Demand shocks affect **output and employment**
- Prices do not adjust quickly in the short run

2. Are All Prices Sticky?

No. Price flexibility varies widely across markets.

Flexible Prices:

Prices of many **commodities and raw materials** adjust very quickly.

Examples:

- Oil
- Natural gas
- Corn
- Gasoline
- Airline tickets

These prices can change **daily or even within minutes**.

Sticky Prices:

Prices of most **final goods and services** are much slower to change.

- On average, prices change every **4.3 months**
- Some prices remain fixed for **years**

❖ Examples: of very sticky prices:

- Coin-operated laundry machines (\approx 46 months)
- Newspapers (\approx 30 months)
- Haircuts (\approx 26 months)

3. Evidence on Price Stickiness

Research shows that:

- Price stickiness is especially strong during **macroeconomic and monetary disturbances**
- Many firms delay price changes even when economic conditions change significantly

This confirms that sticky prices are a real and important feature of modern economies.

How Sticky Are Prices?

(The degree to which prices in the economy are sticky)

4. Why Are Prices Sticky?

Economists identify several reasons for price stickiness. Two important ones are:

1. Consumer Preference for Stable Prices

- Consumers prefer **predictable and stable prices**
- Frequent price changes create uncertainty and frustration
- Customers may feel cheated if prices rise suddenly

✓ To maintain customer trust:

- Firms keep prices stable
- Occasional sales occur, but regular prices change infrequently

2. Fear of Price Wars

In markets with few competitors:

- Firms worry that price cuts will be **matched by rivals**
- A price cut may not increase sales but will reduce profits

❖ Example:

- Coca-Cola and Pepsi
- If one cuts prices, the other likely responds immediately

As a result:

- Firms avoid changing prices
- Prices remain sticky

5. Why Price Stickiness Matters

Because many prices are sticky:

- Demand shocks do not quickly change prices
- Firms respond by adjusting **production and employment**
- This leads to **business cycle fluctuations**

Categorizing Macroeconomic Models Using Price Stickiness (Why economists use different models for different time horizons)

1. Price Stickiness Changes Over Time	<p>Price stickiness is not permanent.</p> <ul style="list-style-type: none"> In the very short run, many prices are fixed. Over time, firms revise prices when changes in demand appear permanent. This is why economists say prices are “sticky,” not “stuck.” <p>As time passes, prices become more flexible.</p>
2. Short Run vs. Long Run	<p>Economists distinguish between different time horizons:</p> <p>Extreme Short Run</p> <ul style="list-style-type: none"> Lasts weeks or a few months after a demand shock Prices are almost completely inflexible Firms adjust output and employment, not prices <p>Long Run</p> <ul style="list-style-type: none"> Lasts months to several years Prices have time to adjust Prices and quantities both change to restore equilibrium
3. Why Different Models Are Needed	<p>Because the economy behaves differently depending on how flexible prices are, economists use different macroeconomic models.</p>
4. Macroeconomic Models and Price Flexibility	<ul style="list-style-type: none"> ➤ Aggregate Expenditures (AE) Model <ul style="list-style-type: none"> Assumes completely fixed (stuck) prices and wages Best for analyzing the extreme short run Explains output changes caused by demand shocks ➤ Aggregate Demand–Aggregate Supply (AD–AS) Model <ul style="list-style-type: none"> Allows for price flexibility Useful for medium-run and long-run analysis Shows how price changes help the economy adjust over time
5. Importance for Economic Policy	<p>Using different models helps economists understand:</p> <ul style="list-style-type: none"> Why government and central bank policies may work in the short run Why the same policies may have different effects in the long run <p>❖ For example:</p> <ul style="list-style-type: none"> Expansionary policy may raise output when prices are fixed The same policy may mainly raise prices when prices are flexible
6. Key Insight	<p>The key reason economists use different macroeconomic models is:</p> <ul style="list-style-type: none"> Prices move from fully sticky in the short run To fully flexible in the long run <p>Different models capture different stages of this adjustment process.</p>