Introduction to Economics

IB SL Study Guide

Contents

Videos on this page: Watch: Opportunity Cost and Scarcity · Watch: Supply and Demand

What is Economics?

Economics is the study of how individuals, firms, and governments make decisions about allocating **scarce resources** to satisfy **unlimited wants**. The central challenge in all of economics flows from one inescapable fact: resources are finite, wants are not.

Scarcity and Choice

Scarcity means that there is never enough of every resource to satisfy all desired uses. Because of scarcity, every economic actor must choose. Every choice involves a trade-off: selecting one option means giving up another.

The concept that ties scarcity and choice together is **opportunity cost** — the value of the next best alternative forgone when a decision is made.

MEMORISE THIS

Opportunity cost = the value of the next best alternative you give up.

If you choose to spend two hours studying economics instead of studying chemistry, the opportunity cost is whatever you would have gained from those two hours of chemistry study.

EXAM ALERT

Opportunity cost is **not** the monetary cost of your choice — it is the value of what you gave up. If a government builds a hospital on a piece of land, the opportunity cost is the school, park, or housing that could have been built there instead. Never define opportunity cost simply as "the cost of the decision."

Factors of Production

Economists group all productive resources into four categories:

Factor	Definition	Return earned
Land	All natural resources (soil, minerals, water, climate)	Rent
Labour	Physical and mental effort of workers	Wages
Capital	Man-made resources used in production (machinery, buildings, tools)	Interest
Entrepreneurship	The organisational talent and risk-taking that combines the other factors	Profit

IB TIP

> IB exams frequently ask you to identify which factor of production is illustrated in a scenario. Remember: **capital** in economics means physical capital (machines, factories) — it does NOT mean money. Money is a financial resource, not a factor of production.

Economic Systems

Because resources are scarce and choices must be made, every society must answer three fundamental questions:

1. **What** to produce?
2. **How** to produce it?
3. **For whom** is it produced?

Different economic systems answer these questions in different ways.

Free Market Economy

In a free market, prices are determined by the interaction of buyers and sellers through the price mechanism. Firms decide what to produce based on the profit motive; consumers signal their preferences through willingness to pay.

Advantages of the free market:

- Efficiency — resources flow toward uses where they generate the most value
- Consumer sovereignty — production responds to consumer preferences
- Innovation — competition and the profit motive incentivise firms to innovate
- Wide variety of goods and services

Disadvantages of the free market:

- Market failures — public goods are underprovided; negative externalities (pollution) are overproduced
- Inequality — income and wealth can become highly concentrated
- Monopoly power — dominant firms may exploit consumers
- Cyclical unemployment — no automatic mechanism prevents recessions

Command Economy

In a command (planned) economy, a central government authority decides what, how, and for whom to produce. All major firms are state-owned.

Advantages of the command economy:

- Can direct resources to social priorities (healthcare, education, defence)
- Can reduce inequality through redistribution
- Eliminates private monopoly exploitation

Disadvantages of the command economy:

- Information problem — no price system to signal scarcity, leading to shortages and surpluses
- Lack of incentives — workers and managers have little reason to innovate or improve productivity
- Bureaucracy and inefficiency
- Historical record of low living standards

Mixed Economy

Almost every real-world economy is a **mixed economy** — a combination of free-market and government intervention. The government provides public goods, regulates markets, and redistributes income through taxes and transfers, while private firms and consumers drive most economic activity.

> **IB TIP**
>
> For Paper 1 essays, always acknowledge the real-world context: no pure free market or pure command economy exists. All IB case studies involve mixed economies. Frame your analysis around the degree of government intervention rather than treating it as a binary choice.

Watch: Opportunity Cost and Scarcity VIDEO

The Production Possibilities Curve

The **Production Possibilities Curve (PPC)** — sometimes called the Production Possibilities Frontier (PPF) — is a diagram showing all possible combinations of two goods that an economy can produce when all resources are fully and efficiently employed.

Drawing the PPC

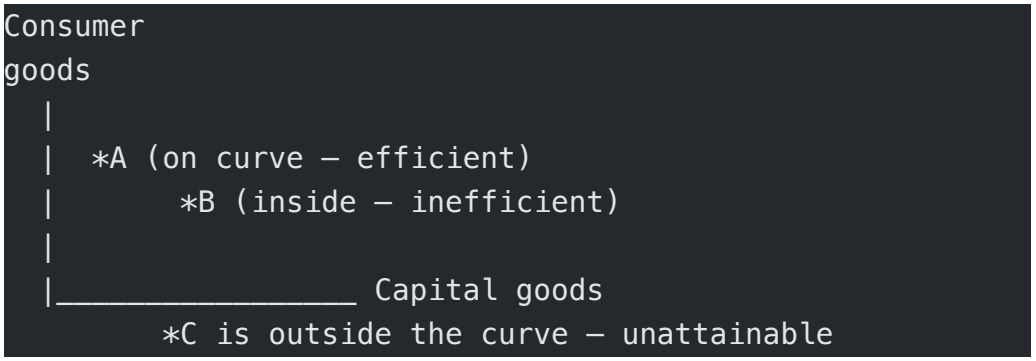
Axes: Each axis represents the quantity of one good. Label them clearly (e.g., "Consumer goods" on the vertical axis, "Capital goods" on the horizontal axis).

Shape: The standard PPC is **concave to the origin** (bowed outward). This shape reflects the **law of increasing opportunity cost**: as more of one good is produced, increasingly large amounts of the other must be sacrificed, because resources are not perfectly adaptable between uses.

Key points on the diagram:

- A point **on the curve** (e.g., point A) = **productively efficient** — all resources are fully employed
- A point **inside the curve** (e.g., point B) = **inefficient** — some resources are unemployed or misallocated (e.g., during a recession)

- A point **outside the curve** (e.g., point C) = **currently unattainable** with existing resources and technology



Opportunity Cost on the PPC

Moving along the PPC illustrates opportunity cost directly. If the economy moves from point A (producing 80 consumer goods and 20 capital goods) to point D (producing 60 consumer goods and 40 capital goods), the opportunity cost of producing 20 more units of capital goods is 20 units of consumer goods.

WORKED EXAMPLE

Worked Example — Reading Opportunity Cost from the PPC

Suppose the PPC shows:

- Point A: 100 units of food, 0 units of clothing
- Point B: 70 units of food, 10 units of clothing
- Point C: 30 units of food, 20 units of clothing

Moving from A to B: produce 10 more units of clothing; give up 30 units of food. Opportunity cost of each unit of clothing = 30/10 = **3 units of food**.

Moving from B to C: produce 10 more units of clothing; give up 40 units of food. Opportunity cost of each unit of clothing = 40/10 = **4 units of food**.

The opportunity cost is rising — this confirms the concave shape is correct.

Shifts in the PPC

A **shift outward** of the entire PPC represents **economic growth** — the economy can now produce more of both goods. Causes include:

- Discovery of new resources (e.g., new oil reserves)
- Improvement in technology
- Increase in the quantity of labour (population growth, immigration)
- Investment in physical capital
- Improvements in education and training (human capital)

A **shift inward** represents a decrease in productive capacity: natural disaster, war, emigration of skilled workers, depletion of resources.

⚠ EXAM ALERT

A common exam error: confusing a **movement along** the PPC (a reallocation of existing resources between two goods — no growth, just a trade-off) with a **shift of** the PPC (a change in the economy's total productive capacity). Only a shift represents growth.

Demand

The Law of Demand

The **law of demand** states that, all other things being equal (ceteris paribus), when the price of a good rises, the quantity demanded falls; when the price falls, the quantity demanded rises.

This inverse relationship between price and quantity demanded is explained by two effects:

- **Substitution effect:** When a good becomes more expensive relative to substitutes, consumers switch to the cheaper alternatives.
- **Income effect:** When a good becomes more expensive, consumers' real purchasing power falls, so they buy less.

The Demand Curve

The demand curve slopes **downward from left to right**. Plot price (P) on the vertical axis and quantity demanded (Qd) on the horizontal axis.

A movement along the demand curve occurs only when the **price of the good itself** changes. All other factors cause a **shift of the demand curve**.

Determinants of Demand (Shifts)

Use the mnemonic **PIRATE** to remember what shifts the demand curve:

MEMORISE THIS

P — Price of related goods (substitutes and complements)

I — Income of consumers

R — consumer tastes and pReferences (or fashion/trends)

A — Advertising and consumer expectations

T — Tastes (often combined with R above; some use "T" for Taxes on income)

E — number of buyers in the markEt (population)

Substitutes: Goods that can be used in place of each other (e.g., butter and margarine). If the price of butter rises, demand for margarine **increases** (demand curve shifts right).

Complements: Goods consumed together (e.g., cars and petrol). If the price of cars rises, demand for petrol **decreases** (demand curve shifts left).

Normal goods: When income rises, demand increases (positive income elasticity).

Inferior goods: When income rises, demand falls (negative income elasticity) — e.g., instant noodles, bus travel.

> ⚠ EXAM ALERT
>
> Never say "demand changes because of a price change." A price change causes a **movement along** the demand curve — a change in **quantity demanded**, not a change in **demand**. Demand (the whole curve) only shifts when a non-price determinant changes.

Supply

The Law of Supply

The **law of supply** states that, ceteris paribus, when the price of a good rises, the quantity supplied increases; when the price falls, the quantity supplied decreases.

This direct (positive) relationship exists because higher prices make production more profitable, attracting more suppliers and encouraging existing suppliers to expand output.

The Supply Curve

The supply curve slopes **upward from left to right**. Price (P) is on the vertical axis; quantity supplied (Qs) is on the horizontal axis.

A movement along the supply curve occurs only when the **price of the good** changes. Everything else shifts the curve.

Determinants of Supply (Shifts)

Determinant	Effect on supply if it increases
Cost of inputs (wages, raw materials)	Decreases supply (curve shifts left)
Technology improvements	Increases supply (curve shifts right)
Number of sellers	Increases supply (curve shifts right)
Government subsidies	Increases supply (curve shifts right)
Indirect taxes (e.g., excise tax)	Decreases supply (curve shifts left)
Price of other goods the firm could produce	Decreases supply of this good if prices of alternatives rise
Expectations of future prices	May decrease current supply (firms hold back stock)

IB TIP

A supply curve shift to the **right** means more is supplied at every price — this represents an **increase** in supply. A shift to the **left** means less is supplied at every price — a **decrease** in supply. Students frequently confuse direction of shift with increase/decrease. Always define the direction relative to the quantity axis.

Market Equilibrium

Equilibrium Price and Quantity

The **equilibrium** is the price at which the quantity demanded equals the quantity supplied. Graphically, it is the point where the demand and supply curves intersect.

- *Equilibrium price (P):** the price at which the market clears — no shortage, no surplus
- *Equilibrium quantity (Q):** the quantity bought and sold at the equilibrium price

Excess Supply and Excess Demand

Excess supply (surplus): When price is **above** equilibrium, Qs > Qd. Unsold inventory accumulates. Sellers reduce prices to clear stock. The market moves back toward equilibrium.

Excess demand (shortage): When price is **below** equilibrium, Qd > Qs. Consumers compete for the limited good. Prices are bid upward. The market moves back toward equilibrium.

How Markets Self-Correct: The Price Mechanism

The **price mechanism** (also called the invisible hand, following Adam Smith) automatically adjusts prices to eliminate shortages and surpluses, coordinating the decisions of millions of buyers and sellers without central direction.

WORKED EXAMPLE

Worked Example — Equilibrium Shift

Suppose the market for coffee is initially in equilibrium at P* = 3 dollars per cup, Q* = 100 cups per day. A drought destroys a third of global coffee harvests.

1. Supply decreases (curve shifts left).
2. At the original price (3 dollars), there is now excess demand: quantity demanded (100) exceeds the new quantity supplied (70).
3. The shortage puts upward pressure on prices.
4. Price rises until a new equilibrium is reached at a higher price and lower quantity.

Diagram labelling: Show original S1 shifting left to S2; original equilibrium E1 moving to new equilibrium E2 at higher P and lower Q; label the shortage gap at the original price P1.

EXAM ALERT

IB Paper 1 essays and Paper 2 data-response questions require you to draw accurate diagrams AND explain the mechanism — not just draw the diagram. Always walk through the steps: what shifts, direction of shift, effect on price and quantity, and why.

▸**Watch: Supply and Demand** VIDEO

Elasticity

Elasticity measures the **responsiveness** of one variable to a change in another. The four elasticities examined in IB Economics are PED, PES, YED, and XED.

Price Elasticity of Demand (PED)

Definition: PED measures the responsiveness of quantity demanded to a change in the price of the good itself.

$$PED = \frac{\%\Delta Q_d}{\%\Delta P}$$

Because demand curves slope downward, PED is always **negative** (price and quantity move in opposite directions). IB convention is to state PED as an absolute value or to acknowledge the negative sign explicitly.

Interpretation of values:

Value of |PED|	Interpretation
Greater than 1	Elastic demand — quantity changes more than proportionally to price
Equal to 1	Unit elastic
Less than 1	Inelastic demand — quantity changes less than proportionally
Equal to 0	Perfectly inelastic
Infinity	Perfectly elastic

Determinants of PED:

- **Availability of substitutes:** More substitutes = more elastic (consumers can switch easily)
- **Proportion of income:** Goods taking a large share of income tend to be more elastic
- **Necessity vs. luxury:** Necessities (insulin, bread) are inelastic; luxuries (holidays, jewellery) are elastic
- **Time period:** Demand becomes more elastic over time as consumers find alternatives
- **Brand loyalty:** Strong brand loyalty reduces elasticity

WORKED EXAMPLE

Worked Example — PED Calculation

Price of cinema tickets rises from 10 dollars to 12 dollars. Monthly attendance falls from 500 to 400.

$\%\Delta P = \frac{12-10}{10} \times 100 = 20\%$

$\%\Delta Q_d = \frac{400-500}{500} \times 100 = -20\%$

$PED = \frac{-20\%}{+20\%} = -1$

|PED| = 1 — unit elastic demand.

Revenue implication: Total revenue before = 10 x 500 = 5,000 dollars. After = 12 x 400 = 4,800 dollars. Revenue fell slightly. This small TR change is expected — the simple percentage-change formula is an approximation, and a minor deviation from the TR test is normal when |PED| ≈ 1.

PED and Total Revenue (TR):

- Elastic demand (|PED| > 1): Price increase → TR decreases; price decrease → TR increases
- Inelastic demand (|PED| < 1): Price increase → TR increases; price decrease → TR decreases
- Unit elastic (|PED| = 1): Price changes have no effect on TR

MEMORISE THIS

TR rule: When demand is elastic, price and total revenue move in **opposite** directions. When inelastic, they move in the **same** direction. (Remember: E = Elastic = Opposite.)

Price Elasticity of Supply (PES)

Definition: PES measures the responsiveness of quantity supplied to a change in the price of the good.

$$PES = \frac{\%\Delta Q_s}{\%\Delta P}$$

PES is always **positive** (supply curves slope upward). Elastic supply (PES > 1) means producers can respond quickly to price changes. Inelastic supply (PES < 1) means they cannot.

Determinants of PES:

- **Time period:** Supply is more elastic in the long run (firms can build new capacity)
- **Ability to store inventory:** If goods can be stored (e.g., canned food), PES is more elastic
- **Spare capacity:** Firms with idle machines and workers can increase output quickly
- **Ease of factor substitution:** Can inputs be easily switched to produce this good?
- **Agricultural goods** generally have inelastic supply in the short run (growing season constraints)

Income Elasticity of Demand (YED)

Definition: YED measures the responsiveness of demand to a change in consumer income.

$$YED = \frac{\%\Delta Q_d}{\%\Delta Y}$$

where Y = income.

Sign of YED	Type of good
Positive (YED > 0)	Normal good — demand rises as income rises
Negative (YED < 0)	Inferior good — demand falls as income rises
YED > 1	Luxury good (income elastic normal good)
0 < YED < 1	Necessity (income inelastic normal good)

Significance: YED is important for firms forecasting how demand will change during economic booms and recessions, and for governments understanding how tax revenues will respond to economic growth.

Cross Elasticity of Demand (XED)

Definition: XED measures the responsiveness of demand for good A to a change in the price of good B.

$$XED = \frac{\%\Delta Q_{dA}}{\%\Delta P_B}$$

Sign of XED	Relationship between goods
Positive (XED > 0)	Substitutes (e.g., Coke and Pepsi)
Negative (XED < 0)	Complements (e.g., printers and ink cartridges)
Zero	Unrelated goods

Significance: XED helps firms assess competitive threats and plan pricing strategies.

> ⚠ EXAM ALERT
>
> A frequent error: confusing XED sign conventions. Substitutes have **positive** XED (if rival's price rises, consumers switch to your good, so your quantity demanded rises). Complements have **negative** XED (if the price of your complement rises, demand for your good falls). Draw out the logic each time if unsure.

Government Intervention

Governments intervene in markets to correct market failures, redistribute income, and achieve social objectives. The main tools are price controls, indirect taxes, and subsidies.

Price Floors (Minimum Prices)

A **price floor** is a legally imposed minimum price, set **above** the equilibrium price. The most common example is the **minimum wage** in the labour market.

Effect:

- At the floor price, quantity supplied exceeds quantity demanded → **excess supply** (a surplus).
- In the labour market: workers want to work more hours than firms want to hire → **unemployment**.

Welfare analysis:

- **Consumer surplus (CS)** decreases — buyers pay a higher price.
- **Producer surplus (PS)** may increase (higher price) or decrease (lower quantity sold), depending on elasticities.
- **Deadweight loss (DWL)** arises — transactions that would have been mutually beneficial at equilibrium no longer take place.

Diagram requirements: Show D and S curves, original equilibrium, the floor price P_floor above equilibrium P*, the resulting quantity demanded Q_d and quantity supplied Q_s (with Q_s > Q_d), label the surplus (Q_s - Q_d), and the DWL triangle.

Price Ceilings (Maximum Prices)

A **price ceiling** is a legally imposed maximum price, set **below** the equilibrium price. The classic example is **rent control**.

Effect:

- At the ceiling price, quantity demanded exceeds quantity supplied → **excess demand** (a shortage).

- Housing shortages, queuing, black markets, and deteriorating quality can result.

Diagram requirements: Show D and S, original equilibrium, the ceiling P_ceiling below P*, resulting Q_d > Q_s, label the shortage, and the DWL triangle.

> **IB TIP**
>
> For any government intervention diagram, always identify and shade the DWL triangle. It represents the loss in total welfare caused by the price being prevented from reaching equilibrium. Examiners specifically look for this.

Indirect Taxes

An **indirect tax** (also called a specific tax or excise tax) is a per-unit tax placed on producers. It effectively **increases the cost of production**, shifting the supply curve to the left (upward by the amount of the tax).

Effect:

- Price paid by consumers rises (by less than the full tax if demand is elastic).
- Price received by producers falls.
- Quantity traded decreases.
- **Tax incidence** is shared between consumers and producers — the relative burden depends on the price elasticities of demand and supply.

Tax incidence rule:

- More inelastic demand → consumers bear more of the tax burden.
- More elastic demand → producers bear more of the tax burden.

> **WORKED EXAMPLE**
>
> **Worked Example — Tax Incidence**
>
> Market equilibrium: P* = 5 dollars, Q* = 100 units. Government imposes a tax of 2 dollars per unit. New equilibrium: consumers pay 6.50 dollars, producers receive 4.50 dollars.
>
> Consumer burden = 6.50 - 5.00 = **1.50 dollars per unit** Producer burden = 5.00 - 4.50 = **0.50 dollars per unit** Total tax = 1.50 + 0.50 = **2.00 dollars** (correct — must sum to the tax amount).
>
> Consumers bear 75% of the burden (1.50 / 2.00), suggesting demand is relatively inelastic.

Diagram requirements: Show the original S1 and new S2 (shifted left by the tax amount), new higher price P_consumer, lower price P_producer, the tax rectangle (shaded between P_consumer and P_producer), and the DWL triangle.

Subsidies

A **subsidy** is a payment by the government to producers, effectively reducing their costs. It shifts the supply curve to the right (downward by the subsidy amount).

Effect:

- Price paid by consumers falls.
- Price received by producers rises (they receive the market price plus the subsidy).
- Quantity traded increases.
- The government incurs a fiscal cost equal to the subsidy per unit multiplied by the quantity produced.

Rationale for subsidies:

- Encourage production of goods with positive externalities (e.g., education, public transport, vaccines)
- Support domestic industries (e.g., agriculture)
- Keep essential goods affordable for low-income consumers

Diagram requirements: Show S1 shifting right to S2, new lower price P_consumer, higher price P_producer (= P_consumer + subsidy), quantity increasing from Q1 to Q2, and the subsidy rectangle (= subsidy per unit x Q2).

> ⚠ EXAM ALERT
>
> A key difference from taxes: with a subsidy, the **consumer price falls** but the **producer price rises** — they diverge by the subsidy amount (whereas with a tax they diverge by the tax amount). The rectangle representing the government's total subsidy cost = subsidy per unit x Q2 (the new quantity, not the original).

IB Paper 1 Essay Structure

IB Economics Paper 1 essays are marked out of 25 (part a: 10 marks; part b: 15 marks). Both sections require diagrams and two-sided analysis.

For "Explain" questions (part a):

1. Define key terms.
2. Draw a clearly labelled diagram.
3. Explain the mechanism (the sequence of cause and effect, using the diagram).
4. Give a real-world example.

For "Evaluate" questions (part b):

1. Define key terms and state your argument.
2. Draw a diagram supporting your main argument.
3. Develop the argument with theory and evidence.

4. Present a counter-argument with a second diagram if appropriate.
5. Conclude — make a balanced, supported judgement. Use phrases like “the extent to which… depends on…” and reference elasticity, time period, or context.

> **IB TIP**
>
> The word “evaluate” is the instruction for the highest-mark questions. Markers look for: two-sided analysis, recognition that outcomes depend on conditions (e.g., elasticity, market structure, time horizon), and a supported final judgement. A one-sided answer cannot reach the top mark band even with a perfect diagram.

Practice Questions

Short-answer (Paper 2 style):

1. Define scarcity and explain, using an example, why it necessitates choice. (4 marks)

2. Using a diagram, explain what happens to the market for electric vehicles if the government introduces a subsidy for EV manufacturers. (4 marks)

3. Calculate the PED for a good whose price falls from 20 dollars to 16 dollars and whose quantity demanded rises from 500 to 600 units. State whether demand is elastic or inelastic and explain one implication for total revenue. (4 marks)

Essay questions (Paper 1 style):

4. (a) Explain, using a diagram, how a price ceiling below the equilibrium price affects a market. (10 marks) (b) Evaluate the use of a price ceiling as a method of making housing affordable for low-income consumers. (15 marks)

5. (a) Explain the factors that determine the price elasticity of supply for agricultural products. (10 marks) (b) Evaluate the view that the price mechanism efficiently allocates resources in free markets. (15 marks)

▶ Answer guidance — Question 3