

Introduction

Foundations of Economics

Economics is the study of how people and societies allocate limited resources to satisfy unlimited wants. All economic reasoning begins with **scarcity**, which is the reality that resources are limited while human wants are unlimited. Because scarcity is universal, every individual, business, and government must make choices.

We cannot produce or consume everything, so every decision involves a **trade-off**. The **opportunity cost** of any action is the value of the next best alternative you forgo. Recognizing opportunity cost helps explain why efficiency, specialization, and markets matter.

Positive vs. Normative Economics

Economists distinguish between statements that describe reality and those that prescribe what should happen.

- **Positive economics** deals with facts and cause-and-effect relationships (“A higher minimum wage may increase unemployment among teens”).
- **Normative economics** involves value judgments (“The minimum wage should be raised to improve living standards”).

Understanding the difference prevents confusing objective analysis with subjective opinion.

Microeconomics and Macroeconomics

The field divides into two interconnected branches:

- **Microeconomics** examines individual decision-makers, like consumers, firms, workers, and how they interact in specific markets. It focuses on prices, production, and resource allocation.
- **Macroeconomics** studies the performance of the economy as a whole. It measures and explains aggregate indicators like GDP, unemployment, inflation, and growth.

While micro focuses on parts of the economy, macro views the system as an integrated whole. Micro-level behavior collectively determines macro outcomes, and macro conditions influence micro decisions.

Economic Models and Assumptions

Because the real economy is complex, economists build **models**, which are simplified representations that highlight key relationships.

- Models depend on **assumptions** to isolate variables, most importantly the idea of *ceteris paribus* (“all else equal”), which holds other factors constant to study one effect at a time.
- A model’s usefulness lies not in perfect realism but in clarity. It allows economists to test theories, make predictions, and design policies with logical structures.

Economic Systems

Every society must answer three basic questions:

1. What goods and services should be produced?
2. How should they be produced?
3. For whom should they be produced?

The way these questions are answered depends on the **economic system**:

- **Market economies** rely on voluntary exchange and price signals. Individuals and firms make decentralized decisions, guided by self-interest and profit motives. Competition tends to produce goods at lower costs and allocate resources efficiently, though markets may neglect equity or public goods.
- **Command economies** use centralized planning. The government determines output, prices, and distribution. This system can mobilize resources quickly but often faces inefficiency due to lack of incentives and imperfect information.
- **Mixed economies** combine both market forces and government involvement. Modern economies, including the United States, fall into this category. Markets allocate most resources, while governments regulate and redistribute to promote fairness and stability.

The Production Possibilities Curve (PPC)

The **Production Possibilities Curve** illustrates the trade-offs an economy faces when using limited resources to produce two goods. Every point on the curve represents maximum output combinations achievable with existing technology and resources.

- Points **on** the curve show **productive efficiency**, where all resources are fully utilized.
- Points **inside** the curve indicate inefficiency, such as unemployment or idle factories.

- Points **outside** are unattainable with current capacity.

The **law of increasing opportunity costs** explains the PPC's bowed-out (concave) shape: as production of one good increases, the amount of the other good sacrificed rises because resources are not perfectly adaptable. When opportunity costs remain constant, the PPC is a straight line.

The PPC also visualizes **economic growth**. Over time, if a nation invests more in **capital goods** (machines, infrastructure, technology) instead of only **consumer goods**, future production capacity expands. This shift moves the PPC outward, showing that present sacrifices in consumption can yield higher living standards later.

Hence, the PPC connects scarcity, efficiency, opportunity cost, and long-run growth in a single model.

Graphing Skills Checklist: The PPC

When drawing and analyzing PPCs on the AP exam, you should be able to:

1. Label both axes with clear, specific goods.
2. Draw a correctly shaped curve (bowed-out for increasing costs).
3. Identify and label points representing efficiency, inefficiency, and unattainable combinations.
4. Indicate opportunity cost as the slope between two points on the curve.
5. Show an outward shift for growth (e.g., more capital investment).

Marginal Analysis

Rational decision-making in economics occurs **at the margin**, which measures additional benefits and costs of a small change.

- **Marginal benefit (MB)** is the extra satisfaction or revenue gained from one more unit of activity.
- **Marginal cost (MC)** is the extra sacrifice or expense incurred.

The decision rule is simple: continue an activity as long as $MB \geq MC$; stop when $MB = MC$.

This principle applies universally to consumers deciding how much to buy, firms deciding how many workers to hire, or governments evaluating a new project. It ensures that resources are allocated to their most valued uses.

Utility and Rational Behavior

Individuals seek to maximize **utility**, or overall satisfaction, from consumption. As more of a good is consumed, total utility rises but the gain from each additional unit, or its **marginal utility**, declines. This is the **law of diminishing marginal utility**.

Because satisfaction per unit decreases, consumers distribute their limited income across goods to equalize the marginal utility per dollar spent:

$$\frac{MU_x}{P_x} = \frac{MU_x}{P_x}$$

This equilibrium condition ensures that each dollar yields the same added satisfaction, creating an efficient allocation of personal spending. Rational behavior doesn't mean people never make mistakes, but it ensures that people make choices consistent with their goals and available information.

Graphing Skills Checklist: Marginal Analysis

For marginal-utility graphs, you should be able to:

1. Label the horizontal axis as Quantity and the vertical axis as Utility or Marginal Utility.
2. Show that total utility increases at a decreasing rate.
3. Plot a downward-sloping marginal-utility curve.
4. Identify the point where marginal utility per dollar is equalized across goods.
5. Explain how this point represents consumer equilibrium.

Efficiency and Productivity

Efficiency has multiple meanings in economics, each describing how resources are used:

- **Productive efficiency:** producing at the lowest possible cost; achieved at any point on the PPC.
- **Allocative efficiency:** producing the combination of goods most valued by society, where marginal benefit equals marginal cost (MB = MC).
- **Distributive efficiency:** how output is shared across individuals or groups; this is normative and depends on social goals.

A society can be productively efficient yet allocatively or distributively inefficient if the mix of goods or the income distribution does not match public preferences.

Sustained improvements in living standards depend on productivity, or output per worker. Productivity rises through:

- Capital accumulation (machines, infrastructure)
- Human-capital development (education, training)

- Technological innovation
- Stable institutions that protect property rights and encourage investment

Comparative and Absolute Advantage

Trade arises from differences in productivity and opportunity cost.

- **Absolute advantage** occurs when one producer can make more of a good using the same resources.
- **Comparative advantage** is more important: it occurs when one producer can make a good at a lower opportunity cost than another.

When each specializes in the good where it has comparative advantage and then trades, total output and overall welfare rise.

The **terms of trade** represent the exchange rate between goods that benefits both parties. For trade to be mutually advantageous, the agreed rate must fall between their respective opportunity costs. This principle of gains from specialization and exchange is fundamental to both micro and macro economics.

Computing Terms of Trade: Step-by-Step

To compute terms of trade, you should:

1. Calculate each producer's opportunity cost for both goods.
2. Identify who has comparative advantage (lower opportunity cost) in each good.
3. Determine the acceptable range of the price (in terms of one good for the other) that lies between both producers' opportunity costs.
4. Select a rate within that range to show a mutually beneficial trade.

Consumer and Producer Surplus

Although introduced formally in later units, consumer surplus and producer surplus relate closely to efficiency and trade:

- **Consumer surplus**: the difference between what consumers are willing to pay and what they actually pay; measures buyer benefit.
- **Producer surplus**: the difference between what sellers receive and their minimum acceptable price; measures seller benefit.

At allocative efficiency, the sum of consumer and producer surplus (total surplus), is maximized. Any deviation from that point (price controls, inefficiency, or misallocation) reduces total welfare.